

The Mining Journal.

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DEEP MINE PUMPING WITHOUT PUMP RODS.

Without any belief in perpetual motion, there are many who consider that there ought to be some means of utilising the water pressure to raise a portion of the quantity to the surface. Some few practical efforts in this direction have been made, and the success has been ample to encourage further attempts. At the celebrated Harz Silver-Lead Mine, where they have reached a depth of more than 2800 ft., it was found that the pumping system of raising water in numerous shafts with primitive machinery would not in the future be able to cope with the growing bodies of water. A deep vertical shaft was, therefore, sunk beyond the hanging-wall of the main lode, the Burgstadter Zug, which was to serve for the centralisation of the pumping machinery, and a large gallery was driven at a depth of 670 ft. below the lowest drainage adit, the Ernst August, to serve as a general reservoir.

The problem to be solved was to construct machinery which would utilise the supply of water coming from the main ditch and pond system of the district to raise the mine water for the reservoir level to the Ernst August drainage adit, a height of 738 feet. The depth of the reservoir below the point where the supply tunnel enters the Marie shaft (95 feet) was 1959 feet. It was decided to use two water-pressure engines placed in the reservoir level, and as the water for driving the engines had to be conducted to the drainage level also the effective head of water was 1209 feet. By this arrangement the necessity of using a long pump-rod, requiring frequent repair, was avoided, a difficulty which placing the engine in the adit would have entailed. The disposition chosen more than counterbalanced the drawbacks of an increased length of pipe, and its greater thickness in the lower portions to resist the pressure of 59 atmospheres.

In a recent number of Dingler's Polytechnic Journal is described a system of pumping machinery without pump-rods invented by Mr. Angeley. The principle by which this is effected is the utilisation of the pressure transmitted by the water itself. The simplest arrangement of the Angeley pump consists of a suction part and a compressor. The first consists of two vertical cylinders placed one above the other. In each of these moves a piston on opposite ends on the same piston-rod; these pistons are without valves, and fit watertight. The piston-rod passes through a stuffing-box both above and below the upper piston. The upper piston bears against a spiral spring, which is coiled around the piston-rod, and rests against the top of the cylinder. The upper cylinder is connected at its lower end by means of a side tube with the ascending pipe, while the larger cylinder is connected by means of a side tube with the valve chamber; the latter is provided with valves, the operations of which needs no description. The apparatus for compression consists of a pump cylinder placed at the top of the pipe. On the downward stroke of the compressor piston the pistons in the cylinders are forced upward, and the spring is compressed; the recoil of the spring raises the water.

LOADING AND UNLOADING COLLIERY CAGES.

At a time like the present any appliance that will ensure economy in the winding and raising of coal and other minerals with a minimum of manual labour must be of great importance to colliery proprietors. An arrangement of this nature has been patented by a Mr Fisher, and is styled the Patent Self-Acting Arrangement for Unloading and Loading Colliery Cages. This invention enables the unloading of the full trams from the cages and the simultaneous loading of empty ones thereon to be effected almost automatically, and with little or no manual labour, except that required to place the empty trams into position on the pit bank for loading. The manner in which this is effected is briefly as follows :- Instead of fastening the rails or platform (upon which the trams are run) direct to the cage itself, they are swung intermediately between the ends on axles working in bearings, and are fitted at one end with L-pieces and at the other end with deflecting levers or feet so arranged as to project below the bottom of the cage, and in such a manner that when the cage is settling down on the props the L-pieces and feet are raised up by the props or keps, and in so doing the rails of the cage are depressed at one end and raised at the other to such an extent that by the time the cage has settled on the props the loaded trams run off the cage by nature of their own gravity alone - the tilting of the rails having previously automatically deflected the stops in front of the trams and which held them in place. Simultaneously with this motion the platform and rails (carrying the empty trams), which are attached to four lifting levers (two at each end) working in bearings fixed underneath the rails, are raised by a small single-acting cylinder (actuated either by steam, compressed air or water) to a similar inclination to and in a line with those on the cage itself, thereby causing the trams to run down the incline on the cage, where they are arrested at the proper place by the release of the front stops by the loaded trams. The operation of loading being complete, the cage is raised off the keps, and by so doing the cage rails fall to their normal horizontal position; at the same time that the lever controlling the supply and exhaust of steam to the small platform cylinder allows the steam to be exhausted from the underneath side of the piston and the rails carried by it to be lowered to the level of the pit bank ready to receive other empty trams. The same action ensues at the bottom of the shaft by the cage discharging its empty trams and taking on the full ones from a permanent incline from the workings. This system of unloading and loading is equally applicable to cages with two, three, and four decks, and holding one or two trams on each deck, and by the application of this important invention, thereto, and the self-raising and lowering tram hoist, by means of which the loaded trams are lowered to the level of the pit bank and the empty ones raised therefrom to the inclined loading platforms for running on the cage by a simple and automatic arrangement, we are enabled to effect the unloading and loading of each deck simultaneously, without the tedious necessity of unloading each deck consecutively to one or two platforms. Amongst the advantages claimed by the use of this arrangement are the following:

-1. A very great reduction of the number of banksmen required for loading and unloading the trams. One of the collieries where this is at work having reduced the number of banksmen 60 per cent., thus effected a saving of over £300 per annum in this item alone.

-2. Very great increase in the amount of output of collieries by the important saving of time required in changing the trams, and consequently great increase in the number of journeys made by the cage and quantity of coal raised in some cases amounting to between 30 and 40 per cent.

-3. The apparatus can be very speedily and readily applied to any winding cage and platform without interfering with ordinary work.

-4. Increased efficiency of present winding gear without the excessive wear and tear of same due to high speeds.

The extreme simplicity of the whole apparatus, which is entirely self-acting, dispenses with the requirements of any skilled attendant whatever, and the whole is of such ample strength, and has so few parts that even with the excessive wear and tear that colliery machinery has to sustain, it is practically impossible that any derangement whatever can occur to it. The apparatus has now been in full use for an extended period, effecting a great economy in labour and expense and a great increase in the outputs. The invention is in practical use at a colliery near Nottingham, and answers admirably. It is being introduced by Mr. Thomas A. Warrington, of 30, King Street, Cheapside, London.

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THE MINES REGULATION ACT.

At the Guildhall, Walsall, on Friday, before Messrs. J. W. Newman and W. Bayliss, Mr. E. Crapper, of the Portland-street and Hatherton Limestone Mines, Walsall, was, on the complaint of Mr. James P. Baker, Chief Inspector of Mines for the district, convicted of offences under the Metalliferous Mines Regulation Act, 1872, and fined £5 and costs.

COLLIERY ACCIDENT.

At Ansley Colliery, near Atherstone, on Saturday night, Mr. Slack, the manager, Mr. Allen, the enginewright, and three other men who had been effecting some repairs to the sump at the bottom of the pit. desiring to ascend, signalled to the engine-man at the pit's mouth to start the engine. This was done, but before half the ascent had been accomplished the cage, containing the five men, by some means, as yet unexplained, got fast. A banksman seeing the danger in which the men were placed, signalled to the engine-man to stop. The latter, a stranger to the pit, and probably somewhat excited, reversed the engine too suddenly, and the cage and men were precipitated with some degree of velocity into the sump below. This contained 9 or 10 ft. of water, and the men were completely submerged, and in imminent danger of being drowned. The manager, however, with great presence of mind, seized the conducting rope, and by this means climbed to the top and raised the other men, who were in a very exhausted condition.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

Jan. 2. - The holidays have passed over in an unusually quiet manner, giving unmistakable evidence of a scarcity of money consequent on the depression of trade. This is only what was expected, for very few miners or ironworkers are at all thrifty in good seasons, for Saturday is often wanted two or three days before it comes. But during the year it is only fair to state not much opportunity for saving was given to workers generally. During the summer and even in autumn, the coal trade of Derbyshire was unusually dull, many of the pits not working more than three days a week, whilst a reduction in wages also took place, so that the men could scarcely live on their earnings. The house coal trade with London however, kept up very well, but at prices during a great part of the year that could not pay, for Silkstones were delivered to consumers as low as 21s. per ton, and ordinary sorts as low as 19s. Steam coal did not go off very well, all things considered, and towards the close of the year, one or two furnaces having ceased to require fuel, there was a still further decline in the consumption. A tolerably fair tonnage, however, was sent southward for some of the furnaces in Northamptonshire. In small coal the business done was only moderate, the depression in Lancashire causing a considerable decrease in the quantity required for boilers.

Some of the lead mines have done tolerably well, but it may be said that the number that has been in operation is less than in some former years, the greater part of the production coming from a very few mines, one of them at Wensley, near Matlock, the Mill Close probably getting one-fourth of the entire produce of the county. But this mine has had expended upon it a large amount of money in the best machinery and appliances, and at the present time it is only by having such, and by means of capital, that lead mining can be made to pay. Ironstone has not been so much worked as in some former years and our ironmasters appear satisfied with the large supplies they receive from Northamptonshire in particular, whilst the Staveley Company have been using stone from Lincolnshire. Makers of pig have had a hard time of it, owing to the competition in the various markets, and the low prices which have so long ruled. Little can as yet be said with respect to the new year, for work has scarcely got into its ordinary channel again, but it may be said that the collieries in most of the districts in Derbyshire have commenced very well, although at a few places the men have received notices of a reduction of wages. Ironworkers, however, are scarcely as well off, the number employed being less than during the greater part of last year.

In Sheffield the last quarter was the worst of the year, and, indeed, the worst that has been known for many years; and at the present time there is a very large amount of distress amongst the iron working class. Several works as yet have not resumed business, some of their manufacturers being engaged in taking stock, and others in making alterations. Some few of the cutlery manufacturers have orders in hand that will admit of them putting their men on full time, but it is quite problematical how long they will be able to do so, for competition with German makers in particular is keener than it has ever been before. It is difficult to say much with respect to armour-plates, but there is very little doubt but that the present year will see a very extensive demand for steel plates for our armour-clads, as well as for ordinary vessels, boilers, and other purposes for which iron alone is now used. Bessemer rails have for a long time been in rather brisk request, but of late there does not appear to have been so much activity in them, for the trade is getting more scattered, and the old mills are being altered, or at least have been, so that they can roll Bessemer. The foundries have been kept fairly going, and have commenced the new year much better than many other branches. Makers of crucible steel have had a long

season of quietness, but their prospects are certainly getting brighter, although some time may elapse before the demand will be such as to find full employment for all the furnaces.

In South Yorkshire for a few weeks before Christmas the house coal trade was very good, and is now in about the same state, but colliery-owners still complain of barely making expenses. Seeing that during the summer months nearly all the collieries were worked at a loss notice of a reduction of wages has been given at several places. But this at most will not affect more than 4000 or 5000 persons, although a paragraph has been doing the rounds that there is a probability of a strike in South Yorkshire and North Derbyshire that may lead to from 80,000 to 100,000 men and boys being out of work. It so turns out that in the whole of the West Riding and Derbyshire there are not 80,000 persons employed in the collieries underground and above ground. There is, however, every probability that some arrangement will be come to, but the men at none of the collieries will submit to a reduction of 12½ per cent.

COAL MINING IN 1878.

During the year just ended coal mining has been anything but prosperous, whilst prices have been so exceptionally low that a large number of collieries have worked without profit, and very many at a serious loss. Depression in trade, however, did not lead to a better understanding between masters and men, for in 1878 we had a larger crop than usual of strikes, lock-outs, and disputes of a more or less serious nature, all leading to a heavy loss of wages. as to the production of coal, we are likely to have another proof of what little reliance there is to be placed on the estimates of the able men who have endeavoured to fathom the time when our stores of coal will be exhausted, by showing a certain annual increase in the quantity required for household, manufacturing, and all other purposes. Basing their calculations on the assumption that coal would go on increasing in consumption at the rate of about 3,000,000 or 4,000,000 tons a year, a comparatively short period was allowed for the working out of all our coal fields to a certain depth. But not only has the rate of increase been much less rapid than was anticipated by our able experts, such as Prof. Jevons, Sir W. Armstrong, Mr. Williams, and others, but in some years there has been scarcely any increase as compared with the preceding years. In 1877, for instance, the output of coal was 134,610,763 tons, whilst in 1876 it was 133,344,766 tons, showing an increase for the year of only 1,265,997 tons, whilst the number of persons employed in mines in the kingdom in 1876 was 514,432, and in 1877 it had declined to 494,386. These facts, doing away as they do with a certain annual progressive increase, commensurate at least with the increase of population, as suggested by the Commission on Coal would be the case, will be repeated, there is no doubt, in 1878. Indeed, since 1870 colliery owners have not had anything like so bad a year, for not only was the demand very far below the power of supply, but prices ruled unusually low. This was not confined to certain districts, but was general. Many collieries were closed for a long time owing to disputes, whilst some serious explosions, resulting in a serious loss of life, also took place, the principal ones being at Haydock and Abercarne. In South Wales, the largest coalfield in the kingdom, trade was but indifferent at times, still a fair business was done in steam coal for our own navy, as well as for general export. But the stoppage of so many furnaces was a serious drawback, as well as the collapse of the manufacture of iron rails. But the latter will to some extent be compensated for by the introduction of Bessemer rails, for the Dowlais Company, the Ebbw Vale, and the Rhymney Iron Company are engaged in the production of steel, the former having three converters of a capacity of 19 tons 10 cwts. But several colliery owners in the southern part of the Principality have been cultivating the London trade by railway, and have sent large quantities over both the Great Western and London and North-Western. From Bwlfa alone the Great Western has been taking at the rate of 7,000 tons a month, Aberdare 5,000 tons, and Navigation 7,000 tons a month, whilst the Plymouth Iron Company have been sending 8,000 tons a month.

The largest coal field in England, with the greatest quantity of unworked coal, is the Midland, which extends from the town of Nottingham to Leeds, being nearly 70 miles in length. The year has been a most unfavourable one both in Derbyshire and the West Riding. In the former county during the summer months many of the collieries did not work more than three days a week, whilst wages at several of them had to be reduced. From several of the leading collieries, such as Clay Cross, Langley Mill, Tibshelf, Grassmoor, Hucknall, Blackwell, &c., a very good business was done with the Metropolis up to the end of the year, the former alone having been credited with nearly 240,000 tons for the twelvemonth, whilst the Midland Railway, taking mainly from Derbyshire, carried to the Metropolis upwards of 1,500,000 tons. The output of coal in Derbyshire for 1878 is estimated at fully 7,000,000 tons. In the northern part of the same field matters have not gone so well, for the year opened out with strikes, and finished with notice

being given to some 5,000 or 6,000 miners of a reduction of wages that is likely to lead to one of a most serious character. Trade was very bad up to the last quarter, and for months most of the pits did not work more than three or four days a week. At one of the largest collieries the men were on strike nearly three-fourths of the year, and others for four or five months. Most of the colliery owners in South Yorkshire state that no profit was made during the year, whilst many of them suffered heavy loss by keeping their men employed. Good house coal sold as low as 6-0d. per ton at the pits, and even Silkstones, the finest inland coal there is, was purchased as low as 8-0d. per ton. It may be said that one of the most interesting features in connection with the coal trade of the West Riding is the attention which has been paid, in the southern part of it in particular, to the manufacture of coke for blast-furnaces and cupola purposes. Formerly the coke made, owing to the dirt in the coal, was of a very inferior quality, but now many of the colliery owners have put up complete plants, with all the newest improvements, and coke is now being turned out equal to any in the country. One of the latest and most important improvements in the treatment of coal for coking is the causing of the latter, after being washed, to revolve in a circular disc at an immense speed, the centrifugal force causing the damp coal to come out quite dry, thus effecting a great saving in the heat of the oven, and causing coking to commence earlier than would otherwise be the case. It is probable that the production of coal in Yorkshire in 1878 will be fully half a million tons less than the previous year. In the North of England, less, perhaps, than in some other counties, there has not been any marked disturbance or stoppage of work during the year, whilst the production of coal has been pretty regular. In pig-iron it appears that there has been a falling off in the production in Cleveland to the extent of about 100,000 tons. This would show a diminution in the quantity of coal used for smelting of about a quarter of a million tons. But with the ports of Newcastle, Sunderland, and Hartlepool, and an extensive foreign trade, in which there has been no falling off, Northumberland and Durham will appear to advantage as compared with some other counties. In addition, it may be said that from the northern ports last year upwards of 3,000,000 tons were sent to London, whilst the Great Northern from a few collieries also took a considerable tonnage to London.

In Lancashire trade has varied a good deal, and full work has not always been the rule. Still, shipments have been very fair, but steam coal for manufacturing purposes, owing to the stoppage of the cotton mills, has been particularly dull. But, on the other hand, there does not appear to have been any falling off in fine cannel or gas coal, for which Lancashire is so noted. In the somewhat limited field of North Wales the end of the year was worse than the earlier part, and many of the miners were on short time. There appears to have been a falling off in the production of fine cannel at one time peculiar to Leeseewood, Joppa, and some other collieries. The London and North-Western, however, was a fair customer for locomotive coal, and a considerable quantity of steam coal was also forwarded to Birkenhead. Taking what may be termed the south-western counties of Gloucester, Somerset, &c., there appears to have been less progress made in them than in any other of our coalfields, so far back as 1852 the output of coal in them was 1,430,000 tons, and now it is at the rate of 1,800,000 tons a year. In the Forest of Dean trade during the greater part of 1878 was very dull indeed, and a great deal of distress prevailed, although miners there have many privileges in connection with the Royal Forest that is unknown to those in any other part of the kingdom. But as the total output in any one year has not been more than 1,800,000 tons, the actual output in 1878 will not affect the general results. Staffordshire will have evidently suffered from the depression of the iron trade, for in the southern part of the county upwards of 3,000,000 tons of coal have been required for the mining districts alone, whilst in North Staffordshire one-sixth of all the coal raised has been generally consumed at the furnaces and ironworks. In Scotland, which in 1877, produced about 24,000,000 tons of coal, it is not expected that there will be any material reduction in the quantity. In a year which has been so unfavourable to the interests of colliery proprietors it is gratifying to find that our exports of coal have been satisfactory, showing a fair increase as compared with 1877. In connection with our coalfields we find that some of the old ones are declining in production as they become more and more exhausted, whilst in the others, where

the deposits are the largest, there is just the contrary going on. This will be seen by taking the percentage of coal supplied by each county in 1852 and 1877/8.

	Percentage 1852	Percentage 1877/8
Durham and Northumberland	24	23.25
Cumberland	1.25	1
Yorkshire	12	12
Nottinghamshire	1.25	3
Derbyshire	3.5	5
Leicester and Warwick	1	1.5
Stafford and Worcester	11.25	10.5
Lancashire	14	13
Cheshire	1.5	0.5
Shropshire	1.75	0.75
Gloucester, Somerset, &c.	2.25	1.5
North Wales	1.75	1.75
South Wales	13	12.75
Scotland	11.75	13.5
Ireland	0.25	0
Total	100	100

Derbyshire, Yorkshire, Notts., South Wales, are undoubtedly the fields that have the most ground as yet unopened, and the districts known as the Midland Coalfield, already alluded to, will be the largest coal producers in England, whilst South Wales and Scotland will also increase in productiveness as other fields fall off.

SERIOUS BREACH OF THE MINES REGULATION ACT.

At the Bilston Police Court Enoch Harvey and William Fethern, butty colliers, working the Upper Gornal Colliery, Sedgley, were summoned by Mr. J.P. Baker, her Majesty's Inspector of Mines, for neglecting to observe the 14th. general rule of the Mines Regulation Act. The rule requires that the mouth of the pit shall be fenced or otherwise properly guarded. Mr. Scott, assistant inspector, proved that on Oct. 8 a lad employed on the pit mouth was wheeling a trolley to the top of the shaft when he was drawn down the shaft and killed because the mouth was not properly guarded. Mr. T. Walker, solicitor, Wolverhampton, conducted the prosecution. A fine of £10 and costs were imposed. - George Willings and James Henley, butties, working the Priorfield Colliery were summoned by the Inspector on three separate charges for offences against the Mines Regulation Act - first, for keeping no record of the periodical inspection of the pit by a competent person; second, for neglecting to report the condition of the mine; third, for not keeping a register of the people employed. Fines of 40-0d. and costs were imposed for the first two offences, and a fine of 10-0d. and costs for the last.

WARNING TO COLLIERS.

The weather has become thoroughly unsettled. The whole body of air extending over England is in a state of great agitation. A cyclonic system now prevails, and during the past two or three days immense waves of air have passed over us, shown by the oscillation of the mercurial column. Since Christmas Day the barometer has fallen more than an inch, and the temperature has risen more than 30 degrees. All these conditions point that miners on resuming work after the holidays must use the greatest care. The decrease of pressure is rapid, and this alone is an indication of great danger to the miner. Nothing can prevent the accumulation of gas but a thorough ventilation. Let managers see that this is efficient, as the safety of the pit depends upon it. Fire triers must be careful in their examination of every working place. Gas will probably be found in places where it has not been usually seen. Colliers must individually use great caution. Better to fix a few extra sprags than suffer from a broken back, or to lose a few week's work than a life. If lamps give indications of gas leave work at once. For the first seven days of the New Year the weather will prove unsettled, as it is now so thoroughly broken that no permanent change for the better can take place before that time.

Sheffield Telegraph.

THE COAL TRADE.

Mr. J.R. Scott, the Registrar of the London Coal Market, has published the following statistics of imports and exports of coals into and from the port and district of London by sea, railway, and canal during December, 1878: -

IMPORTS

	By Sea	Ships	Tons
Newcastle		246	222,686
Seaham		25	15,058
Sunderland		120	92,705
Middlesborough		1	195
Hartlepool		68	26,390
Scotch		18	10,187
Welsh		7	1,799
Yorkshire		4	410
Small Coal		1	1,692
Cinders		3	1,066
Total		493	372,957
Imports - December 1877		506	321,957

	By Railways and Canal.	Tons - Cwt.
London and North-Western		115,579 - 17
Great Northern		88,366 - 0
Great Western		85,038 - 0
Midland		172,986 - 0
Great Eastern		55,279 - 7
South Western		639 - 8
South-Eastern		1,590 - 10
Grand Junction Canal		203 - 5
Total		519,682 - 7
Imports during December 1877		470,700 10

Comparative Statement, 1877 and 1878.

	By Sea	Ships	Tons
Jan. 1 to Dec. 31, 1878		5017	3,198,309
Jan. 1 to Dec. 31, 1877		5335	3,170,601
Increase 1878			27,708

	By Railway and Canal	Tons
Jan. 1 to Dec. 31, 1878		5,596,267
Jan. 1 to Dec. 31, 1877		5,421,082
Increase 1878		175,185

EXPORTS

Railway-borne Coal passing <i>in transitu</i> through district		91,165
Sea-borne Coal exported to British possessions, or to foreign parts, or to the coast	44,918	
Ditto, sent beyond limits by railway	16,340	
Ditto, by canal and inland navigation	1,363	= 62,621
Railway-borne Coal exported to British possessions, or to foreign parts, or the coast	42,586	
Ditto, by canal and inland navigation	462	= 43,048
Sea-borne coal brought into port and exported in same ships		1,800
Total quantity of coal conveyed beyond limits of coal duty district during December 1878		198,634
Ditto, December 1877		164,687

Comparative Statement, 1877 and 1878

Total distribution of coal from Jan. 1 to December 31, 1878	2,115,446
Ditto, Jan. 1 to December 31, 1877	1,943,258
Increase in the Present Year	172,188

General Statement, 1877 - 1878

Increase in coals imported by railway during 1878	175,185	
Increase in coals imported by sea during 1878	27,708	202,893
Less increase in exports		172,188

Total deceased in trade within London district during 1878 30,705

Mr Scott has also published the following statistics of imports and exports of coals into and from the port and district of London, by sea, railway, and canal, during the year 1878: --

IMPORTS

	By Sea	Ships	Tons
Newcastle		1938	1,657,013
Seaham		378	197,200
Sunderland		1236	889,401
Middlesborough		56	13,623
Hartlepool		946	323,733
Blyth		1	412
Scotch		111	53,209
Welsh		78	19,089
Yorkshire		147	9,901
Duff		4	3,078
Small Coal		82	26,605
Cinders		37	4,252
Colonial		2	567
Culm		1	226
Total		5017	3,198,309
Imports in 1877		5335	3,170,601

By Railways and Canal.	Tons - Cwt.
London and North-Western	1,269,742 - 9
Great Northern	926,082 - 0
Great Western	984,352 - 9
Midland	1,731,039 - 0
Great Eastern	612,184 - 2
South Western	46,628 - 14
London, Chat, and Dover	6,067 - 10
London, Tilbury, and Southend	182 - 3
South-Eastern	17,011 - 11
Grand Junction Canal	2,977 - 10
Total	5,596,267 - 8
Imports during 1877	5,421,082 - 6

EXPORTS

Railway-borne Coal passing <i>in transitu</i> through district		918,853
Sea-borne Coal exported to British possessions, or to foreign parts, or to the coast	530,791	
Ditto, sent beyond limits by railway	165,650	
Ditto, by canal and inland navigation	17,959	= 714,000
Railway-borne Coal exported to British possessions, or to foreign parts, or the coast	465,833	
Ditto, by rail beyond district	361	
Ditto, by canal and inland navigation	3,850	= 470,044
Sea-borne coal brought into port and exported in same ships		12,149
Total quantity of coal conveyed beyond limits of coal duty district during December 1878		2,155,446
Ditto, 1877		1,943,258

The trade in coal in London has exhibited little variation either in supply or in price during the past year. As compared with previous years, the price has ruled low throughout, and without remarkable fluctuations.

RAILWAY TARIFFS FOR IRON, STEEL AND COAL.

Owing to the excessive and still increasing competition in connection with iron, steel, and coal, and the low prices at which they have to be sold, in many instances causing an actual loss, for some time past efforts have been made on the part of producers to have the railway carriage rates for such material so far assimilated that no one district shall have a preponderating advantage over others. As it is at present, some places are so fortunately situated, or are so leniently treated by the company connected with the locality, that in the railway tariffs alone they are better off to the extent of from 1-0d. to 4-0d. per ton in connection with the industries we have alluded to than others are who have not the same advantage of locality or a considerate railway company to deal with. Such a difference not only allows of a good profit, but allows the persons placed in such a fortunate position to sell considerably lower than those who have to pay much higher rates, and so secure an amount of custom that under different circumstances would be divided with other localities. But not only is it the producer who loses by the heavy charges for carriage, which does not allow of his being able to compete with his more favoured rivals, but the railway companies are also losers owing to the diminution in carriage to and from certain points. When we consider the millions of tons of iron, steel, ironstone, and coal that pass over our railways yearly, and the large revenue that must be derived from them, it will be admitted that railway companies, for their own interests, should do all they could to foster such valuable traffic, not only by transit facilities, but by rates so arranged as to place their clientele in such a position as to enable them to compete with other localities more favourably situated for reaching certain markets.

Some time since the ironmasters of the North of England memorialised the North-Eastern Railway Company to reduce the carriage rate of iron, &c., going over that line. Of the value of mineral traffic to that railway some idea may be formed when it was stated that in 1877 it carried 11,776,000 tons of coal, principally from Cleveland, and 5,547,821 tons of ironstone. The North-Eastern is, therefore, unquestionably the largest carrier of minerals of any railway in the kingdom, so that the revenue from that particular description of traffic must be very large indeed. But the directors do not see their way to make any concession whatever. It may be, and most likely is, the case that the rates are low, but it does not necessarily follow that a slight reduction would lead to a diminished revenue, for experience has shown that the reverse is usually the case, the lowering of the rates being followed by augmented traffic. The importance of the Cleveland district to other railway companies as well as the North-Eastern is considerable, for large quantities of pig are sent from there into South Staffordshire. The latter is the principal seat of the manufacture of rolled iron in the kingdom, for out of a total of 1112 mills in England, 338 are situated in South Staffordshire. A moderate rate from Cleveland to the mills is, therefore, a necessity, but this appears not to be the rule, but rather the contrary. This is shown by a memorial extensively signed by the merchants, iron manufacturers, and iron founders of South Staffordshire, requesting the London and North-Western, the Great Western, and the Midland Railway Companies to reduce their charges for the carriage of pig-iron between Middlesborough and the county named. It is pointed out in the memorial that the freightage from Middlesborough to the French and German ports is only from 5-0d. to 6-0d. per ton, whilst that from that town to South Staffordshire it is 12-6d. per ton, with an extra 1-0d. for delivery at the works. The rate appears a very high one indeed, especially when we know that coal is taken from some of the collieries in Durham to London, a much longer distance than from Middlesborough to South Staffordshire, at about 10-0d. per ton. Most of the pig, it may be said, is put on to the lines named by the North-Eastern, and it appears that a recent application to the directors of that line was somewhat more favourably received than the previous one to which we have alluded, as the

directors merely declined to entertain the application without negotiations were also entered into with the other three companies who take iron over from their line. The freight charged for the pig would appear to be close upon a penny per ton per mile, whilst coal is taken by some other lines at a halfpenny per ton per mile, or slightly under. Why there should be such a vast difference is anything but clear, and we do not see how it can be to the real interests of the companies concerned to maintain it. It is, therefore, to be hoped that in the interests of all parties some concessions will be made.

During the past year in scarcely any branch connected with the steel trade has there been more competition than in the manufacture and sale of Bessemer rails. At one time, by no means far back, the trade was almost confined to Sheffield and the neighbourhood, and Barrow, but the collapse of iron rails has led to their being rolled in South Wales and Middlesborough. As a very large export trade is done, the Sheffield manufacturers, and the large firm at Dronfield, in Derbyshire, have found themselves placed at a great disadvantage in having to pay railway freight to Liverpool, Hull, and Grimsby, whilst their competition, owing to their works being close to the shipping ports, have no such charges to meet, the difference, indeed, being so much profit. The carriage to Hull is 8-0d. to 8-6d. per ton, and to Liverpool 10-0d. per ton from Sheffield. Messrs. Bolckow, Vaughan, and Co., it is said, have sold rails at £5-2-0d. per ton, and have delivered them on the Continent at less than £5-15-0d., but this could not be done by the Sheffield manufacturers, for the railway rate put it out of their power to compete for foreign orders with Barrow, Middlesborough, and South Wales, so as to make anything like a fair profit. Under such unfavourable circumstances a deputation lately waited upon the directors of the Manchester and Sheffield Railway upon the subject, but the result has not yet transpired. Unless some concession is made it is evident that the Sheffield steelmakers will be unable to compete with those whose works are immediately connected with seaports, and with their loss there will be loss to certain railway companies. As the productive power of our coalmines is very far in excess of the consumption, the competition for the trade is, consequently, very severe, and prices low. The London market is about the most important we have, and to get a footing in it is the object of most coalowners. Before the Midland Railway to the Metropolis was completed the Great Northern carried a large tonnage from the West Riding; but of late years this has declined, and the Midland, owing to a lower carriage rate from Derbyshire, has greatly increased its traffic, standing at the head of all the lines taking coal to London. The coalowners of the West Riding consider that were the rate of the Great Northern reduced about 1-0d. per ton they would be able to get back a large portion of the trade they formerly enjoyed, so that not only would they be benefited, but the railway company as well, owing to the large increase which would take place in the traffic. Consequently, a memorial was lately forwarded to the directors of the Great Northern on the subject, but the reply was that no reduction could be made. The rate no doubt is a moderate one, and whether it could be advantageously reduced it is hard to say, for to what extent the coal traffic pays or otherwise is a question that none of the companies have made known.

In our opinion, however, railway companies, in the interest of those they represent, should do all they could to increase the iron, steel, and mineral traffic on their lines, seeing it is so vast, and should remember that high rates too often conduce to a "penny wise, pound foolish" policy, and is often put forward as a substantial reason for the formation of competing lines.

WORKING UP IRON AND STEEL SHEARINGS

Thin shearings or pieces of iron or steel - such, for example, as the scrap from cutting iron sheets for tin-plate making, and from other operations in which thin sheet iron or steel is employed - are frequently reworked with other metal either in the puddling furnace or in the refining furnace. In some cases the scrap has been placed loose in the puddling or refinery furnace, but more commonly it is made into bundles. In any case the binding only serves to keep the material together whilst heating up, for the bundle then falls apart, allowing the metal to mix with the remainder of the charge upon the bed or hearth of the furnace. There is much loss in this process of reworking, 30 cwt. of this scrap not producing more than a ton of manufactured metal. According to the invention of Mr. J.H. Rogers, of Llanelly, the shearings or waste pieces of thin iron or steel are compacted together into masses or blocks, and these either alone or together with other pieces of iron or steel are placed in a reheating furnace, and when heated to a proper temperature are consolidated under a steam hammer or in other convenient way. In this manner he can obtain a ton of remanufactured metal from 23 cwt. of shearings. In order to form the shearings or pieces of iron or steel into masses or blocks ready for heating he places them in a box or mould, and by a steam press or other suitable machine he presses the contents of the box or mould until a compact block is obtained. The mass thus compacted is withdrawn from the box or mould by an opening provided for the purpose, and which is closed by a door whilst the material is being moulded. The compacting of the scraps is performed in a cylinder or mould, wherein they can be compressed by a kind of steam hammer. In order to lessen the wear which would take place if the cast-iron sides were left unprotected the mould is lined with plates of steel secured with rivets. The heads of the rivets on the inner side are received into countersunk holes. The box or mould is made with a taper from front to back of about 1 inch in 10 inches, which latter will be found a convenient length to which to mould the blocks. In working the apparatus, the box or mould being filled with scraps or pieces by the open doorway in front, the door is closed, and then by repeated blows the contents of the mould is beaten down as far as possible. To discharge the moulded mass or block the box or mould is opened, and by means of a bar inserted at a suitable hole it is forced out in a condition to go into the reheating furnace. In the furnace, and in the subsequent hammering, the blocks or masses are treated in the same way as piles or blooms, with all the care possible, to prevent the oxidation of the metal. In place of employing steam pressure and impact to mould the shearings and pieces into masses or blocks it is in some cases convenient to employ hydraulic pressure, but usually in works where these shearings are produced steam power will be more conveniently applied. In place of using a steam hammer to consolidate the reheated masses or blocks hydraulic squeezers or other compressing apparatus may in some cases be conveniently employed.

THE BLAENAVON WORKS, SOUTH WALES.

We have heard a great deal about crises in the coal and iron trade of South Wales during the last five years, but these crises have been tided over somehow. The stoppage of the West of England and South Wales District Bank appears, however, to have been another turn of the screw; and at Blaenavon some 7000 or 8000 men are now face to face with something very like absolute destitution. As our readers are aware, a petition was presented to the Court of Chancery about a fortnight since for the liquidation of the Blaenavon Iron and Steel Company, and the prayer of the petitioners was formally assented to. The Vice-Chancellor, however, before whom the matter came, mercifully hesitated before casting 7000 workpeople adrift upon the world, and so the works are being continued temporarily in operation. At the same time satisfactory proof will shortly have to be tendered to the Vice-Chancellor that it is possible to carry on the works at a small profit, or, at any rate, with an absence of loss; and the men have accordingly been informed that they must work for such wages as will satisfy the prudent requirements of the Court of Chancery, and that they must remember that half-a-loaf is better than no bread. Time presses rather urgently, as a satisfactory scheme for carrying on the works must be submitted to the Vice-Chancellor not later than the 17th inst., otherwise they must be stopped.

This rather grim state of affairs has been laid before a meeting of the men, and has been received by them, upon the whole, in an unsatisfactory manner. There really appears to be a section of the British working classes who are incorrigible; they can never be taught anything. They are as blind, it would seem, to the terrible difficulties of the moment as they were blind to the commencement of them five years since. Thus a deputation of the Blaenavon men waited upon Mr. Martyn, the manager, and were informed by that gentleman that the question was whether the workmen wished the works to come to a standstill, or whether they would keep the wheels turning, and so get half a loaf instead of none - whether they would agree to such terms as would enable Mr. Martyn to say to the Vice Chancellor before a fatal judicial blow was struck, "The Blaenavon men have given me power to continue the works according to times and circumstances." Upon this one man expressed "conviction that if the works had been rightly conducted Blaenavon would have stood as firmly at the present time as any works in South Wales; and, therefore, he should like to know why the Blaenavon men should suffer a reduction, and be treated differently to any other body of workmen in South Wales." A second speaker urged that they ought not to allow Blaenavon to be stigmatised as originating a reduction in the district. A third denounced the conduct of the unfortunate Mr. Martyn as tyrannical if he wished to force a reduction upon people who had even now scarcely a piece of bread. A fourth maintained that there was a disposition on the part of the company to sacrifice the men for the purpose of carrying on the works. The Chairman sensibly pointed out that, if through any resistance on the part of the men a stoppage of the works was brought about, the worst of the evil would fall upon themselves. A long discussion took place, and eventually it was determined that before any decision was arrived at upon the subject an effort should be made to obtain further information from Mr. Martyn. So the matter stands, and the serious question which remains undecided is whether or no 7000 or 8000 men are to be brought to the verge of destitution.

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THE WEIGHTS AND MEASURES ACT, 1878.

IRON AND COAL.

The Act which came into operation on January 1 with respect to uniformity of weights and measures evidently affects both ironmasters and colliery-owners, although one gentleman considers that it is not necessary to change the selling weight of either iron or coal. In Staffordshire pig-iron has been sold at what is termed long weight - that is, 2400 lbs. to the ton, whilst the Act requires that the imperial standard weight shall be 20 cwts., or 2240 lbs. Mr. Plevins, the gentleman alluded to, who is a large iron maker in Northamptonshire, contends that he can sell a ton of pig-iron which is 2240 lbs., or a "parcel" of 2400 lbs., whilst the coalowner can sell a ton of coal consisting of 20 cwts., or a "parcel" of 21 cwts. If the Act is so flimsily framed that this can be done, then for all intended purposes the Act is a dead letter, and the object desired - uniformity - is completely defeated. But we are of a very different opinion, and consider that the imperial weight of 20 cwts. to the ton can be enforced, and will be enforced if necessary in our courts of law should the question really be raised; but we believe that no one will be found desirous of testing the law, for in so doing there would be neither honour nor profit. So far as regards iron, however, Staffordshire appears to be the only county where the long weight of 2400 lbs. to the ton has been the custom, and where there appears to be some disposition to continue it. This we infer from a remark of Mr. Plevins, for he says he does not see how the change can be accomplished, as their Staffordshire customers would resist the innovation. Well, they may resist the innovation if they like, and in so doing, in our opinion, they resist the Act of Parliament, and we have no doubt that the latter will be the winner, however much it may inconvenience a few persons. We also feel sure that the word "parcel," as applied to a ton of 2400 lbs., is too transparent a disguise to be put up in competition with the Act of Parliament. But Mr. Plevins, we are glad to find, is in favour of uniformity of weight and of the Imperial ton, for which they have to pay carriage rate to the railway companies, as he believes it would confer a great benefit on the trade, and is willing to do all he can to bring about such a result. Mr. C. Markham, the managing director of the Staveley Iron and Coal Company, one of the highest authorities we have, is of a different opinion to Mr. Plevins on the subject; he says that he has sold thousands of tons of pig-iron to Staffordshire purchasers, and contracts have been made for the long ton weight of 2400 lbs., the word "parcel" or "lot" never having been used in any of the correspondence or contracts. But even in Staffordshire long weight is not general, for Mr. Markham informs us that the Staveley Company for years have not only protested against that system, but have sold thousands of tons of pig-iron to some of the most enterprising firms in Staffordshire by the imperial weight of 2240 lbs. That is the weight which has been adopted in all other iron-manufacturing districts saving Staffordshire, and there is certainly no ground why an exception should be made in favour of that county.

The Act we consider to be a really good one for the benefit of ironmasters, easy of adoption, and we have no doubt will be strictly enforced. We may say that we fully agree with Mr. Markham that the introducing of the words "parcel" or "lot" is a distinct evasion of the law, and would not be allowed in any Court of Justice, not even in Staffordshire. Already we are told that several of the ironmasters of Staffordshire have already seen the necessity of conforming to the new law according to its ordinary reading, and have been made known to those who supply them with pig that the contracts on or after January 1 are to be calculated by the imperial ton of 2240 lbs.

In coal going by railway the new Bill also makes an alteration necessary as regards the weight. Up to the end of the year coal sent from collieries was at the rate of 21 cwts. to the ton. The extra hundredweight is supposed to be allowed for breakage and waste made in transit. On the other hand, however, the consumer does not get more than 20 cwts. for his ton, if he gets that. Most of the merchants will doubtless endeavour to keep up the custom which benefits them so much at the expense of the colliery-owner, but we do not see how they can expect to do so and not go dead against the Act of Parliament. These small mercies that really benefit but a few persons must now be swept away along with many other customs that have long since died out. There is certainly no more reason why a railway company should carry 21 cwts. of coal at the price of 20 cwts. than that the colliery-owner should be paid in the same manner. Some years since the Midland Railway Company attempted to reduce the allowance to 2 cwts. to the truck of about 8 tons, but were unsuccessful, and had to go back to the old system. We congratulate both ironmasters and colliery-owners on the change which has taken place by the Act which came into operation on Wednesday last, believing that it will be for their benefit, and work well, whilst several railway companies will also be placed in a better position to make some reduction in their rates for carrying coal.

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Registration of New Companies.

Rounds Iron and Limestone Quarries (Limited).

Capital £15,000 in shares of £20. The adoption and carrying into effect an agreement between W. Pedder, London, and J. Parkinson, London. The using, working, and developing of mines and quarries of ironstone, iron ore, limestone, and other materials under lands in the parish of Rounds, Northampton, mentioned in said agreement. The purchasing and developing of other mines and quarries of ironstone, iron ore, &c. The subscribers (who take one share each) are J.J. Stansfield, 10, Bush Lane, E.C., accountant; J. Hosking, 2D New Broad Street, E.C., mining engineer; B.C. Hooke, Canonbury, barrister; J. Parkinson, 188, Great Dover Street, agent; E. Howell, 674, Old Kent Road, accountant; W.G. Payne, 27, Finsbury Pavement, solicitor; J. Renton, East Dulwich, commission agent.

Llanberis Slate Company (Limited).

Capital £60,000 in shares of £10. To work, win, and make slates, slate slabs, stone, rock, and earths of all descriptions, and to carry on the business of merchants and dealers in all like articles. In particular to work the Goodman and Cambrian Quarries, near Llanberis, Carnarvon. The subscribers (who take one share each) are T.H.G. Newton, Henley-in-Arden; J. Wotherspoon, Glasgow; W.L. Lamb, Greenock; G. Lamb, Glasgow; W. Wotherspoon, Glasgow; J. Menzies, Carnarvon; W.B. Jeffrey, Carnarvon.

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Statistics of Copper Ores sold in Cornwall during 1878.

From Mr M. W. Bawden, Liskeard.

In presenting my usual synopsis of the late year, and taking a general retrospect of copper ores from Devon and Cornwall, it gives a further decreased quantity on the total returns when compared with the year previous; the average produce for fine copper shows an improvement, whereas the standard of copper ores experienced a considerable reduction. In contrasting the total returns from the two counties during the past year I find the average produce for the year ending 1877 was 7 $\frac{1}{16}$ percent; standard, £97; price per ton of ore, £4-1-6d; quantity of ores sold, 5 2,791 tons of 21 cwts. each; fine copper, 3683 tons 19 cwts; amount of money realised on the sale of ores, £203,845 7 shillings and sixpence; whilst the recent year, 1878, gives an average produce of 7 and $\frac{3}{16}$ percent of fine copper; standard, £88; price per ton of ores £3-12-0d; quantity of ores sold, 47,592 tons; fine copper, 3391 tons 12 cwts; total amount of ore money, £166,291-10-0d, showing an increase of $\frac{1}{8}$ percent, on the average produce and a reduction of £9 on the standard, being equivalent to 9-6d per ton on the price of ores sold, and a decreased of 5,199 tons, amounting to 292 tons 7 cwts. of fine copper, and the sum of £18, 716 less money value on the annual sale of ores. The preceding two years sales showed a total diminution of 10,648 tons on the general returns.

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The Metal Trade - Annual Review.

The year 1878 is one that will certainly be marked with a black letter in the commercial calendar. Never has such a lengthened period of depression - we might almost call it stagnation - in trade prevailed. Seldom have misfortunes of such magnitude followed in such quick succession as those that have transpired during the year that has just now what closed. There have been wars and rumours of wars throughout the whole of the year. Nation has arisen against nation, famine and pestilence have brought mortality amongst thousands of people, both in India and China, as well as other parts of the world; and in our own country, although we fortunately had a very fair harvest, and food generally has been cheap, the depression of trade has been such that producers have been obliged to reduce their men's wages, and in a great many instances shut up their works altogether, thereby throwing many families out of employment, and in other cases men have voluntarily struck rather than submit to the reduction of wages which masters found it necessary to make from time to time.

The precautionary measures which have had to be resorted to by the Government against hostilities in the East of Europe have led to increased taxation, which, coming at a time when trade was so bad, has been severely felt. The Glasgow Bank and the West of England Bank failures, and many other mercantile suspensions, have also helped very materially to check business, and to destroy confidence even in houses that hitherto had been looked up to as most reliable and trustworthy.

The distress in all the mining and manufacturing districts has been, and continues to be, very great, and the intense cold and heavy snows during December have greatly added to the discomforts and miseries of the poor in the North of England, who have greatly felt the want of fuel as well as food, and have been to a great extent dependent on charitable institutions, and well as help from private sources. Speaking of the distress in Sheffield, one of the daily papers states that "some families in Sheffield, very much to their credit, are not only giving up luxuries, but what are usually deemed necessities, in order to contribute the more to the Mayor's relief fund." It is very satisfactory to know that Englishmen are so ready and willing to help one another, even though it may involve a great sacrifice to themselves; but this would appear to be a work too large for large individuals to carry on unaided for any length of time. The unemployed, however, are not deserving of too much pity, for many of them could if they had chosen to do so have found more work at reduced wages, and it is partly through their persistent obstinacy in refusing to accept reduced remuneration when trade was in such a state of depression as to necessitate a reduction in the expenses of production that so much distress has been brought about.

It would have been unreasonable, and indeed impossible for masters to have paid their men the same during the past year as they did when they were obtaining so much higher value for their commodities. All metals, without an exceptional, have fallen in value since the beginning of the year, and tin is the only one that has in the slightest degree recovered. The markets have been in the most weak and uninteresting state, and there has been but little speculation to enliven them. All but a very few operators in metals have made considerable losses, and those who have refrained from speculating have had reason to congratulate themselves. Those who were holders at the beginning of the year have had little opportunity of divesting themselves of their stocks except by making considerable sacrifices. Holders have been so slow to perceive and believe in the permanent decline in the value of their stocks that the depreciation has now become very serious.

Certain branches of our trade have suffered considerably from foreign competition, and until we are in a position to compete successfully with the prices of foreign houses it is almost an impossibility that there can be any increase in those branches that are more immediately affected by such competition. But if low prices is sufficient ground for hope of an improvement in trade there is certainly a very substantial basis for expecting that the new year will be a very prosperous one.

Copper. The death of Mr. Edwards, of Valparaiso, which took place early in January, has been one of the principal events connected with the copper trade off the year 1878. At the time of his death, and for some time previous, all his operations in this metal were watched with the greatest interest, not only in America but also in England and on the Continent, so that the news of his death was not at all a favourable event for the opening of the new year. It was reported that he held something like 15,000 or 16,000 tons of Chili copper, and the fear of this or any large portion of its having to be realised tended very considerably to depress the markets, and to retard business transactions.

There was some business done in Liverpool during January, but in London little was done in this metal. There was some slight speculation going on, but the markets are in too low and weak a state to be roused by it.

The price of Chili bars in January was about £ 65-10-0; Burra, £ 74; and Wallaroo, £75-10-0. Towards the end of the month the market was very variable, the prices fluctuating with every tidings of political movement at all unfavourable. The demand, which was limited, was very speculative, so that it was liable to give way at any moment; but although there existed a want of confidence amongst consumers, some of the principal holders firmly adhered to their prices, and so gave support to the market. At the beginning of February the market was very unsteady, and there was more disposition to sell at lower rates, but it was not easy to find buyers, for politics continued in a very unsettled state, and statistics were not improving, being more than 2000 in excess of the previous month. The Indian rate of exchange had slightly improved, however, since the beginning of the year, but buyers did not appear to be in any hurry to execute the orders then on the market, except at very low prices. As the month advanced prices fluctuated somewhat; at one time they were rather stronger, but at the end of the month Chili bars could be bought at £65. Yellow metal has fallen since the beginning of the year about three-quarters per pound and about the end of February might have been bought at 16 1/4, but there was very little demand. In March the stocks continued to increase, and the position of the market was consequently becoming worse. The stock in Europe, and the quantities afloat for Europe, were 47,241 tons. This was the largest stock that had ever been previously recorded, and although there was at the time every prospect of the stock increasing, the struggle to maintain prices was continued, but notwithstanding all their efforts, holders were compelled to reduce their prices twenty shillings or thirty shillings per ton, and were thereby enabled to dispose of some portion of their stock, in doing which they undoubtedly acted wisely, for although they in all probability made losses by the transactions, the markets, owing to politics, were so unsettled that higher prices were almost impossible, while lower rates were very probable. Chili bars at the end of the month were sold as low as £63-10-0, but even this figure did not allow sufficient margin to enable smelters to sell manufactured at buyers' limits, and the following month's prices were further reduced. There was simply nothing to encourage holders to sustain the markets for stocks were increasing month by month, and the consumption was evidently not keeping pace with the supply, and as long as this lasted it was necessary to continued reducing prices. Chili bars had already been sold at £62-10-0, but a still lower price was expected, and so buyers refrained from buying more than was necessary to cover immediate requirements. During the early part of May there was even less business done than before, and the downward tendency of the market continued. The price of Chili bars was fast falling to that figure - £60 per ton - which had been so long and so positively predicted by Rogers, and adhered to by ourselves. The spring demand was fast drawing to a close, and as even at the best of times there is but little business done during the summer, no hopes of a revival in the trade were entertained. But, strange to say, about the end of the month prices rose from £2

to £3 per ton, and a fair business was transacted. This improvement was chiefly owing to politics taking a turn for the better, which caused speculators to come forward, and so give the market a fresh start, but the market was at that time in too weak a state to be upheld entirely by speculators, and full charters for the month being announced, some of the speculators began to realise, and although others continued to cling to their purchases, prices once more resumed their downward course.

Prices, however, did not at once go back to where they started from, although it was pretty evident that they would have to do so before long, as the demand was diminishing and stock increasing. About the middle of June a sale of Australian copper took place, at which Wallaroo cake was sold at about £73 or £73-5-0. Burra cakes realised about £70-10-0, and ingots about £71. The stock in England and on the Continent at the end of the month proved to be about as large a one as had ever been known, and as the demand continued to fall off there was little hope of any improvement. The Indian rate of exchange had further fallen, so it was almost impossible for merchants to execute their orders at current prices. In July the unfavourable character of the market became still more manifest. Stocks were enormous and increasing, and the demand was less than it had been known to be for many years. It is almost impossible to conceive a more depressed and uninteresting state than the market was in that at this time. There was simply no business doing, speculators had withdrawn, so there was nothing to enliven the market, or to give it the slightest relief from the monotony into which it had fallen. The markets at the beginning of August opened with an increase in stock of about 4766 tons above that of the previous month, while the visible stock amounted to no less than 5 0,000 tons in round figures. The notice of a public sale to take place on August 20th did not tend to improve prices; as doubtless was expected, the sale did not prove to be a very successful one, for Wallaroo was sold at an average price of £69-18-0. Although no worse, at the beginning of September statistics were certainly no better than they were at the beginning of the previous month, but prices were weaker, and Chili bars had reached £60 per ton. The price appeared to stimulate the markets somewhat, and a slightly better tone prevailed. It was explained that a portion of the late Mr Edwards' stock had been sent over to England. This of course increased the figures on this side, but as no part of it was for sale it did not affect the market. Owing principally to the Indian rate of exchange improving, orders were placed more freely, and some of the works were well supplied; sellers were, consequently, rather stiffer in their prices.

During the latter part of September and the beginning of October statistics greatly improved, for deliveries proving far greater than the supplies, consequently stocks were reduced. There was a fair demand for Indian sheets, and prices continued tolerably steady, Chili bars at about £59-15-0 per ton; but at the beginning of October the failure of the Glasgow Bank and other extensive failures greatly affected the market, and prices at once fell. Chili bars dropped about £2 per ton in less than a week. None, however, but those who were compelled sold at this price, for they were certainly panic prices, and might have risen as suddenly as they had fallen, but it was satisfactory to know of that what was sold was going into stronger hands, and that the future of the market was likely to be benefited by it rather than otherwise. The announcement of the failure of Messrs James Sawyers and Company about the middle of October gave the great shock to the market, and prices again fell, Chili bars being offered at £56, but could not be sold at that price. Rulers went forth that sales had been made at £54, but there was no public confirmation of this. The visible stock of copper on November 1st was 51,558, or a reduction of 495 tons upon that of previous month, and the Indian rate of exchange slightly improving merchants were enabled to offer rather better prices for manufactured, but in few cases were these limits accepted by holders. The market continued in the same uninteresting state during the greater part of the month; there was not the slightest activity or interest in the market displayed. The Indian rate of exchange was very bad towards the end of the month, so that hardly any orders were placed for those markets. There was no improvement has the year advanced, and in December prices were further reduced in the hope of stimulating buyers to place their orders, but without effect, the aggregate stock being on December 1st, 53,621 tons.

Iron. Few, if any, members of the iron trade will be sorry to see the end of the year 1878, for it would be difficult to imagine a more dull and uninteresting time than the year which has now just passed away. Orders all through have been particularly scarce, and although prices have been low they have not been low enough to overthrow the excessive competition which we have had to contend with from other countries, especially Belgium. To reduce prices masters have had from time to time to give their men notice of reduction in wages. This has caused much distress and discontent in all producing districts, and has been the cause of strikes and lockouts, and in many instances of the mills having to be shut up altogether, and as furnace after furnace has been blown out business has fallen into that state of lethargy from which it will be very difficult to rouse it. The price for common Welsh bars in week of January was £5-15-0 per ton f.o.b. London, and continued so up to the beginning of April, when quotations became somewhat easier, fair orders being placed at £5-12-6, at about which price contracts might have been passed for the first eight months of the year; but comparatively few orders were given out, especially when Belgium declared her willingness to execute orders at £5-5-0 free ex ship in the Thames. A few masters in October consented to accept contracts of any fair size at £5-10-0 per ton f.o.b. Thames, but business by this time had fallen into such a deep slumber that this slight reduction was not sufficient to stimulate the demand, and in December £5-7-6 was accepted. Staffordshire bars of market brands have shown hardly any change, except in early September, when at a meeting of the list houses it was agreed to reduce their price twenty shillings per ton. This step ought to have been taken some months before, as the delay only caused several orders to be returned unexecuted, many to be placed in foreign countries, and finally it came too late to be of any material value to the trade, as merchants had overcome the prejudice in trying the quality of the Belgian iron. The demand for Swedish bars has been very limited, and quotations during the year have fallen about twenty shillings per ton, the highest price realised being £9-15-0, and for the first four months of the year contracts might have been passed at this price -- occasionally, perhaps, at a shade under. At the beginning of May quotations became slightly weaker, the price quoted being £9-10-0, but in July a few specifications were sold at £9-5-0, and in August many sellers did not refuse £9 per ton, but as the orders were so scarce sellers reduced their price to £8-15-0 per ton, but about this time, owing to the City of Glasgow failure, and other failures caused thereby, this tempting price was not sufficient to induce buyers to place their orders until they had ample time to see what effect it would have on the markets, and also owing to the Calcutta holidays, which took place about this time, this place been one of the chief markets for the receipt of this description of iron, business remained in a most slack and uninteresting condition.

The inactivity which has prevailed throughout the year has not been confined to any particular district, but the trade throughout the country has declined, and the depression has extended not only to Staffordshire, Middlesborough, and Shropshire, and, in fact, all the iron-producing districts in England, but it has been felt equally, if not to a greater extent, in Scotland and Wales; no place, in fact, has been exempt, but it is a question whether the trade to some extent has not entirely left us. What has been the cause of this? There must certainly been something internally wrong to have caused such an unhealthy state of affairs. Of course we know very well that trade generally has not been in anything like a satisfactory condition, and that consumers have consequently been unable to pay high prices; they have, therefore, been compelled to purchase from Belgium and other countries, because the ironmasters in England have been unable to induce their men to accept sufficiently low wages to enable them to compete successfully with foreign houses. The Trade Unions have certainly been greatly to blame for this, for although the ideas of the institution when first organised were excellent, and worthy of the highest commendation, for they not only relieved those who could not secure work, but also those who were through ill-health or disabled in any way whatever from earning their livelihood. What better institution could be wished for the working classes? Certainly none whatever, but when a society like this begins to encourage men to oppose their employers, and to support them when, through their own obstinacy and persistency, they are out of work, it is quite time of such institutions were abolished. The iron trade was once one of the most flourishing in England, but since the organisation of the Trades Unions that trade has been very different, for they have only

stirred up strife and contention by telling them that they ought to receive higher wages, and that they are being imposed upon by their employers, while all the time they are misleading the men by holding out vain hopes of better wages, and thereby destroying all moral and social happiness which ought to exist between masters and men.

Tin. This metal was in a very unsettled condition when the year began. The exports from Australia for month of December, 1877, were reported to be 72,000 ingots. Although large supplies during the first quarter of the year were expected, owing to the nominal rate of freight, these figures were so enormous that many refused to credit them, thinking that some mistake had occurred in the transmission of the telegram. But these figures, unfortunately for those who wished to and whose interest it was to keep up the market, proved very nearly correct. The price of Straits and Australian tin at this time was very much higher than the supplies justified. The price for the first week was £65 or £65-5-0, but before the end of the month it had fallen to £63-10-0.

There was not much disposition to sell at that time, and buyers were in no hurry to secure more than what they required for immediate use, there being a large stock already, and supplies coming forward freely lower prices were expected, so that they could well afford to wait. The price was at this time exceptionally low, and yet notwithstanding this fact people appeared afraid to buy, although they had more confidence in the market when the price was £10 or £20 higher than they had at the beginning of the year. During January English tin fell about £3 per ton, which brought it down to £68, at which price it remained tolerably steady until about the end of March, when a further reduction of twenty shillings per ton was made.

Owing to the heavy supplies which continued to arrive from Australia during the month of February that trade was kept in a very unsettled state. It was impossible to ascertain what quantity was likely to come over, and it would have been well if the smelters of English tin had reduced their price £4 or £5 a ton; this might have checked the supplies for a time, and have given a better opportunity for the trade to recover from the unsettled state into which it had fallen. The price of Straits and Australian towards the end of February was rather firmer, and £63-15-0 to £64 was accepted, which price continued to harden, until it reached £64-10-0 the following month. The market was steady towards the end of March, but no large sales were reported. The consumption, although large, was not equal to the supply, and stocks were about 400 tons in excess of the previous month.

At the beginning of April the markets were very unsteady, and prices lower, Straits and Australian being quoted at about £62-10-0. The shipments for the first quarter of the year were about the same as those of 1877. Before the end of April the price, having fluctuated somewhat, rose from £62-10-0 to £64, but a moderate business only the was transacted, and the price again fell; small sales were made at £62-5-0, but the stock proving about 400 tons in excess of the previous month a reduction of thirty shillings or 35 shillings was made, and English ingots were quoted at £67 to £67-10-0.

In May prices were rather weaker, the supplies continued to come forward freely from Australia, and there was not the slightest prospect of any diminution from that quarter. The following month prices rose again both for English and Australian, but there was not much business done. A telegram from Australia had reached us, stating that great discoveries of tin had been made in Mount Heemshire, in Tasmania. The stocks were continuing to increase, and sellers were asking £63 per ton for Straits, but this price was not realised, and £62-15-0 was the highest given, but this figure had to be reduced, and £61-10-0 to £62 was accepted before the end of the month. At the beginning July statistics were anything but favourable. The stock then in England was quite sufficient to supply all requirements for several months, there being between 9000 and 10,000 tons in England, besides 2000 or 3000 tons on the way. Prices during the month were steady -- English at £65 to £66, Straits and Australian at £61 to £61-10-0. It was estimated about this time that the total stock in England and Holland, afloat and landing, amounted to no less than 18,491 tons. This was the largest stock that had ever been known, and at a time too when it was considered that a

medium stock only was desirable or necessary for the requirements of trade. The market in August was very weak, and prices rose rapidly for Straits and Australian from £61-5-0 to £58-10-0. English fell about twenty shillings per ton.

In September holders appeared to lose all confidence in the markets, and the price of Australian fell to £57, and English was further reduced twenty shillings per ton. The Glasgow Bank failure about the end of this month had a very serious effect upon the market, and in October the price at one time was as low as £52, but statistics improving, the price of Straits rose to £56, and then to £56-10-0. There was a decided improvement in the tone of the market towards the end of the month, and prices were not only upheld by the most influential dealers, but customers came forward boldly, so that a good business was transacted, and the supplies proving less, and the deliveries good, a large proportion of the stock was reduced. The prospects of this metal were, therefore, very encouraging, and prices rose almost as rapidly as they had before fallen in November. Straits and Australian rose to £64, and English to about £68. As the month advanced the market continued to improve; about this time supplies began to fall of somewhat, and deliveries increasing, how stock continued visibly to decrease. Prices were rather easier at the beginning of December, but there did not appear to have been any other reason for the reduction in price beyond that one of the principal houses that had been buying freely suddenly ceased doing so. The statistics were certainly much more favourable than they had been for many months past, so that the movement of one house ought not to have been sufficient cause for a fall of thirty shillings or 40 shillings per ton.

Spelter. At the beginning of the year there was very little business done in this metal, the price of Silesian falling from £19-5-0 to £18-15-0 during January. English was tolerably steady at about £21. In March the stocks in England were moderate, and in the aggregate showed diminution in comparison with the previous months and corresponding periods of 1866 and 1877, so that in this respect there was a decided improvement. Orders were very scarce, and the prices in the Indian markets were declining, and the increased rate of freight to the East about this time prevented further shipments in that direction. During May and June business was very dull indeed, prices were steady, but few orders were placed. About the end of June, however, there was a slight improvement in the price of Silesian, but hard was difficult of sale. In July this metal was in fair request at about £18-2-6 for Silesian and £18-15-0 for English, but during the next month prices fell, owing partly to the increase in stocks, and lower prices abroad, the imports proving far in advance of the corresponding periods of the two previous years. In September Silesian was reduced to £17-15-0. Hard was in fair demand that £13 to £13-10-0, at which price orders were freely placed. But the extra demand did not cause prices to advance far, and only in a few instances did sellers obtain a slight rise, and then had soon to reduce their price again to even a lower figure than that at which they had previously made contracts, and by the end of October in some cases £17-2-6 for Silesian and £17-10-0 for English was accepted. Silesian fell to £16-10-0 and English to £17 to £17-10-0 per ton. About 2000 tons of English zinc has been sold during the past year at public auctions: at the commencement of the year £24 per ton was realised, but the price gradually dropped until it reached £22 per ton, and during the last two months a further reduction of about thirty shillings per ton was made.

Steel. Steel rails have been in fair request during the greater part of the year. Most of the works have found plenty of employment, and some of them have taken very considerable orders. In March the price was about £6-2-6, but by the beginning of May it had fallen to £5-10-0 per ton. In August the price had risen to £5-17-6, and makers, expecting orders from the Continent, refused to accept anything less. Large orders were being given out by the Italian, French, and Russian Governments, and one house in Sheffield was fortunate enough to secure an order for 60,000 tons. For other descriptions of steel the demand has not been good, but prices have varied very little. The market opened at the beginning of the year for English spring steel at £14 to £19, and these figures were steadily maintained until the middle of March. A few sellers then reduced their price to £13-10-0 per ton, but orders did not flow in very rapidly, and as the makers did not care to submit to further reductions, this

price was maintained with but slight variation until the autumn, when prices again gave way. For cast-steel £35 to £45 per ton was asked at the beginning of the year, but this price was afterwards reduced to £30, £40. Swedish pig opened at £16, and sellers refused to make any reduction until the middle of March, when £15-10-0 was accepted. For Swedish hammered and faggot steel the demand throughout the greater part of the year has been very slack; £17 was at first asked, but a reduction of £1 per ton was found necessary, and in March a further reduction of twenty shillings was made, since which rates have been ruling still lower.

Lead. Like other metals Lead has fallen in value during the past year, the markets have been extremely dull, and the depression that trade generally has been labouring under has been fully participated in by this metal. The great cause of the continuous decline in the markets has been owing to the American production. For instead of shipments being made to America that country is now sending large quantities to China and other markets, which were formerly supplied by England. At the beginning of the year the price of English pig was £19 to £20, but even at this figure, which when compared with former years is comparatively low, was not sufficient inducement for buyers to place their orders, and so sellers, in order to secure any contracts at all, have been forced during the year to reduce their price again and again. It might reasonably be expected that such low prices would have brought increased orders; but, unfortunately, the very reverse has been the case, buyers fearing the markets should continue to decline refused to place orders beyond those to cover immediate requirements.

In June the general demand did not undergo any material change, but holders raised their price somewhat as a protective measure against speculative influences. During the following month, however, prices were easy, and English declined 2-6 per ton. The imports for the first seven months ending July 31 were 59,461 tons, which is about 1500 tons more than the previous year, while only 21,944 tons were exported, against 23,235 tons in 1877. These figures were certainly not conducive to high prices, and as supplies still continued to come from America prices had to be further reduced. In September the reduced quotations had a slight effect upon the market, and a few orders were placed. It was thought that prices could not recede much further without having a serious effect upon the producing districts, but the price of English pig was as low as £14-15-0 before the end of the year.

Quicksilver. Quicksilver has receded in value since the beginning of the year from £7-5-0 to £6-10-0. The downward tendency, however, has been but gradual, it remaining at the former price until nearly the end of February, when 2-6 less per bottle was accepted. But during March it declined to £7, at which price considerable business was transacted, but orders becoming more numerous caused sellers to raise their price to £7-2-6. In April quicksilver was reduced to £7 per bottle, at which price considerable business was transacted, but this only lasted a day or two, and for the remainder of the month the demand was very slack, and about the middle of May the price was once more reduced 2-6 per bottle. The reduction had the desired effect upon the demand, and large sales were again made, whereupon importers raised the price to £7, which was the official quotation for the remainder of the month, although sellers were willing to pass contracts for 100 bottles at £6-17-6, and a good business was done at this price. In June the demand was not good, although it improved towards the end of the month, but notwithstanding that £7 was the official quotation there were still sellers at £6-18-9. In consequence of the improving demand, however, sellers raised their price to £7-5-0, at which price considerable sales were made, but the demand again gave way, and £7 was the ruling price throughout July.

There was not the slightest variation in price during August, but the demand improved very considerably, large sales having been made during the whole of the month the demand was general, so that there was, perhaps, more business done this month than at any other time of the year. In September the price was reduced to £6-17-6, at which price fair sales were made. At the beginning of October the market was firm, and orders of magnitude were refused below £6-17-6, but towards the middle of the month the demand fell off, and sellers reduced their price 2-6d. The demand, which had been so good a short time before, had

quite died out by the end of the month, but in November contracts continuing to come in slowly, sellers found it expedient to reduce their price to £6-12-6, and afterwards to £6-10-0.

Tin-plates. There was very little business transacted in these commodities during the first two months of the year, prices being above buyers' limits. Charcoal, first quality, 20 shillings to 21 shillings; second quality, 19-6 to 20 shillings; coke, 17 shillings to 18 shillings. Before the end of March there was a reduction of about one shilling per box, but this had little effect upon the demand. In June there was an improved demand for charcoal, principally for America, but the price of coke did not alter. The American system of working up plates by machinery instead of by hand was about this time forcing itself before the notice of English manufacturers. This new method has many important advantages over the old, as the plates can not only be worked up to a higher perfection, but the cost, and also the labour, is considerably less.

During the two following months prices continued to fall, the raw material being cheaper makers could afford to make slight reductions, but the demand did not improve until the beginning of November; about this time, however, there was a slight improvement in the market, and better prices were realised for coke. The demand continued to improve during the month, especially for America, and most of the works were fairly employed, and makers were enabled to obtain better prices. The tone of the market generally appeared to improve, and there seemed every possibility of the improvement continuing. Although Tin had advanced in price iron was cheaper, so that makers had no cause to complain of the cost of materials. The extra demand coming upon the reduction in the make at the various works if continued may materially help to advance the price of these commodities.

The Mining Journal.

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Page 1

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30	Parys Mountain	7-0d
50	Chontales	12-6d
80	Javali	5-3d
10	Roman Gravels	£6-17-6
10	Colorado	£1-12-6
25	Leadhills	£2-1-3
50	Rookhope	7-6d
15	D'Eresby Consols	
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25	Talybont	(offer wtd.)
25	East Van	£2-0-0
50	Morfa Du	17-3d
10	Tankerville	£3-0-0
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Established 1842

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Page 1

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50	Birdseye Creek	13-9d
20	Eberhardt	£3-7-6
100	Penstruthal	4-6d
100	Bodidris	
25	Frongoch	£2-10-0
100	Prince Patrick	
35	Colorado	£1-13-0
40	Frontino	£2-2-0
40	Rookhope	7-0d
70	Chontales	11-0d
50	Gold Run	7-0d
15	Richmond	£10-17-6
5	Cape Copper	£29-17-6
10	Great Laxey	£18-5-0
10	Roman Gravels	£6-16-3
25	Chicago	16-0d
60	Glenroy	11-0d
10	South Frances	£7-2-6
10	D'Eresby Consols	£8-0-0
25	Hultafall	
£200	St. John del Rey	£262-0-0
50	Derwent	
50	Javali	6-3d
3	Dolcoath	£29-10-0

100	Kapanga	11-9d
25	Tankerville	£2-12-6
20	Devon Consols	£1-13-6
30	Leadhills	£2-3-0
10	Van	£17-15-0
75	Don Pedro	13-0d
40	Marke Valley	14-6d
3	West Tolgus	£39-10-0
30	East Chiverton	(offer wanted)
20	New Quebrada	£1-13-6
20	Wheal Grenville	£2-17-6
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Page 1

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Page 1

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70	Birdseye Creek	
20	Grogwinion	£2-12-6
15	Blue Hills	12-6d
100	Gold Run	5-0
25	Wheal Grenville	
25	Bettws-y-Coed	
25	Gorsedd and Mer.	£2-17-6
20	Wheal Uny	10-6d
100	Bodidris	
70	Llanrwst	
50	West Wye Valley	
200	Bedford United	5-0d
75	Ladywell	16-9d
40	West Chiverton	
35	Blue Tent	£2-3-9
7	Minera	
100	Wheal Coates	£1-5-0
30	Chapel House	
50	Monydd Gorddu	
20	West Frances	£3-10-0
100	Cambrian	
30	Pennant	£3-0-0
40	Neuchatel Rock	
30	Cakemore	£3-7-6
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20	Wye Valley	£2-15-0
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Page 1

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Advert: 1879 - For Profitable Selections, Investors should read the "Investors' Gazette", published last evening. Post free Three Stamps; Quarterly Subscription, 2-6d.

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Established 1853

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Page 1

Advert: North D'Eresby Mountain Lead Company (Limited).

The Liability of each Shareholder is limited to the amount of his shares.

Capital £10,000, in 2000 shares of £5 each, of which 1000 are now offered for subscription.

Payable £1 per share on application, £1-10-0 per share on allotment, and the balance as required by instalments not exceeding 10-0d per share at intervals of not less than three months.

Bankers, Metropolitan Bank (Limited), Cornhill, London.

Secretary - Mr. E. Beazley

Offices: No. 9D, New Broad Street, London, E.C.

Applications for Shares can be made either to the Bankers, Secretary, or through any Broker or Sharedealer.

Full reports by well known inspectors may also be obtained.

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Page 1

Advert: Mr. James Stocker, Stockbroker, 2, Crown Court, Threadneedle Street, London, E.C.

Mr. Stocker transacts Business in all Stock Exchange Securities. (Established 1848).

Bankers: London and Westminster

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Page 1

Advert: Ferdinand R. Kirk, 5, Birch Lane, London, E.C.

"The Week" - A separate Edition from that which appears in the Mining Journal is published every Wednesday evening, containing "Notes and Hints on the Stock Markets", with Closing Prices. May be had on application.

Collieries - Special Business in Bilson and Crump, Chapel House, Cardiff and Newport Abercarn.

Miscellaneous: Investors should notice the low prices reached by General Credit, Hudson Bay, National Discount, Mercantile Bank, Credit, Brighton Aquarium, and Mexican Railway.

Bankers: London and Westminster, Lothbury.

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Page 1

Advert: Messrs. John Cann and Co., Stock and Share Dealers, 14, Cockspur Street, Pall Mall, London, S.W., have business, both as Buyers and Sellers in the following companies: -

Cambrian
Llanrwst
Dolcoath
Van
Great Laxey
Colorado
Minera
Lead Era
Frosterley
D'Eresby Mountain
Eberhardt
Bodidris
Leadhills
West Chiverton

Investors and intending investors should apply to the above. Telegrams promptly attended to. All business transacted free of commission. References exchanged.

Bankers: Imperial Bank

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Page 1

Advert: Messrs. Endean and Company, 85, Gracechurch Street, London, E.C., Stock and Share Dealers.

Established in 1861

Bankers: Barclay, Bevan, and Co., and London and Westminster Bank, Lothbury.

English and Foreign Stocks and Shares and all other Securities dealt in for cash or account.

Llanrwst Mine. Special Business in these shares at close prices. Buyers and sellers should communicate with us.

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Advert: Mr. R. Tredinnick, Dealer in Stocks and Shares, Consulting and Advising Mining Engineer,
7, Union Court, Old Broad Street, E.C.

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Advert: Mr. John B. Reynolds, Stock and Share Dealer, 70 and 71, Bishopgate Street Within, London, E.C.

Established Twenty Years.

Bankers: London - City Bank
Cornwall - Messrs. Tweedy, Williams, and Co., Redruth.

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Page 1

Advert: Messrs. J. Taylor and Co., Mining Engineers and Inspectors.

86, London Wall, London, E.C.

Have Agents in England, Scotland, Wales, and on the Continent.

For Sale, 100 Virneberg Shares, at 35-0d

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Page 1

Advert: Messrs. Ekins and Company., Stock and Share Dealers, 14, Queen Victoria Street, London, E.C.

Buyers of South De Eresby Shares. Sellers of Tamar Shares at close prices.

Bankers: Metropolitan.

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Advert: William Gabbott, Stock and Share Dealer, 8, Draper's Gardens, London, E.C.

Bankers: The National Provincial Bank of England.

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Advert: Abbott and Co., Stock and Share Brokers.

9, Union Court, Old Broad Street, E.C.

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Advert: Mr. W. Marlborough, Stock and Share Dealer, 29, Bishopsgate Street, London, E.C.
(Established 22 Years) can sell the following shares, at prices annexed: -

50	Cambrian	£1-15-0
20	Leadhills	£2-5-0
20	Pateley Bridge	£1-10-0
30	Colorado	£1-15-0
100	Javali	7-0d
150	Penstruthal	3-6d
40	Cakemore Col.	£3-15-0
20	Llanrwst	
20	Richmond	£10-15-0
75	Don Pedro	15-0d
20	Morfa Du	18-0d
60	Rookhope	6-0d
20	East Van	£2-0-0
10	Monydd Gorddu	£2-5-0
50	Rossa Grande	1-6d
20	Eberhardt	£3-10-0
40	New Zealand Kap.	12-6d
100	So. Roman Grav.	3-0d
100	Exchequer	4-0d
25	N. Quebrada	£1-15-0
10	Tankerville	£2-12-6
20	East Caradon	4-0d
20	Pant-y-Mwyn	£3-5-0
40	Tyn-y-Fron	
25	Frontino	£2-2-6
200	Pestarena	3-9d
10	W. Chiverton	£1-6-3
25	Flagstaff	5-0d
50	Port Phillip	10-3d
100	Yorke Penin.	3-9d
100	Parys Mountain	6-9d

Special Business in Frongoch and Lead Era.

Shares bought and sold at net prices.

Telegrams promptly attended to.

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Page 1

Advert: Mr. Charles Thomas, Mining Agent, Stock and Share Dealer, 3, Great St. Helen's, London, E.C.

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Page 1

Advert: Mr. Alfred Thomas, Mining Agent, and Stock and Share Dealer.

10, Coleman Street, London, E.C.

"Investments and Speculations" for 1878. Price Sixpence.

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Page 1

Advert: Mr. Edward Ashmead, 62, Cornhill, London, London Mine Agent, Accountant, and Auditor

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Page 1

Advert: Mr. Edward Brewis, Stock and Share Dealer, 15, Great St. Helen's, London, E.C.

Buyers and Sellers of Mine Shares, Railways, Foreign Bonds, and Miscellaneous descriptions of Stock and Shares may send their orders, and have their business promptly attended to for immediate cash, or the fortnightly account current, or for a deferred settlement.

Bankers: National Provincial.

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Page 1

Advert: Mr. John L.M. Fraser (Fourteen years at the Great Minera Mines), Consulting Mining Engineer and Financial Agent,

Office: - 59, Hope Street, Wrexham.

Wanted to Buy - 50 Mineras, 100 British Silver-Lead Shares.

On Sale - The Leases and Plant of a First-Class Silver-Lead Mine, situated in the most productive strata in Cornwall. Full particulars on application.

Visits the Mining Districts of Minera, Mold Mountain, D'Eresby Mountain, British Silver-Lead, and others, monthly: and will be happy to inspect any property on his client's behalf. Instructions should be posted not later than Tuesday's post.

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Page 1

Advert: Mr. David Cowan, Consulting Mining and Mechanical Engineer, and Licensed Valuator, 58, Renfield Street, Glasgow.

Investigations, Reports, and Valuations made of Coal, Iron, Slate, Pyrites, and other properties at home and abroad. Enquiries for Road and Railway Materials, Mining Plant, Pipes, Castings, &c. Plans, &c, of the most modern and economical mining appliances, fittings, and arrangements.

I have been long acquainted with the principal Coal and Ironworks in the North, with the Slate Quarries in North Wales, and for many years was Chief Engineer of the Tharsis Mines, Works, and Railway in Spain.

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Page 1

Advert: Captain Absalom Francis, Mining Agent, Engineer, and Surveyor, Goginan, Aberystwyth.

Thirty-Eight Years of Practical Experience.

A Selected List of Dividend and Progressive Mines free on application, or from Mr. Hy. Francis, 259, Gresham House, E.C., who will also supply an estimate of Probable Costs, Returns, Profits, and Losses of every mine at work in Cardiganshire for 1879 for £1-1-0; also Map of Cardiganshire Mines, with Position and Depth attained, revised to end of 1878; post free, 2-0d.

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Page 1

Advert: For Sale, the Whole or Part: -

40	Wheal Agar	£4-2-6
100	Santa Barbara	£1-15-0
100	Tyn-y-Fron	£1-0-0 p, 30-0d
200	Tyn-y-Fron	5-0d p, 10-0d
50	Hultafall	£2-15-0d
50	Pant-y-Mwyn	£3-3-0
40	East Van	£2-2-6d
18	Hornachos	(off. wd.)

Wanted to Buy - 50 to 100 Glyn, at a fair price; 10 to 20 Monydd Gorddu.

Address, H. Wilkins, 3, Heybourne Villas, Tottenham

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Page 1

Advert: Cambrian Mining Company - For Sale, on any reasonable offer, Ten Shares, fully paid.

Letters to be addressed "E.E", Mining Journal Office, 26, Fleet Street, E.C.

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Page 1

Advert: Medlyn Moor Mine, Cornwall.

Granville Sharp, Secretary.

Wanted, an Offer for Two Hundred and Ten Shares.

Apply to J.H. Dingle, Lostwithiel.

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Page 1

Advert: Mining Engineer.

Wanted, to accompany in a professional capacity an Exploring Expedition likely to be absent about four months from February next, a First-Class Practical Man of long and varied experience in Gold, Copper, and other Mining. Should also be able to Assay.

Address, with testimonials, Mr. J.H. Murchison, 8, Austinfriars, London.

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Page 1

Advert: Rich Mines - Copper, Manganese, Iron.

Wanted, a Capitalist or a Company, with capital, to Undertake the Working of either one or all these mines abroad.

For further particulars, apply to C.D. Vassiliades, 7, Cable Street, Liverpool.

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Page 1

Advert: Wanted, a situation as Agent in Metalliferous Mines at home and abroad. Have had ten years foreign experience. At present engaged in Lead Mines, North of England. Practically acquainted with Machine Drills, Electric Blasting, &c., also Surveying. Have Manager's Certificate of Competency (Coal). Testimonials and reference to present employers.

Address, "C.R.", Mining Journal Office, 26 Fleet Street, London, E.C.

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Page 1

Advert: Wanted, a situation as Underground Agent or Dresser of Lead Ores. Has had over 18 years experience in North and South Wales.

Address, "Mr. E.", Mining Journal Office, 26 Fleet Street, London, E.C.

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Page 1

Advert: Wanted, a Partner, with £2500, to join the Advertiser in working a very valuable Iron and Colour Mine, in the Forest of Dean.

Apply to C. and J. Cadle, Land Agents, Gloucester.

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Page 1

Advert: Mining Agent open to a Re-Engagement.

Has had considerable experience in Metallic Mining in Cornwall and the North of England; also 15 years on the Continent. Speaks English, French, German, and Spanish, and has had charge of mines for many years. Practically acquainted with the most modern dressing apparatus, the most economical pumping and winding engines, boring machines, smelting, and general steam and water appliances. Inspections undertaken; plans of mines and assays carefully executed. Unexceptional references.

Address: Mr. Nance, 22, Stanley Street West, North Shields, Northumberland.

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Page 1

Advert: T.V. Clarke and Co., Trundley Lane, Surrey Canal, Deptford, S.E.,

are Buyers of Calamine and Blende; Zinc and Lead Ashes, Sulphates of Lead, and other Metal Residues.

N.B. - Sole Manufactory of the Palm Anti-Friction Grease and Lubricating Oils for Collieries, Mines, &c.; also the Asphalte Varnish Paint for coating outdoor Ironwork and Machinery.

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Page 1

Advert: W.M. Allan and Company, 184, Buchanan Street, Glasgow,

Execute Commissions for the purchase and sale of Scotch Pig-Iron Warrants.

Sole Agents in Scotland for -

Spear and Jackson, Etna Steel Works, Sheffield; and
John Shaw, Yorkshire Wire Rope Works, Sheffield.

Steel and Steel Tools, Pig and Manufactured Iron, Hemp and Wire Ropes for all purposes, Indiarubber Goods, and Furnishings of every description for Collieries, Founders, Engineers, Saw-millers, &c.

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Clausthal Mining School Notes -- No. 102.

By J. Clark Jefferson, A. R. S. M., Mining Engineer, Wakefield.

(Formerly Student at the Royal Bergakademie, Clausthal.)

Section V.

At the Rhine-Elbe Colliery, near Gelsenkirchen, in Westphalia, the upper part of the shaft is lined in a water-tight manner by the means of sectional walling. The shaft, which has a total depth of 115 yards, is 13 feet 9 inches in diameter. At a depth of 26 yards the first wedging crib is laid. This is composed of 10 segments of oak, being round on the interior and polygonal on the exterior, and is 6 inches in height. It is wedged in the usual manner, with two "lambourdes", between which wedges are placed, first with the thicker end downwards, and with moss placed between the outer lambourde and the sides of the shaft. A second crib, 6 inches high and 18 inches broad, shaped like the wedging crib, is placed on the wedging crib. The space around this latter, over the wedges, moss, etc., is filled by pouring on a suitable cement. The walling is built upon this second crib. In consequence of large quantity of water met with it was necessary to insert a second wedging crib, at a further depth of 13 yards, on which the walling was immediately built. On sinking 18 inches deeper a stronger rock than that on which the second crib was laid was met with, on which two bearing cribs, 9 inches deep and 4 1/2 broad, were laid to the underside of the wedging crib, or rather two cribs (side to side), were laid, and on them a third crib (or bearing crib), which is attached to the crib below, and on which the walling is built. The connection of the second length of lining with the first is effected by placing two wooden cribs, 6 inches high and 8 inches broad, on the top of the second walling, next to the wedging crib, for the first length. Tarred linen is placed between the two cribs, and the water-tight junction of the upper crib with the underside of the wedging crib is effected by horizontal wedging. The connection of the third length of lining with the second is effected by laying a wooden crib, 6 inches high and 18 inches wide, on the top of the walling, and the space between, amounting to about 29 inches, is filled with crib composed of ten cast-iron segments. The first and second lengths of walling are 2 1/2 bricks and the third 3 bricks thick.

A somewhat noteworthy example of the use of a water-tight walling is given by Cheneux in the "Annales des travaux publics de Belgique", being remarkable, owing to the insertion of the brick walling (which was to replace a wooden lining) without having to set down the pit, or interrupt the winding apparatus. The original shaft, which passed in the upper portion through 19 yards of gravel, was lime in this portion in a water-tight manner by means of wood; and although the shaft had existed and served its purpose thus for 30 years, it had gradually become so deficient that it was necessary to replace it. Owing to the necessity of continuing the winding operations uninterruptedly the defective lining could not be taken out and replaced in the ordinary manner, and the size of the shaft was too small to admit of any further diminution of its area. The original lining was surrounded by a brick lining, in the following manner:- The shaft, rectangular in section, was originally 17 ft 6 inches long by 5 ft 5 inches wide. Along one of the shorter sides a narrow shaft was sunk to the coal measures. From the bottom of this shaft a narrow drift was driven round one of the longer sides to the centre of the opposite shorter side. This drift was afterwards filled with walling, which was commenced at the far end of the drift, and built backwards towards the small shaft. A second drift was carried in like manner along the

remaining longer side and half the length of the opposite shorter side to meet the wall, which was then continued backward, filling up this second drift. In this manner the shaft was completely surrounded by a wall elliptical in section, the longer axis being 32 ft 6 inches and the shorter axis 12 ft 6 inches in length; the wall was 26 inches, or three bricks, in thickness. On the top of this walling two drifts were driven in like manner in opposite directions around the shaft, which were then filled in like manner with walling.

This mode of proceeding was repeated until the lining had been carried up to the surface. The heights of the drifts -- or, what is the same, the height of walling -- which would thus be built up at one time varied, according to the nature of the ground, from 8 to 12 ft. In all this operation was repeated six times for the length of 55 feet. In consequence of the loose nature of the ground the drifts could only be driven by means of spilling or piling, and had to be strutted against the old wooden lining. The mortar for the walling was composed of equal parts of trass, powdered and sifted slag, and slaked lime. After allowing several months to elapse for the hardening of the mortar the original wooden lining was taken down, and conductors, etc., attached to the new walling. Owing to the great quantity of water met with it was necessary to provide special pumping apparatus for the auxiliary shaft.

Before leaving this part of the subject it will be well to notice here the arrangements for carrying on the work of walling the pit. As the height of the walling continually advances, some arrangement must be made by means of which the bricklayers can, besides having a good scaffolding on which to stand, find room for bricks, lime, etc. The usual method is to provide a flying scaffold, or cradle, which may be circular or rectangular in form, according to convenience. On the surface a rectangular (in the case of circular shafts generally square) frame is laid down over the mouth of the pit. Two cross bearers divide the frame into three divisions. Over the two side divisions two low pulley frames are erected; on one side the ordinary kibble is raised or lowered, and over the other pulley frame the rope for raising a triangular shaped cage passes. The cage is used for raising or lowering corves containing bricks, lime, etc. The flying scaffold is supported at each corner by means of a chain or rope, passing over pulleys fixed across each corner of the surface frame, and from thence to an independent hand windlass. By raising or lowering these corner ropes or chains, the flying scaffold can be adjusted and suspended with but little loss of time in any position in the shaft. Sometimes an auxiliary hand windlass is placed at one end of the middle division of the surface frame, close to the side of the shaft.

Cast Iron or Metal Tubbing. The first application of cast-iron for the purpose for the purpose of lining shafts appears to have been made in 1795, the lining being composed of short cylindrical pieces. This method had the great disadvantage that, except in the case of very narrow pits, the cylinders were of an unusual size and weight; and the difficulty of procuring a perfectly sound casting increased the difficulty of using this method of lining pits of the usual diameter. In the year 1796 Buddle introduced the idea of casting the lining in short segments, which should be of a manageable size and weight. The segments were provided on the inside with flanges, through which the bolts for screwing them together were passed. In order to prevent anything in the shaft from catching beneath the flanges the inside of the cast-iron lining was covered with wood. A few years later the plan (now generally used) of forming the flanges on the outside was adopted, the segments being simply laid upon each other without screws or bolts.

As in the case of the water-tight wooden tubbing, the lining is composed of wedging cribs, and what corresponds to the lining cribs, the cast-iron segments or tubbings.

The wedging cribs are in this country almost inevitably of cast-iron; wooden wedging cribs, as have been above described, may be and are sometimes used. It is extremely rare that the metal wedging cribs are cast solid. The usual form of the wedging crib segments consists of a broad

flat top and bottom piece, with a circular inside piece collecting them together, the segments being strengthened by means of vertical ribs extending across the whole breadth of the crib, and placed about 8 to 10 inches apart. More rarely the segments of the wedging crib consists of two vertical circular pieces connected at the top by a broad horizontal piece, the whole being strengthened by vertical ribs. The wedging crib varies from 11 inches to 16 inches in breadth, from 6 to 8 inches in height, and about 1 inch thick. In the case of the first form we have described the chambers of the crib of filled with knot-free blocks of wood. At the Hibernia Colliery, Westphalia, the wedging cribs were 14 inches broad, 6 inches deep, and the iron 1 inch thick. The length of the segments varies according to the diameter of the pit. Generally the circle of the wedging crib is divided into so many equal divisions that the length of each is about 4 feet. Before placing the wedging crib in position a ledge of water-tight rock is carefully dressed, and upon this pieces of Memel or pitch pine 1/2 inch thick were laid, with the fibres of wood arranged radially. The end of the segments abut flush against each other; the vertical joints are generally made tight by inserting similar pieces of 1/2 inch pine, with the fibres of the wood placed radially. The space behind the wedging crib, amounting to from 1 1/2 inches to 2 inches, is then tightly filled with wedges, which are driven in so long as one will enter. The foundation of lining is sometimes formed with one, two, or even three wedging cribs placed immediately upon each other.

The tubbing or cast-iron segments are usually cast in two shapes. The simpler of these usually consists of a cylindrical curved plate provided with flanges on the convex side, and strengthened with two diagonal ribs; where the latter cross in the centre there is a circular boss provided with a hole about 1 1/4 inches in diameter. The other form differs chiefly in being strengthened by horizontal and vertical ribs. In both forms there is a centre boss, the whole through which facilitates the escape of the water into the shaft, and enables the segment to be securely fastened when being lowered into the shaft. This is generally accomplished by means of a long fork, which passes over the segment. A bolt through the end of the fork is made to pass through the hole in the boss. The thickness of the metal of the segments for cast-iron tubbing can be found by an analogous rule to that given for finding the thickness of brick linings for shafts. Multiply the radius by the pressure in pounds per square inch, and divide the product of by the resistance in pounds per square inch of cast-iron to crushing, and the quotient will be the thickness in inches. The resistance of good cast-iron is about 100,000 lbs. per square inch; and assuming, as we have done before, that the pressure is that due to a column of water of the depth for which the thickness has to be calculated, the above rule becomes -- multiply together the radius in inches, the height in feet, and the constant .433; then divide the product by 100,000 and the quotient will be the thickness in inches.

Assuming six as the factor of safety, the annexed table gives the minimum thickness of the lining for the following diameters and depths calculated by the above rule: --

Depth	10 feet dia.	12 feet dia.	13 feet dia.	14 feet dia.
60ft	0.0935in.	0.112in.	0.121in.	0.131in.
120ft	0.187in.	0.224in.	0.243in.	0.262in.
240ft	0.374in.	0.448in.	0.486in.	0.524in.
360ft	0.561in.	0.672in.	0.729in.	0.786in.

The following two examples from actual practice are here adduced, for the sake of comparison; in the latter of the tubbing at the Hibernia Colliery, Westphalia, the shaft is 11.63 feet in diameter; in the former case, the diameter of the shaft is 10 ft: --

Depth - yards	Thickness in Inches
20	0.40
50	0.50
70	0.64
80	0.76

Depth - Yards	Height of Segments	Thickness
40	24.5ins	0.60ins
60	24.5ins	0.75ins
90	24.5ins	0.75ins
90	18ins	0.75ins
114	18ins	0.87ins
130	12ins	0.87ins

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Page 5

South Tolcarne Mining Company.

At the general meeting of shareholders held on Friday (yesterday) at the offices of the company, Austinfriars.

Mr. C. Clark in the chair.

Mr. Hickey (the Secretary) read the financial and other reports. The accounts showed a credit balance of £63-11-10d. The report was then read, as follows: -

Jan. 1 - We have driven the 24 west to the cross-course and a few feet beyond it. The lode at this depth has a kindly appearance, and has yielded good stones of copper. We have suspended operations in this level for the time as we want the men to work in the rise in the back of the 36 east. The 36 has been extended east of shaft 60 fathoms. Throughout this distance the lode has shown a very promising appearance, and the ground easy for working. We passed through a small shoot of copper in the 36, which induced us to try a rise in the back of this level, in which we find the ore ground lengthening out, and the lode yielding some of the finest gossan than can be seen, with some rich stones of red oxide and native copper. The adit end is not extended quite so far east as the 36, consequently the lode is standing whole to surface above this level, and which at this point will measure some 70 fathoms to surface. The lode in the rise is still yielding some good copper, and since the discovery was first made it has yielded 31 tons of ore. We have known capital courses of copper at quite so shallow a depth as we are now, but looking at the fine gossan seen at the 36, we consider the mine is not yet deep enough to have a good permanent course of ore. The water charges to keep the mine drained are very easy; about 20 tons of coal per month is sufficient to work the pumping-engine for this purpose. We advise driving the 36 level east and rising in the back on the ore. The ventilation and has been defective, and we have had to put in air pipes and an air machine. We would also recommend the sinking of the engine-shaft deeper as soon as it is convenient. We consider the mine on the copper lode alone is a capital speculation, and it deserves a spirited working both in driving and sinking, besides this the great tin lode towards the eastern part of the property will doubtless eventually open out well as soon as machinery can be provided and a shaft sunk on its course to prove it at depth. - W. Rich, James Knotwell.

The Chairman said he thought the statement was more favourable than had been received for some time past. From the improvement that had taken place they had been enabled to sell a parcel of copper, and it was likely to lead to good results; however, they must make a call today, and thought that 3-0d per share would carry them on for a time.

The accounts and agent's report were received and adopted, and a call of 3-0d per share was carried.

The committee were re-elected, and a vote of thanks to the Chairman terminated the proceedings.

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Page 3

The Electric Light.

Whilst so much attention is being directed to the proposed introduction of electric illumination for general purposes the enquiries are almost constant as to how the light is really produced, and what are the conditions of success or failure. To meet this question a highly instructive and entertaining lecture by Mr. J.L. King, F.R.S., upon the subject has been included among the Christmas entertainments at the Royal Polytechnic. The lecturer's resources in the shape of apparatus for showing experiments are already well known, and when it is stated he has been using a battery of 55 Grove cells, and now has an excellent Farmer-Wallace machine for supplying the current, it will be understood there is nothing to prevent the experiments being brilliantly successful. The Farmer-Wallace machine is supplied by Mr. Ladd, of Beak Street, and it is driven by an engine capable of working up to 35 horse-power, the steam being supplied from a new vertical boiler tested to 250lbs pressure on the square inch, lent by Mr. John Bourne, of Mark Lane. The lecturer furnishes an enormous amount of information, rapidly tracing the progress of electrical discovery from the days of Galvian and Volta, and describing the various lamps now used, and how they burn, including the Dubose, the Jablochkoff, the Rapieff, and others, whilst that the principle may be thoroughly understood he shows on the screen the shadow, to use a popular term, of the carbons actually in combustion, so that the way in which they are consumed in producing the light can be seen by the naked light. So complete a view of the whole subject as is obtainable from Mr. King's lecture in 45 minutes could not otherwise be procured without many days reading.

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Rock-Drills and Air-Compressors.

Although of recent growth only, the use of rock-drills in excavating in hard ground, and, therefore, the utilisation of the expansive power of compressed air, occupies a prominent rank in mining operations and in tunnelling. The history of air-compressors has naturally been intimately associated with the progress of rock-drills, and will in the future be largely dependent upon the rapidity with which the universal use of the latter is established, a matter which is now only a question of time. American ingenuity has done much to bring the economical working of air-compressors to their present perfection; and Mr. James Clayton, of Brooklyn, has long been favourably known as a manufacturer of this class of machine. His improved compressor is built both single and double acting, has both the steam-cylinder and the air-cylinder bolted down to a common bed-plate, the piston-rod communicating the power through a yoke or slotted crosshead to the compressor piston. The yoke or crosshead runs on a guide, provided with set screws, so that the weight of the yoke is in no danger of producing unequal wear of the pistons, while the weight of the piston-rods and the pistons are carried by the guide. In order to secure a steady motion a heavy fly-wheel is used, which is moved by a crank working in a sliding journal box on the crosshead. The journal box of the main crank, as well as that by which the valve-rod is driven, are both made with tapered brasses bearing equally upon both crosshead and crank pin, so that by tightening a couple of screws wear or lost motion is taken up equally on both pins and crossheads. An arrangement is provided by which a small stream of water is run into the water-jacketed air cylinder with the air. This water is collected in the air receiver, and may be used over again. The compressor has a Steele air-governor, which can be set at any desired pressure, which will be maintained with almost perfect uniformity of even the when the variations of steam-pressure are considerable, or the variation in the consumption of air great. By regulating the throttle valve it will furnish the necessary power under varying conditions. Thus when, for instance a number of rock-drills suspend work steam will be throttled, and a correspondingly smaller amount of air be compressed. Besides its tendency to economise, this feature will act beneficially upon the rock-drills by making less frequent the sudden jarring spurts which act so injuriously upon them, and render such heavy and solid construction necessary.

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Harbours, Docks, and Canals.

The volume of Abridgements of the Specification of Patents relating to Harbours, Docks, and Canals, embraces a large number of contrivances connected with the subjects; but it is surprising to notice how closely the same principles of performing a given kind of work has been adhered to. For removing ballast from rivers by means of a crane and scraper a patent was obtained as early as 1744, and by means of lever and spoons in 1792. Among the other means mentioned are treadmills, barrows, and inclined planes, and the force of a current of water. There are 30 descriptions of fixed breakwaters, and 18 of floating breakwaters. Buoys, caissons, coffer dams, dredging machines, dry docks, the embankment of rivers, lighthouses, substitute for locks, construction of piers and piles, raising vessels out of the water, sluices, and wet docks each form the subject of separate classes, and many of the descriptions will be found to come inconveniently near to inventions introduced comparatively recently as new. The entire volume costs but 1-2d, so that no one need remain ignorant of what has been done in the matter. The Second part, price 6d, of the Abridgements relating to Chains, Chain Cables, etc., extends from 1867 to 1876, and contains many useful suggestions.

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The Week.

Saturday, Dec. 28. All the markets were firm. Unified rose £1, closing at £51¼: being altogether a recovery of £3 during the last few days. In railways Dover, A, rose £1 (123¼), and Brighton, A, ¾ (130). At the opening Metropolitan was dealt in at 111¼, but ultimately left off at 114¾. District rose 1¼ to 61. During the next week an advance is expected in North-Eastern, North-Western, and Great Western. Grand Trunk were rather in demand, closing ½ better on the average. The First Preference are now 35, and the Second 24. The new Egyptian loan, after being at 2 dis., is now nearly par.

Monday. Brighton, A, touched 131¾, but afterwards fell to 129¾. The traffic return showed a decrease of £677. The amount of new capital sought to be raised will be, it is understood, about £1,500,000. Metropolitan advanced to 115. North-Eastern closed £2 higher (132¼). At the opening Unified was dealt in at 52½, being a further advance of 1¼, but the closing price was only 52. Richmond was strong at 11, and General Credit at 5.

Tuesday. Reference was made last week to an impending rise in Grand Trunk. Some progress was made today, the Third Preference advancing to 11⅝, and the ordinary stock to 11⅝. Bank shares were much better. County and National Westminster improved 2½, Westminster 1½. It was stated today that the first call on the City of Glasgow's contributories has only realised so far £635,000. Something like £2,000,000 would have been realised had all paid promptly.

Wednesday. New Year's Day, Stock Exchange closed.

Thursday. Several Bank shares had an advance. The announcement by the Westminster that the dividend would be 7 per cent. (same as last year) led to business being done in the shares at 54. On Tuesday they were dealt in at 49 to 50½. London and County then sold for 54½, and today 57. Gaslight, A, fetched 159, after being down during the week to 153. The other markets were firm. Metropolitan advanced to 116, Unified rose to 52¼, and the Preference to 72.

Friday. (Opening). Copper shares are nearly all quoted higher, owing to encouraging dividends. South Condurow pays 16-0d., West Tolgus 20-0s., South Frances 7-0d., and Wheal Agar 5-0d. Strong hopes are entertained of a further rise in prices. The foreign and railway markets are inclined to be dull, apart from a special rise of £1 in Caledonian to 97. Unified have fallen ⅜, and Preference ¼. Van, 17 to 18. Frontino, 1⅞ to 2⅞. Leadhills, 2 to 2½. Devon Consols, 1½ to 1¾. Richmond, 10¼ to 10½. Don Pedro, 7-0d to 9-0d. Port Phillip, 10-0d to 12-6d. The circular from the Credit Company advising liquidation as a "satisfactory" arrangement is not viewed very favourably on the market. Buyers only offer 5-0d. for the A shares, which yesterday dealt in at 15-0d. (*Two o'clock*). Markets are dull, Brighton A have fallen 1⅞, Great Western and Midland ½, and Dover A ¼. Caledonian are now only ¾ better, and North British ¼. Egyptian Unified, 51¾ to 52. Preference, 71½ to 71¾. Turks, 11⅞ to 11⅝. London and Westminster are quoted £2 higher - 55 to 57 - and Gas Light, A, 2½. Wye Valley, West Wye Valley, and Saint Harmon are offered, while Eberhardt, Port Phillip, and Santa Barbara are in some request. (*Four o'clock*). Brighton A have rapidly receded to 128½, being a fall of £3 on the day. Caledonian are now only 95⅞, after being 97. Unified and Dover A close ⅝ down. In mines there has been an active demand for Don Pedro at 11-0d and 12-0d, on receipt of favourable news from the mine. Glyn, 10-0d to 12-6d. Glenroy, ¾ to ¼. Rookhope, 6-0d to 8-0d. Javali, 5-0d to 7-0d, Chapel House, 3

to $\frac{1}{4}$. Bilson and Crump, 2 to 3. Cardiff and Swansea, $\frac{5}{8}$ to $\frac{7}{8}$. Newport Abercarn, 3 to $3\frac{1}{2}$.
Tiverton Brewery, $4\frac{3}{4}$ to $5\frac{1}{4}$.

Ferdinand R. Kirk.

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Foreign Mines

St. John del Rey. Telegram from Morro Velho, dated Rio de Janeiro, Dec. 30: Produce nine days, second division of December, 10,250 oits = £3971; yield 6.4 oits per ton.

Don Pedro. Telegram from Rio, dated Rio, Jan. 2: The lode in 40 Cross-cut has been intersected, samples good.

Mine Captain's letter, dated Nov. 30: General Remarks: The ore has been obtained from the usual sources - No. 8 new shoot at and below the 35fm level cross-cut, and south side openings; the ore continues of low quality. Fair progress has been made at the No. 8 new shoot and No. 2 incline shaft considering lets with 60ft wheel, and trouble experienced with old timber, &c. The branch in the No. 4 stope east is worked or taken out by the back laths of No. 4 stope in the former workings on the No. 8 old shoot below, in an easterly direction northward a little more ore can be obtained. The branch in the rise in the back of No. 4 stope east is much the same as when last reported on. Pearce's pillar has been in abeyance since our last report. South Side Openings: The lode in the stope opened above the No. 2 stope east is of fair size, but of rather inferior quality at present. Another stope has been opened north of No. 1 stope east; the branch in same, is of fair size and moderate quality. Prospects and Running Work: Fair progress is being made in the incline sump shaft considering the stoppages with the 60ft wheel and machinery. The ground in 40fm level cross-cut has changed considerably since last advertised, being now alternately soft and hard floors of ground: fair progress is being made. Two sets renewed in No. 2 incline shaft. No. 5 shoot, New Level: The lode in the incline rise continues its favourable size and aspect, but still now auriferous.

Roadways are kept in fair order - Stopes: Props and sets put in, and pillars built as required. The 60ft wheel idle 3½ hours to change bolts, wedge yokes, tighten keys, and make sundry other repairs. - Machinery: Pole packed, rolls changed, also bucket, &c., and many other minor repairs made where required. At surface a strong dam and outlet has been completed near or below Dawson's wheel to convey the whole of the water above that point on the top of the 60ft wheel, as well as to guard against damaging rego and machinery by heavy overflows or floods. A large amount of debris filled and packed tight around pulley frames near wash house, which carries the horizontal rods. A strong breakwater has been built across gully near jigging-house to support aqueduct which carries the launders across same. A double crab winch has been fixed near the mouth of the mine for the purpose of facilitating the turning of the 60ft wheel for repairs; a good house commenced to be built over same. A roadway is being made for convenience in changing linings of horizontal rods and lubricating the pulleys, &c., from Carmangoes road to the mouth of the mine. Several repairs are being made to launders and stands, &c., that were damaged by the storm on the 20th ult. A new waggon is in hand, and well advanced for delivery of ore from the mine, &c. Surface water, in consequence of intense heat, very slack.

Richmond Consolidated. Telegram from the mine at Eureka, Nevada: Week's run, two furnaces, 625 tons of ore, \$35,000; final stocktaking shows an additional profit of \$18,000 from the refinery.

R. Rickard, Eureka, Nevada, Dec. 11: There is nothing new to report from the mine since my last; exploratory drifts have been carried on as usual. The 400

cross-cut from quartzite drift has been extended 14ft; ground at present more favourable. The cross cut north from main west drift has been extended 30ft, passing through some low grade ore, on which a rise has been started, and is looking very promising. The cross-cut in the same level south has been extended 23ft; ground very hard. The 800ft level, on quartzite, has been extended 11ft without any change. The 900 west has been drifted 25ft; end still in limestone. The 1000ft level has been drifted 9ft; we have reached the quartzite on this level, and are drifting on it. There is no change in any other part of the mine. A part of the iron for the flue has arrived, and we are expecting the remainder daily, and if it gets here in time I shall be ready to start the furnaces on Monday next.

Frontino and Bolivia. The directors have received advices from their agents, dated Nov. 13 last. During the month of October they crushed 1144 tons of ore, which produced 982ozs. Of gold, and purchased from miners 469ozs., together 1451ozs., value £3386. Cost at the mines, Medellin and London, £1586; paid for gold dust purchased, £956: together, £2543; profit, £843.

Autioquia. Advices report that 121 tons produced 99ozs of gold; average 16.3dwts; value of gold, £290. Cost at the mines £204, and at Medellin £24; together £228; profit, £61.

Tolima. The Frias October returns show a profit of £1025-8-0d. At Alto Mine the washing for four weeks produced 63ozs 3dwts 11grs of amalgam, which will yield one-half of clean gold per 1500 square feet washed. The gravel appears of a better class than at the other workings, and the bed of gravel increases as it runs into the hill.

Mineral Hill. Mr. Plummer, Dec. 7: Mineral Hill: On the western slope we have driven several feet since my last, and have broken some low grade ore. The limestone is soft and congenial, and the face of the drift shows quartz. - Diamond Valley: Our shaft is 37ft from surface, and is developing a true fissure, which may open out at any time. The present bottom of the shaft is in good ore ground, and looks better than ever it has done at this point, and has greatly improved during the past two days; it is turning out better than I anticipated.

Colorado United. The superintendent, in his letter dated Dec 13, says: In the lode on the 100fm level, in the Silver Ore tunnel, running east, we have about 7in of mineral, worth about \$75 per ton. The tunnel looks very well.

United Mexican. E. Hay, Nov. 25: Mine of San Cayetano de la Avejera: In the Pozo de Guia the lode has increased in steepness, and according to the last measurement made had an inclination of 39½ degrees, which on November 24 had continued for a distance of 7½ metres. On the south side of the pozo the lode is 1.50 metres broad, and on the north side 2.10 metres, with a ramification with appearances of ore. We have began driving an exploratory hole to communicate with San Cesario. In the east of San Mateo the lode is 2.80 metres broad, but the veinstuff here is also ramified. Some stones of a better class of ore have been found at the end of last week, but as yet they are disseminated over the vein. The costra (strip of quartz) to the alto of the lode has not yet been touched for fear of impairing the ventilation of the end, but in a short time we will throw down that one.

Pestarena United. Dec. 23: The repairs to the pipes carrying water down through the old Beck shaft, in Peschiera department, to the turbine machine at the deep adit level have been completed. The turbine resumed pumping water to the 46 on Saturday evening, the 21st. inst. That part of the shaft which gave out has been secured by a good wall, with foundations on the rock. It is now a round shaft, and will not fail any more. During the time of doing the repairs

to the shaft and pipes (65 days) the water rose up in the mine to the 46. All will be done that can be to drain this mine to the bottom in the shortest possible time.

Linares.

Dec. 24: The lode in the 115, east of Warne's, is small and unproductive. In the 115, west of Warne's, the lode is very open, and yielding good stones of ore, worth $\frac{1}{2}$ ton per fathom. The lode in the 120, west of Peill's is regular and well defined, valued at 2 tons per fathom. In the 90, west of Peill's, the lode is small, consisting of carbonate of lime and lead ore, worth 1 ton per fathom. The 120, east of Peill's, is opening up a good length of productive ground, valued at 2 tons per fathom. In the 105, east of San Francisco Shaft, there is a very strong and regular lode, consisting of carbonate of lime and lead ore, producing 2 tons per fathom. In Peill's shaft, below the 120, good progress is being made with the sinking. The lode in No. 227 winze, below the 105, is regular and compact, producing 3 tons per fathom. In No. 229 winze, below the 100, the lode is getting smaller, valued at 1 ton per fathom. No. 230 winze, below the 100, is going down in a very fine shoot of ore, yielding 4 tons per fathom. - Quinientos Mine: In the 100, east of Taylor's engine-shaft, the lode is improving in this level, worth $\frac{3}{4}$ ton per fathom. The ground in the 90, east of Taylor's, is hard for driving through. In the 80, east of San Carlos, the lode is very open, and of a promising appearance, containing a little ore.

Alamillos.

Dec. 24: The lode in the 20, west of San Felipe, has fallen off a little in value, but still worth $\frac{1}{2}$ ton per fathom. In the 100, east of Taylor's, the lode does not contain lead enough to value. The lode in the 100, west of Taylor's, contains spots of lead, but the ground is hard for driving. In the 85, west of San Adriano, the lode is producing stones of lead ore, worth $\frac{1}{2}$ ton per fathom. The lode in the 60, east of San Victor, is still producing well, although it is not so valuable as it was last month, worth 3 tons per fathom. In the 70, east of San Victor, there is a promising and well-defined lode. The lode in the 70, west of San Victor, is unproductive. In the 40, east of San Victor cross-cut, the lode is producing a little lead. The lode in the 30, east of air shaft, is of no value. In the 30, west of air shaft, the lode has improved in value, now worth $\frac{3}{4}$ ton per fathom. In the 40, south of San Carlos, good progress is being made. The lode in the 70, west of Judd's, is small and poor, and the ground hard. In the 50, east of Judd's cross-cut, the lode has an improved appearance. In Taylor's engine-shaft, below the 100, the men are sinking rather slowly. The lode at Hidalgo's winze, below the 85, is small and poor. The lode in Ortiz's winze, below the 40, is strong, but does not contain any lead. Gigante's winze, below the 60, is holed to the 70 fm. level; lode worth $1\frac{1}{2}$ ton per fathom. The lode in Carmona's winze, below the 85, is large, composed of carbonate of lime and lead ore, valued at 1 ton per fathom.

Fortuna.

Dec. 24: In the 120, west of O'Shea's, the lode is smaller than for some time past, and the ground harder. The 50, west of Abercrombie's, is not yet out of the influence of the cross-course. The 60, west of Abercrombie's, is looking more promising, but is still entirely without ore. In the 50, east of Abercrombie's, the lode has improved, and the ground is easier for driving, worth 1 ton per fathom. In the 70, west of San Pedro, very good ore ground is being opened here, yielding 2 tons per fathom. The lode in the 80, west of San Pedro, is large and promising, yielding fine lumps of lead ore, valued at $\frac{3}{4}$ ton per fathom. In the 80, east of San Pedro, no improvement has taken place, the lode being destitute of ore. The lode in the 70, east of San Pedro, is wider, and contains more ore, and promises further improvement; worth $\frac{3}{4}$ ton per fathom. In the 120, east of O'Shea's, there is a large strong lode, thickly impregnated with lead ore, producing $\frac{3}{4}$ ton per fathom. The 100, west of Lowdnes', continues poor, there being scarcely any lode to trace. In the 100, east of Lowdnes', the lode is compact and regular, and the ground moderately easy; worth 1 ton per fathom. The lode in the 90, east of Caro's, is split, each part yielding good spots of ore, valued at $\frac{1}{2}$ ton per fathom. In Martinez' winze, below the 30, the lode is small, and the ground very hard. The lode in Pilar's winze, below the 60, is not quite so good, but yields fine lumps of lead ore, worth 1 ton per fathom. In Galos' winze, below

the 110, the lode has slightly improved, but does not contain ore enough to value. Lorne's winze below the 80 is being sunk in a very fine lode, yielding 2 tons per fathom.

Los Salidos: The lode in the 160 fm. level, west of Taylor's shaft, is large, and is yielding fine stones of lead ore, valued at 1 ton per fathom. The same remarks apply to the 160, east of Taylor's, as to the aforementioned level, worth 1 ton per fm. In the 145, east of Taylor's, the lode is compact, and yields good stones of ore; valued at ½ ton per fathom. The 130, east of Taylor's, is in contact with a large cross-course. In the 120, east of Cox's, there is a very fine lode, opening splendid tribute ground, worth 3 tons per fathom. The 110, east of San Pablos, has again improved, and is opening fairly productive ground, yielding 1 ton per fm. In the 80, west of Palgrave's, there is a compact and regular lode, yielding splendid lumps of ore, worth 1½ ton per fathom. The lode in the 80, east of Palgrave's, is small with spots of ore, but not enough to value. San Pablos shaft, below the 110, is being sunk at a good speed, and in a rich lode, producing 3 tons per fathom. In Linares' winze, below the 130, the lode is small with spots of lead only, and the ground hard.

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The Copper Trade.

Stocks in Europe: --	Tons		
Chili ores and regulus, Liverpool and Swansea (equal to fine) is	4,040		
Chili bars in Liverpool	18,818		
Chili bars in Swansea	1,695		
Chili ingots in Liverpool	---		
Chili ingots in Swansea	---		
Foreign copper (chiefly Australian) in London	6,030		
Foreign copper (chiefly Australian) landing	119		
English copper in London	50		
Chili bars and ingots and Barilla in Havre	6,715		
Other copper in Havre	400	=	37,867
Afloat and chartered from Chili to Europe (advised by mail): --			
Ores and regulus (equal to fine)	2,938		
Bars and ingots	7,738	=	10,676
Afloat from Australia (advised by mail): --			
Fine copper			1,417
Afloat and chartered from Chili to Europe (advised by cable): --			
Fine copper			2,300
	Tons		52,260

Leadenhall Street, January 1
Henry R. Merton and Company

Arrivals here during the fortnight of West Coast, S.A. produce: -- Valparaiso, from Valparaiso, 800 tons bars and 76 tons ingots: Georgina, from Carrizal, 40 tons ore, 576 tons regulus, and 350 tons bars: Formcea, from Pisco, 1000 tons ores: Nauphante, from Pisco, 300 tons ores. At Swansea, Mary Jose, from Tocopilla, 680 tons ores and 225 tons regulus. Stocks of copper (Chilean and Bolivian) in first and second hands likely to be available, we estimate at --

	Ores	Regulus	Bars	Ingots	Barilla
Liverpool	40	1494	18,818	---	---
Swansea	2127	6521	1695	---	---
Total	2167	8015	20,513	---	---

Representing about 24,553 tons fine copper, against 23,662 tons December 14; 17,460 tons December 31st, 1877: 14,560 tons December 31st, 1876: 12,400 tons December 31st, 1875: Stock of Chili copper in Havre, 4934 tons fine, against 7612 tons December 31st, 1877: stock of Coro Coro barilla in Havre, 2375 tons fine, against 1050 tons December 31st, 1877: stock of Chili copper afloat and chartered for to date, 15,300 tons fine, against 9600 tons December 31st, 1877: stock of foreign copper in London, chiefly Australian, 6180 tons fine against 4797 tons December 31st, 1877.

Harrington, Horan, and Co.
Liverpool, December 31.

The following Reports arrived too late for insertion in their proper places: --

Bettws-y-Coed -- H.T. Haley, Jan. 2: The deep adit end has improved since my last; worth now 30cwts of lead ore per fathom. The shallow adit end is producing good ore and blende; worth of the former about 15cwts per fm. The other places are without change. The water is in fork to the 20, so we shall commence to haul ore from this end tomorrow, and complete laying tramway to the end, so as to resume driving east to the engine shaft. The shaftmen have taken out ground for balance bob on this shaft, and are now engaged cutting down the shaft for the reception of pitwork. The weather is fine, and surface work progressing well.

East Van -- W. Williams, Jan. 1: At the 70, west of Tempest shaft, we have crossed 4½ fms, but have met with nothing of value, the lode being poor. The cross-cut at the end of the 25, west of the north lode, is driven 17½ fms. We have just intersected a joint, on the north side of which we find something very much like a lode - soft ground and a rib of spar, but no lead. Another week's working will throw much light on this point.

De Broke -- J. Phillips, Jan. 1: We have had a very rapid thaw, and the two wheels are rapidly draining the mine to bottom. The flooring is nearly clear of ice, and I hope that dressing will soon be in full activity.

Ladywell -- A. waters, Jan. 2: There is a strong, sparry, ore lode standing by the footwall side of the new south shaft below the 16; the lode here has lately shown less underlie than formerly, a feature which indicates harder ground and more permanent runs of ore. The winze below the said level, south of the above shaft, is also going down by the side of a sparry, ore lode, of considerable promise; we are opening some paying ground at this point at present. The 16 south is opening out a sparry, ore lode, worth at this time about 1 ton of lead ore per fathom. I would remark here that the foregoing points are all very different from anything seen in the south end of Ladywell before the spar of the lode and the bright soft lead ore, being very similar to the matrix and the ore from the Roman lode in the adjoining mine. No change in the tribute pitches of late.

Monydd Gorddu -- James G. Green, Jan. 2: We have been dressing three days this week, but I am afraid the frost will stop us again tomorrow. We have cleared the 24 sufficiently to resume the sinking of the winze and driving the cross-cut to the south caunter lode. No other change.

Morfa Du -- T. Mitchell, Jan. 2: The various points of operation are being carried on vigorously since the setting on Saturday last, and we hope to raise a good quantity of bluestone this month.

Parys Mountain -- T. Mitchell, Jan. 2: The 90 south has now passed through the course of sulphury and peachy ground that we had in the forebreast a few days ago, and at present the ground is a little stiffer for driving.

Roman Gravels -- A. Waters, Dec. 30: The usual progress is being made in sinking the new engine-shaft below the 110. The 110 north is worth 1½ to 2 tons per fathom. We have not seen the hanging wall of the lode here for the last 9 or 10 fathoms driving, and, therefore, have put the men to cross cut east to prove the full width of the vein. The winze below the 95 north, which is sunk 3 to 4 fathoms in a good lode on the hanging side, but which has been suspended

for the last six months on account of the water, will come down just where the 110 end now is, and this too is a strong reason why we should push the said cross-cut to the hanging wall. The 110 south is still in hard ground, and a small lode. This twitch has come all the way down from the back of the 80, through the shaft in the 95 to the present bottom level, corresponding in dip with the principal runs of ore throughout the mine. We can calculate, therefore, that the productive runs will be met with at corresponding points to those in the upper levels. The 95 south having passed through a good run of ore is now forth to cross branch, which has disordered the lode for the present; it will take a few days to get through the cross-lode, after which we shall no doubt be in good ore ground again. The stopes in back of this level are yielding their usual quantities of lead ore. The 80 south is in a lode 5 to 6ft wide, worth 2 tons per fathom. The stopes in back of this level are yielding ore in quantities equal to late valuations.

The 65 south is going forward in about the centre of a lode (as far as we can at present judge) 20ft wide, the present drivage being worth $3\frac{1}{2}$ tons per fathom. We are leaving some ore ground on the west side as we go along. The winze below this level going down in front of the 80 end is worth for the part of the lode in hand $2\frac{1}{2}$ tons per fathom; we bored 5ft into the west side of the winze (about 5 fms below the 65), and find the ore course standing there to be worth quite 2 tons per fathom. This will come down in stoping after the winze is through. The stopes in back of 65, south of Stokes', are all yielding ore in profitable quantities. I think it is now clear that this run of ore extends above the 50. In the 40 we have driven a cross-cut west (we started close to the forebreast) about 15 feet, and have just cut into a lode of strong character. We can see spar, with stones of blende and lead ore, $2\frac{1}{4}$ ft wide, but there is yet no sign of being through the lode. Should this be a continuation of the lode seen in the stopes in back of the 65 we may expect to find a great south run of ore ground holding to the 20, if not to surface.

Jan. 2: There is no change worthy of remark here since my report to the directors on Monday last. The mine, therefore, continues to open out very satisfactorily. The weather is again severe, but the surface operations go on regularly and well.

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Foreign Mining and Metallurgy.

Few new facts have transpired during the week in the Belgian iron trade. The Acoz Forges and Rolling Mills Company has just stopped its rolling mills at Chatelineau. The Dutch Colonial Minister will let on Thursday contracts for the supply of some additional rolling stock for the Dutch Indian railways. The contracts will comprise 160 ballast waggons and 424 other trucks and vans. The Rhenish Netherlands Railway Company has just established a metallic permanent way on the Serres and Battig system throughout its Amsterdam and Utrecht section.

As regards the French iron trade, we may note that the Northern of France Railway Company has given an order to the John Cockerill Company (Belgium) for 4000 tyres and 3000 axles. The French Society of Civil Engineers has elected M. Faicot as its president for 1879. The French Minister of Public Works has decreed the formation of an auxiliary corps of engineers in order to advance more rapidly the execution of various great works which have been projected. Messrs. J.F. Cail and Co., a prominent French mechanical joint-stock concern, have issued their balance sheet for the year ending September 30, 1878, which exhibits a loss on the year's trading of £1644. The Mookta-el-Haded Magnetic Iron Ore Company has just acquired by amalgamation some additional workings in Algeria. The Naval and Railway Blast Furnaces, Forges, and Steelworks Company realised a profit of £56,081 in the year ending Jun 30, 1878, as compared with £34,501, in the year ending June 30, 1877. The company is building a gigantic steam-hammer, at an estimated cost of £49,200.

The extent to which foreign mining industry is extended is shown by the fact that during last year one company of Algerian miners raised 350,000 tons of iron ore, and employed between 800 and 1000 men. During 1875 they raised 428,000 tons, employing about 1500 men.

Deliveries in the Belgian coal trade have been maintained with a fair amount of activity, and rather urgent orders have been received at the collieries. Industrial qualities of coal and coal for domestic purposes are being disposed of as fast as they were produced, but the present depressed condition of the French iron trade unfortunately induces apprehensions that the coal trade will be shortly again reduced to dullness. Prices of coal are rather weak, and although sales are effected only small profits are realised. A new manufactory for the production of agglomerates is about to be established at Monceau-sur-Sambre by M.M. Dehaynin, in conjunction with the Monceau-Fontaine Company. The French coal trade has not presented much change; transport questions continue to occupy a large measure of public attention.

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Fire Extinguishing Experiments.

Some interesting experiments have been made during the week with an improved apparatus for more quickly and effectually extinguishing fires invented by Mr. Thomas Atkins. That the comparison might be reliable the competitive trials were made under precisely the same conditions. For that purpose a steam fire-engine was employed in both, and two wooden structures were erected, each of the same size, and containing the like quantity of most inflammable materials. The first structure fired was allowed to become thoroughly ignited, when the steam-engine employed for the purpose was started, and threw a volume of water into the burning mass equal to 300 gallons per minute, and at which rate it occupied 13 minutes in extinguishing the fire. The second structure was then ignited, and allowed the same time in which to arrive at the same state of combustion as the first. The engine, being then connected with the apparatus for producing the required results, was then started, and succeeded in extinguishing this fire in 2½ min. -- a gain in time over the first trial of 10½ minutes, and an economy in the water used of 3150 gallons, equal to rather over 80 per cent., with, of course, a corresponding increase in the value of the salvage. The apparatus is somewhat similar to a small stove, which, being charged with the combination of materials and ignited, the products of combustion, instead of being allowed to escape, are drawn into the suction-pipe of the pump in combination with the water at each stroke. The gases and water, in passing through the various parts of the pumping apparatus, and being under pressure, become intimately combined, and are then conveyed in the ordinary manner through the hose and branch pipe.

The Tin Trade.

Business has been very limited in our Tin market during the month. Great caution was displayed by the *bona fide* trade, the late upward movement having simply resulted in a large acquisition of stock by one speculator. We recommend the same course as long as the value of the article is thus artificially upheld, and to disbelieve any rumours of decrease in production, which, as far as we have been able to ascertain, have not the slightest foundation. On the other hand, it is gratifying to note that the Billiton Company's last three sales in 1878 to 1879 comprise 6000 peculs more than in 1877 to 1878, thus indicating an increase in production. Banca has been in very small demand, as is sufficiently shown by this month's deliveries. The price declined from 39¾fl. to 38½fl., subsequently advancing to 39fl. There are now sellers at 38¾fl. An address has been presented to our Minister for the Colonies with the object to induce him to change the bi-monthly sales into half-yearly ones. The proposal meets with a vehement opposition from the majority of those who are connected with the trade. We sincerely hope, the present system of selling will be adhered to, frequent sales being the best guarantee against a monopoly of the article. Billiton has been slow of sale, the price varying between 38fl. and 37¾fl. We close with sellers at 37¾fl.: 12,000 peculs Billiton offered at public sale at Batavia on the 9th instant fetched the average price of 4167 fl., costing to sell here about 37½fl. by steamer. Next sales comprising the same quantities, will take place on February 12 and April 10, 1879. The position of Banca tin in Holland on December 30, according to the official returns of the Dutch Trading Company, was: --

		1878	1877	1876
Imports in December	Slabs	8,353	14,725	3,904
Total 12 months		121,130	143,388	94,011
Deliveries in December		4,517	11,900	8,400
Total 12 months		114,276	131,695	132,033
Stock second-hand		50,000	37,517	34,111
Unsold stock		22,418	28,047	19,760
Total stock		72,418	65,564	53,871
Afloat	Peculs	19,600	3,100	7,550

Statement of Billiton: --

Imports in December	Slabs	8,400	6,000	11,500
Total 12 months		109,345	97,700	105,789
Deliveries in December		5,982	8,551	10,860
Total 12 months		94,820	89,809	104,849
Stock		57,912	38,510	30,619
Afloat	Peculs	22,000	16,000	16,000

Quotation December 30, Banca	39fl.	41fl.	45fl.
Quotation December 30, Billiton	37¾fl.	40fl.	44fl.

These combined returns of Banca and Billiton for 1878, compared with those for 1877, exhibit -- a decrease of the import for December of 124 tons; a decrease of the import for the 12 months of 332 tons; a decrease of the deliveries for December of 311 tons; a decrease of the deliveries

for the 12 months of 388 tons; an increase of the stock second-hand of 996 tons; a decrease of the unsold stock of 176 tons; an increase of the total stock of 820 tons; a decline of the quotation of Banca of £3-6-0d per ton.

The Government Returns for the month of October are: --

Export of Tin from Holland

		October			Ten Months		
		1878	1877	1876	1878	1877	1876
Germany	Tons	292	255	296	2813	2745	2936
England		10	14	176	181	326	284
Belgium		126	166	299	1225	1459	2018
France		41	33	75	342	543	511
Hamburg		30	41	41	514	402	380
United States		--	2	16	10	75	62
Other countries		116	22	78	545	448	475
Total		615	533	981	5580	5998	6666

Rotterdam, December 30
Ebeling and Havelaar

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The Brazilian Gold Tax.

St John del Rey Mining Company.

A subject of considerable importance to the holders of shares in companies working gold mines in Brazil was brought forward at the meeting of the St. John del Rey Company, reported in the Mining Journal a fortnight since, and the documents bearing upon it have now been circulated by the Chairman. When the Company commenced operations in Brazil they were subject to an alien's tax in addition to the taxes paid by natives, but in 1840, by the exertions of Mr. Charles Herring, the then superintendent of the company, they were placed on the same footing as natives. In 1846 the natives were exempted from the remaining tax, which, however, was still levied on foreigners, the St. John del Rey soon being almost the only contributor. By petition to the Legislature the total removal in 1859 of the tax was secured, so that the company was again placed on the same footing as Brazilian subjects. A tax of 4 per cent upon all gold in the province has now been imposed and levied by the Provincial Government, which the company say has no power to impose the tax, such tax being one with which the Imperial Legislature is alone empowered to deal. The 2 per cent duty levied by the Brazilian Government on all gold exported has always been regularly paid by the St. John del Rey Company in addition to the ordinary indirect taxes.

The whole question was very clearly stated by Mr. John Hockin, the chairman of the company, who remarked that those who were shareholders in 1857 would remember that the directors in their report of the past year announced that the Imperial Legislation of Brazil had relieved the company from a tax on the gold produced from the mine, which it had been previously subject to. It was taken off gradually, and finally ceased in 1859, since which the company, in common with all other mining associations, Brazilian or foreign, have paid no inland duty on the gold produced. They pay an export duty which amounts to about 2 per cent on the produce and local taxes, in common with other proprietors and employers of labour. Attempts have been made from time to time since 1859 by the Provincial Legislature to impose a similar tax, but hitherto the Presidents of the province have vetoed the bills as unconstitutional, fully recognising the fact that gold mines, being royal mines, are exclusively, as regards their concession, working, and taxing, under Imperial Legislation, and cannot be taxed by the Local Legislature. Last year, however, a Bill passed by the provincial assembly imposing a tax of 4 per cent on the gold produce was sanctioned by the then Vice-President of the province, and efforts were made by the local authorities to collect the tax. The company, under the advice of the ablest counsel in the province, and one of the ablest in Rio de Janeiro, the capital of the Empire, petitioned the local assembly, pointing out, amongst other things, the unconstitutional nature of the tax, and were able up to about October to resist the payment of the tax by protest. The authorities, however, have since enforced one payment, which has been made under protest. The matter it is said has been for some considerable time before the Council of State at Rio de Janeiro, and the directors are informed that there is only one opinion at the capital as to the illegality of the tax, but as yet the Council of State has taken no steps to protect the company from this unjust impost. The directors have from the first intimation of the tax being proposed by the provincial assembly strenuously its payment, as wholly opposed to the Imperial license under which the company exists and carries on its operations in the province of Minas Geraes. Its existence there is well known to be the very life of the neighbourhood, and the directors cannot, therefore, but feel confident that they may ere long obtain justice at the hands of the Imperial Legislature,

under the resolutions of the three branches of which they received in 1855 a recognition of their title to exemption from a direct tax on the produce of the mine, obtained at so great a cost and risk.

As to the relative powers of the Imperial Legislature and of the provincial legislatures in Brazil, it is a matter which cannot be discussed without an ample knowledge of Brazilian law and custom; but there can be no doubt that the St. John del Rey Company have conferred such enormous benefits on Brazil by the capital it has introduced there that it is entitled to the best consideration of the legislators, both provincial and imperial. From the formal statement which has been prepared by the executive it appears that the St. John de Rey Mining Company was formed for working mines in the province of Minas Geraes in the Empire of Brazil, under decrees by his Imperial Majesty the Emperor, in the years 1828, 1830, and 1831. The company on being registered in London in 1858 as a joint-stock company (limited) had its statutes duly registered in Brazil, as required by the law of the Empire, and obtained an authorisation of such statutes. On the company first commencing operations in 1830 it was subjected, under the Imperial decrees, to a duty of 10 per cent on the gold produce raised - i.e., 5 per cent in addition to the duty paid by the subjects of the empire. In 1840 the company, by its then superintendent, Charles Herring, petitioned the Imperial Legislature for certain reasons set forth in such petition for a reduction of the said duty to 5 per cent on the gold produce. A committee of the Chamber of Deputies was appointed to consider such petition. The report of the committee in favour of its justice was unanimous. A law was accordingly passed by both branches of the Imperial Legislature and received the Imperial sanction reducing the duty to 5 per cent, thereby placing the company on the same footing as the subjects of the empire. The company continued to pay the said 5 per cent on its gold produce up to 1854. In 1846, however, a law was passed by the Imperial Legislature relieving the native miners from the payment of this duty, though the former law was continued in force as regards the foreign mining companies. In 1855 the company, in consequence of the non-success of other companies, was almost the only contributor to the tax, and feeling its invidious position as such, and also in consequence of the greatly increased expense of working from the great depth the mine had reached, again petitioned the Legislature, and a committee of the Lower House was a second time appointed to consider the same. The committee having reported on what ground of justice they considered the company was entitled to the remission, resolutions were again passed by both branches of the Legislature and received the Imperial sanction gradually relieving all mining companies of the tax by a reduction of 1 per cent per annum until, in 1859, the company ceased to pay the tax altogether, and was thus placed in the same position as Brazilian subjects. The company continued, however, up to the present time to pay an export duty amounting to about 2 per cent on the whole produce and the several general taxes paid by the community as well as heavy import duties on the several stores imported from Europe, labour-saving machinery only exempted.

Upon the facts thus stated it appears certain that at least up to 1859 the Provincial Legislature of Minas Geraes never exercised this right to levy a direct tax on the gold mines, and it is reasonable to assume they possessed no such right, especially as it is acknowledged the duties on the gold produce which the company has been subjected to, and the relief therefrom it has obtained, have been by enactments of the Imperial Legislature, and by Imperial decrees. In 1875 the Provincial Legislature, exceeding, as the company is advised by eminent Brazilian counsel, its constitutional prerogative and the sphere of the attributes of Provincial Assemblies, passed a law imposing a tax of 4 per cent on the gold extracted in the province of Minas Geraes. His Excellency, the then president of the province, perceiving the unconstitutional character of the law wisely refused to issue a decree for its operation, and it consequently remained inoperative. On the Government, however, being temporarily administered by a vice-president a decree was in March last promulgated for the enforcement of the measure notwithstanding its unconstitutional character. It has been already shown that the company has now carried on mining operations in Minas Geraes for nearly half a century, and that during that lengthened

period it has, acting in good faith, scrupulously paid the duties imposed by the authority having jurisdiction over it as legal holders of gold-producing mines -- the Imperial Legislature. It remains further to be shown what it has done for the province in the expenditure of capital, in promoting the circulation of money, in the employment of labour, in instructing the native miners in the science of mining, and in the introduction of the best known mining appliances and labour-saving machinery. It's subscribed capital is £253,000, all of which has been laid out in the province of Minas in the purchase of properties and in the erection of costly plant and machinery. It's expenditure in Brazil alone since the year 1853, when the Company was in full working, has averaged £95,000 per annum for labour, materials and provisions, and carriage of stores and duties paid in Rio. The last named alone during the above period amounted to the sum of £78,000, besides the numerous duties and taxes paid in common with the rest of the community of the province. The during the period of the Company's existence it has met with many reverses, which have materially affected its prosperity, which, on the whole, considering all the risks attendant on mining enterprise, has been only moderate. One of such reverses had the longer duration of seven years, when not only was no profit made, but the large sum of £140,000 had to be drawn from the pockets of the shareholders to re-establish the mine. The expenditure in Brazil during this period was over £300,000, though no profit accrued to the proprietors. The Company, besides the Morro Velho property, has purchased other mining properties, but without any exception they have proved total losses. They have recently made another such purchase, and contemplated developing it, using the most approved labour-saving machinery for the purpose. If this tax is persisted in, their views regarding it may be changed, for it is doubtful if a mine such as this, having mineral of a small yield of gold, can be worked at a profit in the face of a 4 per cent duty on its produce.

It is so widely recognised a principle of all commercial countries that the introduction of foreign capital is beneficial to the development of the industrial resources of the nation, and in the present case the St John del Rey Company has shown so clearly that during the half-century they have been carrying on operations in Brazil the entire population has derived enormous advantage from the large amount of money they have kept in circulation, that it may be hoped that the matter now in dispute will be so arranged as to prevent any such annoyance and misunderstanding in the future. All that is desired is that the Imperial Legislature pursue the same liberal policy toward the Company which has hitherto characterised its proceedings.

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Advert: Patent Duplex Lamps, for Collieries, Ironworks, &c.

Suitable for Pit Banks, Engine Houses, &c., &c.

Each Lamp gives a light equal to 26 candles.

No breakage of Chimneys from heat.

Cottons last three months.

Will burn any mineral oil.

S. Hooper, Lamp Maker and Oil Merchant, Lower Temple Street, Birmingham.

N.B. Lamps made suitable for every purpose.

The Best Signal Bell made for Mining Purposes.

Illustrations on Application.

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Advert: The "Cranston" Rock Drill.

Is driving levels 200 linear feet per month in hard quartz rock. "Eberhardt" Tunnel now driven in over 3842 linear feet with these Drills and Compressors.

Can be seen in Daily Practical Operation drilling 60 feet of Blast Holes per day in Limestone Rock at one-fifth the cost of Hand Labour.

For other particulars and prices, apply to -- J.G. Cranston, 22 Grey Street, Newcastle-on-Tyne.

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Watson Brothers' Mining Circular.

Watson Brothers, Mineowners, Stock and Share Dealers, etc., 1, St Michael's Alley, Cornhill, London.

Ten years ago the weekly information which had previously been published for a great number of years in Watson Brothers' Mining Circular was transferred to the columns of the Mining Journal, with the following announcement; which is now reproduced in consequence of the numerous letters and inquiries handed to them of late in reply to one which appeared in the Journal on the Clementina Mine.

In the year 1843, when mining was almost unknown to the general public attention was first called to its advantages, when properly conducted, in the "Compendium of British Mining", commenced in 1837, and published in 1843, by Mr Watson, F. G. S., author of "Gleanings among Mines and Miners", "Records of Ancient Mining", "Cornish Notes" (first series, 1862), "Cornish Notes" (2nd series, 1863), "The Progress of Mining", with Statistics of the Mining Interest, annually for 21 years, etc., etc. In the Compendium, published in 1843, Mr Watson was the first to recommend the system of a "division of small risks in several mines, ensuring the successes in the aggregate", and Messrs Watson Brothers have always a selected list on hand. Perhaps at no former period in the annals of mining has there been more peculiar need of honest and experienced advice in regard to mines and share dealing than there is at present; and from the lengthened experiences of Messrs Watson Brothers they are emboldened to offer, thus publicly, their best services and advice to all connected with mines and mining.

Messrs Watson Brothers are daily asked their opinion of particular mines, as well as to recommend mines to invest or speculate in, and they give their advice and recommend mines to the best of their judgment and ability, founded on the best practical advice they can obtain from the mining districts, but they will not be held responsible, nor subject to blame, if results do not always equal the expectations they may have held out in a property so fluctuating as mining.

The great extension of mining business, the difficulty so often complained of by country shareholders in getting accurate and disinterested information as to the state of Cornish and Foreign Mines, and of the financial and real position of mining companies generally, have induced Messrs Watson Brothers to make their Circular now published in the Mining Journal more extensively known, and to state --

That they issue daily to clients and others who apply for it a Price List (as supplied to most of the London and country papers), giving the closing prices of Mining Shares up to four o'clock.

They also buy and sell shares for immediate cash or for the usual fortnightly settlement in all Mines and dealt in on the Mining and Stock Exchanges, at the close market prices of the day, free of all charges for commission. They deal also, on the same terms, in the Public Funds, Railways, Telegraphs, and all other Securities dealt in upon the Stock Exchange.

Having agents in all the mining districts, they are constantly getting mines inspected for their own guidance, and will also obtain special reports of any particular mine for their clients, for the inspecting agent's fee of £2-0-0.

"A.X." --Sentein Mines -- We can tell our correspondent little more than he can read for himself in the Mining Journal of December 21, page 1419. The report of Captain Edwards is a most extraordinary one, but as he has, it is said, been taken from the management of a coal and iron company to report upon a lead mine, we should like to know a little more about his experience in the value of lead ores, and whether, when he says a lode is worth 20 tons per fathom, he speaks or judges of a "cubic fathom". Also, when he says "lead ore", does he not mean lodestuff just as it is broken from the stopes? We are inclined to think that as 60 miners broke 680 tons in six or seven weeks he refers to lodestuff, and a produce of 10 or 20 percent would be a good yield of lead ore under ordinary circumstances. This would give from 68 to 136 tons of ore, and this doubtless of rich quality. If he intends to convey the idea that 60 men can raise 680 tons of rich lead ore in seven weeks, the mine must be a very extraordinary one, and will beat Van hollow. Another still more remarkable thing is this. Why has the mine, with all these riches at hand, been left idle since the end of the Franco-German war, to be now sold at Paris for £26,000, with all its machinery and plant? What could the Parisian gentlemen who form the Mineral Corporation of Great Britain have been about when they brought the French Government Inspector of Mines over here to report upon speculations in Wales when there was such a prodigy under their very noses?

Great Laxey -- With the present price of lead and the state of the mine we do not see how the dividends can be kept up at their late standard. The mine is annually inspected on behalf of the Crown, but its management is entirely local, and almost personal.

British Dividend Mines -- At the present time these (among public mines) are not very plentiful, and may be numbered thus: -- Lead: Van, Great Laxey, Roman Gravels, North Hendre -- Tin: Dolcoath, South Condurrow, South Frances, Wheal Peevor -- Copper: South Caradon, West Tolgus, Mellanear. In 1855 54 British mines paid dividends of £340,714-3-4d. Eleven foreign mines paid £209,320. Five Welsh paid £7535. One Scotch, £117-18-0d. Two Isle of Man, £9960 (of which Great Laxey paid £1000). Three Irish mines, £29,660. Making a grand total for a year of £597,306-3-4d. In 11 years up to 1855 British mines had paid in dividends £2,834,802. A strange contrast with the present.

Among the mines which we hope to see increase their dividends in the coming year are South Frances, Wheal Peevor, Dolcoath, and South Condurrow, the two latter depending most upon the price of tin. Van we hope to see improve upon its last dividend; and, of course, a rise of one or two pounds per ton in lead ore would again bring in Leadhills, and improve Roman Gravels, etc. Among mines which we hope to see in the Dividend List for 1879, and which are now at mere progressive prices, and will, therefore, advance, are D'Eresby Mountain, Aberllyn, and Morfa Du. Among speculative mines where a "stroke of the pick" may do wonders we should choose Crebor, Glenroy, and others. All or any of the above can be picked up in these depressed times at prices likely to secure great profits in a few months on the "division of risk" principle.

Since these remarks were written, South Frances and South Condurrow have both paid an increased dividend.

In the Mining Journal for December 21 (page 1407) the North Wales Correspondent asks: -- "Why should the fact that an immense amount of ore has been taken out of a mine in the distant past be considered as a short evidence of its renewed success in the future? May not such a mine be simply exhausted?" In last Saturday's Journal (page 1436) the same correspondent answers the question in an interesting way by his remarks on the lead mines of Flintshire, where he says -- "With Carboniferous rocks there are two mineral bearing zones, between which there is a great thickness of black and grey fossiliferous limestone and shale, and in which the lodes are unproductive of metallic ores." He further adds -- "The Merllyn lodes and flats are now

worked in the lower zone." Now, in the year 1851 we purchased half the Merllyn mine, divided the whole into 5000 shares, made a call of 7-6d per share, erected an engine, and for a few years had great success. In 1852 upon this outlay of 7-6d per share we made a profit of £5500, and divided £1-3-0d per share. We remember describing in the Journal a visit we paid to the mine and to the 26 fathom level during that year, when it was nearly solid lead -- back, bottom, and sides. Down to the 40 fathom level we raised and sold nearly £40,000 worth of ore, and then it failed. Writing of the mine in our review of 1852 we said, "The opinion is that by sinking deeper another bunch of ore will be met with." Well, we sunk the shaft to the 60 without getting out of the shale or finding a bit of lead. From other shallow lodes, however, we got 177 tons of lead in 1854, but it did not pay cost, and the shareholders after receiving £7,500 in dividends refused to pay calls (it was a cost-book company) for a larger engine so as to go still deeper and find the "second zone", and the mine was abandoned.

We are not able to say when the present company took it up, but we have no doubt it will be found they were induced to do so, and to expend further capital upon it, knowing the "immense amount" of ore we had taken out of it and hearing why it had been abandoned. As a rule, we do not place too much dependence on "old men's tales", but it is notorious that many mines have been abandoned for various reasons after making immense returns, and then set to work again to meet with renewed success. Tresavean was twice abandoned, and at the last working returned copper ores exceeding one million in value. Buller and Beauchamp, once remarkably rich, were abandoned within our recollection, and then Messrs S. and R. Davey took up the sett, worked the western part as West Buller, and from 1851 to 1859 paid £240,582 in dividends, and the £5 shares reached £1200. In the year 1854 mine divided a profit of £53,760 -- an extraordinary sum for a copper miner to pay in one year.

Our experience of Flintshire 30 years ago was that miners old and young would discover shallow veins of lead, sink shafts upon them, get out what lead they could in a rude and primitive way, and when drowned out go and sink other pits in the same manner elsewhere. Thus it was that Merllyn and many other mines were discovered by the old men, who scowled upon the "Sassenach" invader when he took up regular setts and erected machinery upon them.

Argentines are quoted $\frac{1}{4}$ to $\frac{1}{2}$; I.X.L., $\frac{1}{8}$ to $\frac{1}{4}$; Exchequer, $\frac{1}{8}$ to $\frac{3}{8}$ -- and we feel a difficulty in advising upon either. Where did our correspondent see in the Journal for 1876 that Argentines were quoted $7\frac{1}{4}$ to $7\frac{1}{2}$, and that the indications left no room to doubt the mine's great success? The greatest authorities sometimes err.

D' Eresby Mountain. -- The stonebreaker and crusher went to work again on Monday, and if there is no more frost or snow we shall soon expect a sale of lead. But for the late frost the first sale would have been in December. At present the stuff being crushed is coarse, being from the top of the stope, but the agents hope soon to get at the richer stuff broken, and at present covered up. One of the great advantages of the mine, as we have frequently pointed out, is that cheap manner in which it can be worked. Even with the heavy expense of clearing No 5 adit and erecting machinery the costs have not exceeded £150 per month, during which time also some thousands of tons of lead stuff have been broken from No 4 stope.

Sulphur. We have the offer of a property abroad said to be capable, on a small outlay, of returning a very large profit, but we are not much acquainted with the sulphur market. Perhaps some of our correspondents may know more.

A correspondent calls our attention to the fact that the leading article of a local paper on mining is almost entirely made up with extracts from our columns, and without acknowledgement. We notice the circumstance, and are glad that our remarks are so fully appreciated.

Improvements in Electro Metallurgy. Articles produced by the electrotype process have always a rough or ragged edge caused by the unequal deposition or building up of the metal at the edge of the mould, and considerable time is required to file off this ragged edge in order to give the article the desired finish. The invention of Mr J. W. Tufts, of Medford, Massachusetts, United States, has for its object to economise the time heretofore required to finish the edge of an electrotype, and thereby simplify and cheapen the manufacture of articles produced by the electrotype process, and comprises the employment of a mould provided with a projecting lip or ridge extending around the edge or outline of the figure of the article to be produced, and with a similar lip or lips extending around the edge of the figure of any openwork design to be formed therein, in order that the electrotype made from such mould may have a groove or grooves in its face corresponding with the lip or lips of the mould, which will necessarily involve the formulation of a corresponding ridge or ridges on the back of the electrotype. The ridge or ridges thus formed, and also, if desired, a portion of the remaining or plane surface on the back of the electrotype, are subsequently removed by planing, grinding, or other mechanical means to the bottom of the groove or grooves from the rear side. By these means the article contained within the boundary line formed by the groove surrounding it is liberated from the contiguous waste metal, and may be removed therefrom in a finished state, the openwork portion, if any, being simultaneously produced in the same manner. The said invention also comprises the filling of the whole or a portion of the groove or grooves of the electrotype that are to be cut into from the back with soft metal or other suitable substance, which serves to support the edges of the electrotype article during the process of liberating it from the surrounding waste metal, and thus prevent the production of a burr or rough edge by the action of the cutting tool, the temporary filling being subsequently removed by melting or otherwise.

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Lead Mining in Durham.

The following special report has just been made of the Frosterley Lead Mining Company, which has recently opened up afresh this old and valuable property: --

Jan. 1 -- I carefully inspected this property yesterday, and beg herewith to hand you my report. The mine is situated within 400 yards of the village of Frosterley, and the station of the same name on the Stanhope and Darlington Railway. It is surrounded by some of the richest lead bearing lodes in this celebrated district, decidedly the richest in Europe. The railway bounds the mine on the north, as do the River Wear, and the turnpike road leading from Frosterley to Stanhope, securing special advantages for conveyance of goods to and from the mine. The geological position of the sett is everything that can be desired for the production of large quantities of lead ore. It is traversed through its entire length from north to south by two champion lodes of an exceptionally rich character; these lodes are still producing enormous riches in the adjacent mines of Messrs. Beaumont and the London Lead Company, all of which mines are similarly situated; in fact, in addition to a marked similarity in the configuration of the county, the specimens of ore taken from some of these mines and compared with the ore broken from Frosterley Mine are so similar in quality and character that the most experienced mining agent can detect no difference.

The area of the property is about 60 acres, the surface rising gradually from the River Wear on the north until it reaches a height of about 1000ft at the extreme south of the sett, thus giving every facility for developing the lodes and enabling them to be explored by day or adit levels, as well as avoiding the heavy expenditure usually required for drawing and pumping machinery. The old workers of this mine must have been well acquainted with its geological and geographical positions, as is exemplified by the way in which they began its operations. Indeed, had the greatest mining authority of the present day been required to give an opinion upon the best means of developing this field of wealth he could not have suggested a better plan than that originally adopted. There are no less than ten shafts already sunk, at a great cost, to a depth varying from 2 to 10 fathoms, all of which will be most valuable to the new Frosterley Company. The upper or shallow adit has been driven through a good course of ore to the extreme south of the sett, and by stoping down a few fathoms in the bottom of the mouth of the shallow adit level, leading to the waste heap (marked upon the section), some hundreds of fathoms of ore ground will be unwatered, and the mine at once placed in a position second to none of the great dividend paying mines of the district.

The continuation of the driving of the deep adit level from the River Wear will lay open the whole of the upper section of the main lode for the entire length of the mine, and will leave some thousands of fathoms of ore ground to be stoped away at a small cost. The tramway now being laid in the deep adit will afford ready means of taking the whole of the ore direct to the dressing floors, and here again an immense outlay in labour, steam, and water power will be avoided. I would go more into the merits of the mine had it not been for the elaborate survey already made by the authorities who have visited it, but there is one fact that I cannot omit to mention. It is that the whole of the underground workings, whether driving levels, sinking shafts, making communication from one or any point, must be upon the line of the lode, thereby proving every inch of ground taken away either by sinking, driving, rising, or stoping. I would advise the working in the deep and shallow adits to be prosecuted as rapidly as possible, there being every

probability that a further small outlay would bring the mine into a highly profitable condition, and consequently remunerative to its shareholders. This would be gratifying alike to the directors and myself.

John Cann.

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Mining Correspondence.

British Mines.

Aberllyn -- John Roberts, Jan 1: we made good progress in the rise in the deep adit during the past month, the ground having changed considerably. At the present time the ground has become much harder, but having only about 6 ft to communicate with the No 2 adit it will not be of much importance. I expected that we should have made a communication this week, and had the nature of the ground continued as it was we should have done so, but I expect now that it will take till the beginning of next week; the lode here, as far as we can see, is looking very well for blende. The end driving south at No 2 is looking very well for blende, and when we get the communication we shall have opened, as far as anyone can judge, a good piece of stoping ground for blende. We have driven here during the past month 2 fms. In the winze at No 1 we have sunk by two men about 4½ ft on the hanging side of the lode, which looks quite as well as any place we have, showing the continuous and great extent of the course of blende. For the greater part of the month the surface operations have been almost entirely suspended by reason of the weather, but we have now set to again, and I hope that we shall be able to push on with renewed vigour. I think that I have previously informed you that the buildings are completed, and would have been covered in had the weather permitted. The building of the small wheel-pit will be finished tomorrow. I have received some parts of the crusher, and the remainder, I am informed, is on the rails for Llanrwst. No time will be lost in getting it on the mine and erected.

Bedford United -- R. Goldsworthy, Jan 2: Setting Report: To drive the 150 east, by six men, at £12-10-0d per fathom; at present lode is unproductive, but as this end is extended we look forward to its laying opened some of valuable ground. To drive the 138 east, by four men, at £12 per fathom: the lode is 4ft wide, producing saving work. To drive the 127 east, by six men, at £11-10-0d per fathom; the lode has a promising appearance, now worth £9 per fathom. Three stopes in the back of the 138, each let at £4-10-0d per fathom, and one stope in the back of the 103 west, let at £4-15-0d per fathom; these stopes are worth on an average £7 per fathom.

Blue Hills -- S. Bennetts, P. Bennetts, Dec 28: The gossan which lay between the Blue Burrow shaft and the 30 east end has just been cut through in the bottom of the shaft. In the 30 east end the lode is still opening out very satisfactorily, and worth £12 per fathom. The stopes also continue about the same value as last reported.

Bodidris -- H. Hotchkiss, Jan 1: We are making fair speed in sinking the new shaft under the 45, and I am pleased to say we have a favourable improvement in the lode, which is now charged with blende and lead ore. In the 45 end east the lode is 2 ft wide, composed of light limestone, spar, and a mixture of blende throughout, with water coming out from the lode near the sole of the level. As this wall is all whole to surface eastward, I consider our prospects in this level, when we meet with the next run of ore, will be most important, as we have the good backs to work away, and I am daily expecting to meet with a course of ore here. No change in the 60 rise worthy of remark. The 30 stope is not quite so good for ore as last week. The engine is doing its work well, and all points are being urged on with all speed.

Caron -- John Kitto, Dec 28: We made very good progress in sinking the engine-shaft below the 10 until the frost compelled us to stop the pumping-wheel, but I expect the water will be in fork again and the sinking resumed by Monday or Tuesday next. There are some nice strings of lead ore in the bottom of the shaft, which shows that we are getting near the lode. There is no change of importance in the stopes in the back of the 10, but those in back of adit level, as stated in my last report, are constantly communicating with old workings, and there is not much to be expected from them. We have sold since the date of my last report, to Messrs Walton and Co, 30 tons of lead ore, at £1-11-6d per ton.

Clementina -- J. Roberts, W. Sandoe, Jan 1: We have divided and cased the shaft from the dry level or adit to the 15 below, and shall commence at once to do the same from that point to the surface, when the shaft will be quite ready for fixing the new pitwork. We shall commence the masonry of the wheel pit tomorrow, and everything will be hastened on with all possible speed.

Combmartin -- T. Harris, T. Comer, Dec 28: We have today set the following bargains: -- the 15 to drive east of Harris's shaft, by four men, at £5-5-0d per fathom, the month. The lode is 3 ft wide, of killas, quartz, and white iron. The adit cross-cut to drive north, by four men, at £5-10-0d per fathom, the month: the ground is of much the same character as for some past. The adit level to drive north-west, on caunter lode, by four men, at £4-10-0d per fathom, the month; the lode is from 3 ft to 4 ft wide, containing smaller veins of lead and blende throughout, and is producing saving work.

Cwmystwyth -- Jan 1: The driving of Michell's cross-cut north by rock-drill will be resumed in a few days, as the frost is leaving the engine, which will be set going when clear. In Gill's cross-cut north the ground is more damp since we left the lode, and more favourable for driving, and we hope soon to reach the new lode. The ground in the 15 fathom level cross-cut at Pugh's shaft is very favourable for driving, and good progress has been made during the past week. In No. 1 winze sinking below Gill's upper level, on the new lode, the lode has very much improved; now worth 1½ tons of lead ore per fathom. In the No. 2 winze, sinking below Gill's upper level, on the new lode, the lode is 5ft wide, with a good mixture of lead and blende throughout, but the ground is tight for sinking. There is no alteration of importance in any of our stopes or pitches since the date of our last report. The favourable change we have had in the weather during the last few days has cleared the snow and frost, so as to enable us to start our pumping-wheels again, and our dressing has also again been resumed.

D'Eresby Consols -- J. Roberts, W. Sandoe, Jan.1: The ground in the end driving west towards Cobblers' lode is without any change to notice since the last week. The vugh we had with us for two or three months, and which was a great help to us, has for the present left us, consequently the progress is slow. But we are pushing on with a full pare of men as fast as the nature of the ground will admit.

D'Eresby Mountain -- J. Roberts, W. Sandoe, Jan.1: The No 1 adit: The lode in the sump or winze is still producing good lead. We had got down as far as we could go without fixing tackle for drawing up the stuff, so this week we have had to cut ground for this purpose and fix it, which work is completed, and in the coming week we shall be able to make more show in the bottom. No 3: The lode here is quite as large, but scarcely as productive as last week. No 4: The stope here continues to yield good lead stuff for the dressing-floors. The winze or sump to No 5 has been flooded by the heavy rain since Sunday, and so for the time being we are obliged to suspend it, but we hope to resume the clearing again in a day or two. The heavy floods have also affected our progress in No 5 in that they have washed back a quantity of stuff in the level, which we have to clear before we can proceed with the forebreast. We have started the new top to the sump to the No 5, and we are down three yards from the surface. We started the crusher again on Monday, which was immediately after the breaking up of the ice and the thawing of the

heavy snow, and since then we have made use of every hour in treating the stuff from the No 4, which is producing moderate lead, and we shall in a short time get into a better stuff.

Derwent -- John Morpeth, Dec. 31: I inspected yesterday all our workings underground, and now beg to report to you on their present worth, &c. -- Jeffries' Shaft, Middle Vein: The 95 east continues as for a long time past. The sides following the end, and No 1 stope in the immediate back of level, both worked by the same partnership of eight men, are producing 15 cwts of ore per fathom. No 2 stope is wide, and worth 15 cwts of ore per fathom; No 3 yield 14 cwts; No 4, 15 cwts; and No 5, 15 cwts also. The flat on the south side of vein, over the same level, yields 16 cwts of ore per fathom. The 93, west of shaft, is underlaying a strong lode for stoping down by-and-bye, though the level itself, being at the very bottom of Great Limestone, is poor. The stopes over this level, but a great way behind the end, have changed but little since the last setting the. No 1 is 5 ft wide, and worth 13 cwts; No 2 produces 15 cwts; No 3, 15 cwts; No 4, 15 cwts; end No 5, 11 cwts; vein about 4 ft wide all through. Sun Vein: This vein is poor, and disappointing at present. The stope west of shaft yields seven cwts of ore per fathom. The 70 east is 2 ft wide, worth 8 cwts, and the stope in the back yields 12 cwts. -- Westgarth's Shaft, Middle Vein: The 93 east is now within 3 ft 2 ins in by our dialling of the level of meeting the same level west of Jeffries' Shaft, is extremely hard and difficult to drive, and produces half a ton of ore per fathom. Having to stop the drilling machine because of not being able to cart coal to the engine for snow, we have not been able to hole these levels, as we quite expected we should have been by tomorrow (New Year's Day). We cannot, however, be long now. The 74 West is without much change. The stope in the back is poorer. In the lower part especially it is so; it's worth for the whole height is 12 cwts of ore per fathom; ground hard. -- Surface: Since the rapid thaw set in yesterday morning dressing, etc., are assuming a more lively appearance.

Devon Great Consols -- Jan.3: There is nothing new in the report from the mines this week. We sampled on Jan 1, 875 tons of copper ore, for sale on Jan 23.

East Darren -- Jan 1: In the cross-cut south, in the 104, the ground is favourable for driving. In the cross-cut south, in the 92 east, the south lode has been intersected, which is about 3 ft wide, containing small branches of lead ore -- saving work for dressing. In the 93, east of cross-cut, on No 2 branch, the lode is 4 ft wide, yielding 10 cwts of ore per fathom. In the 80, west of cross-cut, on the south lode, the lode is 2 ft wide, yielding 12 cwts of lead ore per fathom. In the 80, west of cross-cut, on No 2 branch, this point is communicated to a level east of the western end, on a south branch. The stopes over the 80, east of cross-cut, on the south lode, continue to fall off in value, the ore ground being cut off by a flat dipping south. The tribute pitches (three in number) continue to yield fair quantities of lead ore. We have resumed the drawing and dressing. We sampled yesterday (Tuesday) 45 tons of silver-lead ore, for sale on Tuesday, the 14th ins.

East Wheal Lovell -- R. Quentrall, Jan 1: There is scarcely any alteration in the mine since my last report. The South shaft is being sunk by nine men, at £17 per fathom; the lode maintains its size and favourable character. On the North lode the 12 is being driven east, by six men, at £10 per fathom: and west, by six men, at £10 per fathom. The lode in the western end is from 18 inches to 2 ft wide, containing a little tin throughout.

Frongoch -- John Kitto, Dec 28: I am pleased to say that all our underground operations have progressed uninterruptedly during the whole of the severe weather, and very good progress has been made, particularly with Vaughan's new perpendicular shaft, and the cross-cut to the south lode. We are also cross cutting the lode in the 90, and as soon as we have ascertained its size and value shall resume the driving of this lode west, where we hope to open up some valuable ore-ground. In driving the 56 cross-cut towards the south lode we had intersected a branch about 18 inches wide, which contains good saving lead stuff. We have now 36 men on tribute,

at prices varying from five pounds to six pounds per ton, and they appear to be making fair wages, and there are several others waiting to go on as soon as the levels are in proper repair. We have not yet commenced dressing operations, but shall do so as soon as the weather moderates, as the kilns at surface are full of lead stuff, and a large quantity has also accumulated underground. The smiths are getting on well with the new line of pump rods, and have about half of them already made. We have put new pump-rods in Vaughan's shaft from surface to the 117, thoroughly renovated the skip road, and repaired the ladder roads from surface to the bottom of the mine.

Gawton Copper -- George Rowe, George Rowe, Junior, Dec 28: We have today intersected the north capels of the lode in the 117 cross cut, which is cut into about 1 ft, being composed of capels, spar, mundic, and ore -- altogether of a very kindly appearance. The lode in the winze sinking below the 105 is worth £10 per fathom, which we expect to communicate with the 117 below in the course of a few feet further sinking. All other points are without change.

Glasgow Caradon Consols -- Wm. Taylor, Wm. J. Taylor, Dec 24: In the 102 cross-cut south we are making fair progress in favourable ground; we have an increase of water as we are nearing the lode: this end is being pushed on as fast as possible. No change in the 90 west on branch. In the 90 east we have had a little better ground, with an increase of water and a little ore, but not of much value yet. In the winze east in bottom of the 78, before this end, we have a good lode, worth £25 per fathom. In the cross-cut south from the 78 east we have cut killas letting out some water, which we think maybe from a lode south. Midway driving west on south branch opening good stoping ground, from £10 to £12 per fathom. No other change in the end is since our last report. The stopes and pitches continue about the same value as last reported. The machinery and pitwork are all in good order, and everything working well except for dressing, which is very much retarded by the severe weather.

Glenroy -- R. Rowe, Jan 2: Telegram: Have now come from underground. So far cross-cut has only intersected several mineralised branches. No regular lode yet. Do not see any change in shaft.

Goginan -- Jan 1: The lode in the pitch over the 130, east and west of western shaft, is 9 ft wide, yielding 15 cwts of ore per fathom. The lode in the pitch over the 120 fathom level, 65 fms west of Bryn Pica shaft, is producing 16 cwts of ore per fathom. The lode in the pitch over the 110 fathom level, 16 fms east of western shaft, is worth at present 12 cwts of ore per fathom. In the three pitches over the 90 fathom level, west of Taylor's shaft, lode is worth 12 cwts of ore per fathom. The two pitches over the 60 are producing 14 cwts of ore per fathom. The pitch over the 26 yields at present 11 cwts of ore per fathom. All surface operations are being pushed forward again.

Grogwinion -- John Kitto, Dec 28: All our underground operations have proceeded regularly, and no portion whatever inside the mine has been interfered with by the severe frosty weather; but I am sorry to say that all our dressing operations have been entirely suspended for just three weeks, and the ore stuff broken in the meantime has consequently been allowed to accumulate underground. I am glad to say the intermediate, 56, 68, and deep adit levels are all opening out satisfactorily, and the prospects of the mine altogether have greatly improved during last two or three months. At present we are developing much more ore ground than we are taking away. Since my last monthly report we have sold to Mr George Burr 100 tons of lead ore, at £9-7-6d per ton.

Hingston Down -- T. Richards, Jan 2: Bailey's Shaft: In the 172 east the lode will now produce 4 tons of ore or £8 per fathom, and is very promising. In the 172 west the lode contains capel, quartz, and good stones of copper ore. In the stope in the back of the 172 east the lode is worth

6 tons of ore or £15 per fathom. There is no change in the 160 west. In the tributers' stope and pitch in the back of the 110 the lode is worth 4 tons of ore or £6 per fathom, and is very promising. In the deep adit the ground is favourable, fair progress is being made.

Lead Era -- J. A. Ede, Jan 1: The weather with us is, as throughout North Wales, most unfavourable for service operations, yet as a few days fine weather will suffice to complete our miners' sheds, store rooms, and account house, little inconvenience is sustained. The adit cross-cut is in congenial grounds, and progress is satisfactory. The lode maintains its size, and we anticipate early and important results. There can scarcely be a question of the east and west veins traversing the sett being highly mineralised, thus at an early date important discoveries may ensue, yet in this mine, as in all others, science and skill can only effect economy and dispatch. Our best anticipations may encounter default, still I have every confidence in the future. We have all the elements of success, and are in the midst of the best lead-bearing mines in the Denbigh and Flintshire district, second to none throughout Great Britain. The shaft No 2 has passed through the upper flat, and is being rapidly sunk. The strata is such as I desire to encounter, and I hope in a short time to reach the deeper flat. This constitutes an important feature as regards the future, as we shall then be in the lead-bearing measures.

Llanrwst -- R. Knapp, Dec 28: The mine is looking a little better. The ground appears to be undergoing a change in the 14, east of Endean's shaft, and a corresponding change is taking place in the lode there; I am in hopes that in about a week I shall have something good to say of it. In the 14, west of shaft, the lode has improved, now yielding one ton of ore per fathom, and the ground is easier for driving. At the adit the lode in the end is very large -- 10 ft wide: the middle part of it is horsey, but on both the foot and hanging walls the leading parts are good, probably together equal to 2 tons per fathom; we shall now push on the footwall part in order to progress, the whole being too large to carry in an ordinary level; besides, we ought soon to intersect the new caunter lode at this level which we met with some time ago while driving at the 10 above adit on the main lode in the south-east part of the mine; it is at that point a very pretty looking lode. In the winze sinking under the adit the lode is still good, and of a good character, and if this continues, and the improvement which I expect take place at the 14, below a widely different aspect will be given to the prospects of the mine. The diagonal shaft is down deepening for a 14 fathom level. We have now to sink three feet for a fork, and then commence to strip down the lode before driving back to meet the 14 from Endean's.

Medlyn Moor -- Jos. Prisk, C. Rowe, Jan 2: On Saturday last we set the following bargains:- North Lode: The 20 to drive east in the great cross-course, by six men, at £8 per fathom; this end is still wet and troublesome, but we are expecting daily to get into better ground, and see the lode to the east of this cross-course. The 20 west we have suspended for the present, the ventilation being bad, so we have removed the men to the 10 to sink a winze for ventilation, and where the lode is worth £10 per fathom; this is important, as we are not only breaking tinstuff, but are cutting the ground properly open for tributers, and when the 10 is communicated with the 20 the whole of the men will be ventilated. In the back of the 20 we have risen and stoped 9ft high, and for that distance we had a moderate paying lode, but at present it is broken up by a large floor or joint, which often happens in the shallow levels and in soft ground; we consider the main part to be thrown a little south, but this we do not attach much importance to, seeing the lode in the winze above it good, and when communicated to the 20 will be of great value for the general working of the mine. In the 20 west we have also risen 10ft, and find that floor has had the same effect on the lode. Puffer Shaft: In driving west from this shaft we have discovered the old men's 10 fathom level, which is driven on the course of the lode; as soon as possible we shall clear this level, which will enable us to sink another winze westward, and follow down the lode. In the 10, east of this shaft, we have a cross-cut north, and intersected what we consider the main lode east of the great cross-course; we have just commenced to drive on it, and find it contains tin, but is not quite settled, being so near the cross-course. This will be a guide for us in

the level below, as soon as we are through the cross-course, to drive in the same direction. We have recently got information from old documents of an exceedingly large lode a little to the north of our present workings, and seeing it can be easily worked from the same shaft, and no additional expenses in pumping, we are driving a short cross-course towards it, and hope in three or four weeks to intersect it; the price for driving is only £2-5-0 per fathom. The number of employed this month 24 -- In the winze in the 10fm level six, driving east in the 10 six, driving east in the 20 six, and in the cross-course on the 20 north six.

Melindur -- John Kitto, Dec 28: We have made very fair progress in the cross-cut during the past month, and the character of the ground through which it is being driven is still very favourable for producing ore when the lode is reached, but so far there is no sign of the latter in the cross-cut. I do not think, however, that we shall have far to drive to intersect it, and the driving shall be pushed forward with all possible speed.

Mellanear Copper -- John Gilbert, Jan 1: The lode in the 30, west of Gundry's shaft, is 3ft wide, and worth 1 ton of copper ore per fathom. The lode in the 40, west of shaft, is 2ft wide, and still producing ½ ton of ore per fathom. The lode in the 30, driving east from the top of the rise, to communicate with the 30, west of Gundry's shaft, is 3ft wide, and worth 1½ ton of ore per fathom. The lode in the 50 fm level, west of shaft, is 4ft wide, and worth 2 tons of ore per fathom. The lode in the 60, west of shaft, is 4ft wide, and worth 2 tons of ore per fathom. The winze in the bottom of this level is worth 2 tons of ore per fathom. The lode in the 70, west of shaft, is 5ft wide, worth fully 3 tons of ore per fathom. The rise in the back of this level, west of shaft, will produce 3½ tons of ore per fathom. The lode in the 80, west of the shaft, is 5ft wide, and worth 3 tons of ore per fathom. The lode in the 90, west of shaft, is 4ft wide, worth 2 tons of ore per fathom, and looking very promising for further improvement. The lode in the winze in the bottom of this level, east of shaft, is worth 2 tons of ore per fathom. The lode in the 100, west of the shaft, is 6ft wide, and producing some saving work for copper and blende. The lode in the 100, east of the shaft, is 3ft wide, and worth 1½ ton of ore per fathom. We have cut a sparry crossing in the 100, west of skip-shaft, which has disordered the lode for the present, but we expect it will improve again soon, as it is getting just under where the lode made productive in the level above. From near this crossing we have broken some splendid stones of tin ore. There is no change in the ground in the 67 cross-cut, south of the main lode. I am pleased to say that the weather has improved, so that the masons are able to resume the building of the new crusher-house, and the plastering of the count-house, and that all our surface operations are going on very satisfactorily. The late floods have increased the water underground, so that the old engine is now doing 7½ strokes per minute, and Gundry's engine nearly 4 strokes per minute, but the engines and pitwork are in good working order, and keeping the water with the greatest ease.

Mineral Corporation of Great Britain -- W. Bennetts, Jan 2: Hafna Mine: The lode in No. 1 adit end is at present pinched up rather small. No. 1 stope in back of No. 1 adit is worth 18cwts of lead per fathom. No. 2 stope is worth 15cwts of lead per fathom. In No. 2 adit the lode in the end is improving every foot driven, and letting out water freely. We shall push on this end with all possible speed, so as to get under the long run of lead ground gone down in the bottom of No. 1 adit. In No. 3 adit the ground in the cross-cut is rather hard spar for driving. In No. 4 the lode has very much improved in the last 3ft driven. We broke some nice lumps of solid lead from this end this morning. -- Surface: I am glad to say the severe frost and snow that we have had for the last three weeks have disappeared entirely, and we have again commenced selecting the lead for the crusher. Saturday being setting day, a full report shall be sent next week. -- Great D'Eresby: The men are making fair progress in the deep adit level.

North Treskerby -- Martin George, Jan 1: The sinking of Doctor's engine-shaft goes on very well: the men are making fair progress, and the ground is most congenial for ore. The lode in the

24, driving west of engine-shaft, is 4½ft wide, and contains friable quartz, with good stones of copper ore. The lode in the 24, driving east of engine-shaft, is 3ft wide, yielding strong mundic and copper ore, but not to value. The lode in the 12, driving east of engine-shaft, is 4ft wide, and worth 1 ton of ore per fathom. The lode in the rise in the back of the 12, west of cross-course, is 2ft wide, and worth 2 tons of ore per fathom. The lode in the winze, sinking below this level, is 4½ft wide, and worth 2 tons of copper ore per fathom. The tribute department is rather improved.

Pateley Bridge -- C. Williams, Jan 2: The Rake vein, in the 30 east, is opening out very satisfactorily, being from 7 to 8ft wide, worth 35cwts of lead ore per fathom, and improving. I have put a pare of men to sink a trial sump in the sole of this level, about 12fms east of the other trial sumps, and I am pleased to say the vein here is richer than at any other point, being a solid body of ore 3ft wide, worth at least 10 tons per fathom, and has, indeed, far exceeded my expectations. The 20, east and west, are much of the same value as last reported, whilst the metal pitches are turning out fair qualities of ore. The change in the weather has enabled us to resume the dressing, which is now being proceeded with as fast as possible. The machinery is working very well. Full report next week.

Penhalls -- S. Bennetts, P. Vian, Dec 28: The men are employed opening out for a rise at the 60 towards the flat-rod shaft. The lode in the 70 east end is without much alteration during the past week, and continues worth £6 per fathom. In the 60 east it is worth £7 per fathom, and in the 55 west £5 per fathom.

Picton -- J. Woolcock, Jan 1: The men have made good progress in sinking the shaft. I expect to reach the 140 yard level during the next week; we have not been able to make such progress as I could have wished to do in the 126 yard level north, in consequence of it being crushed so bad; however, I am glad to state it seems a little more favourable now for getting through. The sump in the 126 south is now 14 yards deep, the matrix of the lode is all that can be desired for the production of ore. I have every reason to think when we get down 6 yards more that we shall have a good course of ore. As in all the previous sinkings, there is about 20 yards between the beds, and on those beds or floors good ore has been met with. The heavy fall of snow has stopped all our surface work, but I am pleased to see the great thaw this week, so that we are able to get coals to the mine again, and to commence dressing.

Prince of Wales -- J. Andrews, Jan 2: There is little or no change in the back of the 24, where the tributers continue to raise a little silver. At Vigar's shaft the lode is 5ft wide, and yields some good lumps of mundic.

Prince Patrick -- H.B. Vercoe, Dec 31: During the past month the 50 has been driven about 5 fms, and it is very gratifying to be able to report that the whole distance has been through a splendid course of lead ore, averaging fully 5 tons of lead ore per cubic fathom. The portion of the lode we are taking with us is 6ft wide, and we are leaving a rich course of ore on each side of the level. In the present end the lode is quite as rich as ever, or, if anything, rather better than usual, and from its general appearance I should not be surprised if it became much more valuable within a short distance of driving. About 10 fms behind the main forebreast we have sunk a sump below the level about 2½ fms deep, and have intersected another "flat" of ore, on which we are now driving. So far as opened on it has not yielded so much lead as the upper bed, but I expect it will improve as we drive in the direction of the main level; however, as it is, it is a good course of ore, producing 2 tons of lead per fathom. Hughes' shaft having been sunk the depth required for a 63 fm level we have commenced driving south from the bottom, and have already intersected a branch of the lode of a very promising nature. The ground is very good for progress, and congenial for the production of lead ore in quantity. We have about 10 fms to drive to reach the course of ore gone down in the bottom of the old workings: this we can accomplish

in less than two months, and I, therefore, anticipate announcing to you a great discovery at this point in February next. This being a very important section of the mine I am urging it forward with all possible speed, and with a full complement of men. The workings in the 20, at Rule's shaft, are temporarily suspended, some of the men having been placed to drive a cross cut in the 50 to the workings on the Pant lode, for the purpose of ventilating our lead ground. We have 40 tons of lead dressed and ready for sale, and several tons broken and lying underground. I have pleasure in again congratulating the shareholders on the way in which the mine is opening out. We are now in a position to make good monthly profits without disturbing our reserve of ore ground, and I look forward to much better results after we have intersected the run of ore ground in the 63, at Hughes' shaft.

Red Rock -- John Kitto, Dec 27: There has been very little change in the mine since the date of my annual report except that the stopes in the back of the 10, west of the new shaft, are not looking quite so well, but all other points are looking much the same as they were at that time. The severe weather I am glad to say has not interfered very much with our underground workings, as only the 72, or bottom level, has been stopped; but all other places are being continued. Our dressing operations, however, have been sadly interrupted, and very little has been done for the past fortnight; but a favourable change has set in now, and I hope in a day or two that everything will again be in full motion. The last parcel of ore sold to Messrs. Walker, Parker, and Co. has, notwithstanding the bad weather, all been delivered.

Rookhope -- Thomas Davidson, Jan 2: In the adit level we have been stoping down the side of the vein from the forehead back, and have had some good ore during this week. Its present value is 16cwts per fathom. In cross cutting from the 15 into the south side of vein, No. 3 on section, east of Low shaft, we have cut some ore which promises to be of some durability, seeing that the vein on that side is whole ground - value 8cwts per fathom. Driving drift west from winze, 4 fms below the 25, No. 2 on section, east of Low shaft - value 10cwts per fathom. Cross cutting into the south side of the vein, in No. 7, east of Low shaft, no ore to value. In rising in the south part of the vein, west of Low shaft, over the 42, the ground is very hard, but the vein well mineralised; value, 8cwts per fathom. In cross-cutting into the north side of the vein, from the 25, on No. 15 on section, east of Gin shaft, we have proved the vein through, but find no ore to pay; consequently we shall remove these men to a more important place. In driving from the winze, No. 7 on section, east of Gin shaft, 5 fms below the 25, the ground is extremely hard, but looks well for yielding ore - present value, 10cwts per fathom.

South Cambrian -- Absalom Francis, Jan 1: We have put our men to strip down the lode 30 fms west from our present forebreast, which is 8 fms west from the end, as from what we have taken down of the lode east of cross-cut we are convinced we have a rich course of ore standing to the north of our adit level for the entire distance. By doing this work it will give better ventilation and increased facilities for working.

South Darren -- Henry James, Jan 2: The lode in the 100, east from No 2 winze, is very fluctuating in value; the width is 3 ft, composed of carbonate of lime and white spar, with a little lead, but at present not enough to value. In the end from winze the lode is worth three tons of lead ore per fathom. No lode has been taken down in the 90 end for the week. No 1 stope in the roof of the 90, east from winze, is worth 1½ tons per fathom. No 2 stope is worth 1½ tons per fathom. No 3 stope, west from winze, is worth 1¾ tons per fathom. In the 80 end west the lode is worth 2 tons per fathom. The stope in the back of this level is worth for lead and copper ores £3 per fathom. No lode has been met with yet in the 70 cross-cut. In consequence of the thaw during the past week, we have been able to proceed with the dressing, but last night and today it has been freezing hard; should it continue long it will stop the dressing again.

South de Eresby Mountain -- W. Bennetts, T. Bennetts, Jan 2: Setting Report: The cross-cut to drive east in No 1 adit is set to two men, 2 fms stent, at 100 shillings per fathom. No 2 adit is set to six men to drive on No 1 lode, 5 fms stent, at 105 shillings per fathom. We have set to four men to drive east at No 2 adit, 4 fms stent, at 95 shillings per fathom. We strongly recommend the directors to instruct us to commence driving the deep adit level.

South Molton Consols -- T. May, Jan 2: The ground in our adit level continues of a favourable appearance, and showing a little more killas of a nice leady colour.

Saint Patrick -- W. Francis, Jan 1: The cross-course is still bold, masterly, and promising in the 120 yard north cross-cut, with siliceous beds on the hanging-wall, between which is blue clay. The 60 yard north cross-cut is in fine bearing chert, but a little stiffer than when last reported.

South Roman Gravels -- John W. Powning, Jan 1: Shelve, Sawpit Lode: We have passed through the cavity in the winze below the deep adit level, and are now sinking in a strong and what appears to be a very wide lode. We are taking about 5 ft of vein in sinking, and there is yet more standing east against the hanging. The portion taken is composed of carbonate of lime, white stone, and nice patches of lead ore. The winze is down about 11 1/2 fms. The cavity and bunch of carbonate of barytes has dipped south towards the shale, and will be met with when we drive out in that direction from the 15. I also entertain great hopes of meeting with a bunch of lead ore against the shale. We shall reach the 15 some time in this month. We should have reached it by the end of next week had not this lode become much stronger.

Tankerville -- Arthur Waters, Dec 30: Watson's shaft, below the 206, is down about 6½ fms, ground without change. The 206, west of shaft, is in a lode 2 ft wide, yielding stones of lead ore, but at present of little value. This end is now within 9 feet (calculating the dip) of the commencement of the big lode seen along the 192, and connected with which there is a large cavity and good ore ground. We expect to cut into this lode and drain the water out of the cavity some time next month. The 206, east of No 2 winze, east of shaft, is now into a lode 6 ft wide, very wet, and worth 2 tons lead ore per fathom. This end is just entering the run of ore first met with in the 192, about 14 fms east of shaft, and from which we got the bulk of our returns for a long time last year. In this level (the 206 east) we catch the dip of said run about 20 fms from the shaft, proving that this deposit of ore has really a dip to the east, verifying the opinion to that effect expressed in previous reports. It will now seem from the dip of the rocks west on the one hand, and to the east on the other hand, that Watson's shaft from the 140 downwards is sunk on (say) the line of an anticlinal axis. This being so, we may expect that the ore ground will extend in length regularly as the mine is deepened. We can see already that the ore ground in the 206 will be four times the length of anything seen above the 140, and I would remark here that this feature is precisely analogous to the state of things in Roman Gravels Mine.

No 1 stope, in the 206 west, working by four men, at 110 shillings per fathom, is worth 2 tons per fathom. No 2 stope east by four men, at 110 shillings per fathom, worth 2 tons per fathom. No 3 stope east by four men, at 110 shillings per fathom, worth 2 tons per fathom. No 4 stope east by four men, at 110 shillings per fathom, worth 1 ton per fathom. No 5 stope east by four men, at 110 shillings per fathom, worth ¾ ton per fathom. No 6 stope east by four men, at 110 shillings per fathom, worth ¾ ton per fathom. No 7 stope, east of No 2 winze, east of shaft (just over the 206 end), by four men, at 110 shillings per fathom, worth 2½ tons per fathom. The winze below the 192, about 25 fms west of shaft, by four men, at £12 per fathom, worth 1½ tons per fathom. Stope in back of this level west by four men, at 110 shillings per fathom, worth 1 ton per fathom. The 120 west (trial level), by two men, at £8 per fathom; lode 1 ft wide, not to value. The 92 east on one of the south lodes in old mine is going forward in a vein 4 ft wide, composed of spar and spots of lead, driving by two men, at £7 per fathom. The stope in bottom of 82 east, Tankerville lode, by four men, at 90 shillings per fathom, worth 1½ tons per fathom.

Stope in bottom of 62, on south lode, by four men, at 110 shillings per fathom, worth $\frac{3}{4}$ ton per fathom. We have 13 pitches at work by 27 men, at tributes varying from 90 shillings to 110 shillings per ton of dressed ore. Our sampling on Thursday next will be No 1 parcel of 80 tons, and No 2 parcel of 20 tons of lead ore. The weather for the last three weeks has interfered very much with our dressing operations.

-- Arthur Waters, Jan 2: Watson's shaft continues to go down through a splendid-looking country rock, the same being laced and interlaced with small branches of carbonate of lime, all running parallel to the great lode, and underlying towards it. We are impressed with the belief that the network of branches referred to, dipping (as we see them to be) towards the great cavity and rich course of ore cut into at the 206 by the shaft, will greatly improve the value of Tankerville lode at the next level, towards which we are now sinking. Along the bottom of the 206, for several fms east of the cross-cut, the lode is worth 7 to 8 tons per fathom; but this is only looked upon like the outcrop of a new deposit. There is no change of note in the 206 west since my report of Monday last. The 206 east, however, has improved from 2 to about four tons per fathom, and a finer looking lode than is now in the end cannot be seen in Shropshire. We are carrying about 6 ft of lodestuff, having more lode well charged with ore standing on the hanging side of the drivage; lode here is very wet, and looks like improving forthwith. The stopes and other points as per valuation given in my previous reports this week. Our sampling today is for 85 tons No 1, and 15 tons No 2 quality.

Temple -- No 1 level is producing some good lead, of a very similar nature to that found on first entering upon the course of ore in No 2 level; the lode occupies the whole width of the level, and contains a quantity of spar and carbonate of lime. In Nos 2 and 3 no alteration can be reported, as the lode has been taken down in neither level during the week. The frost has prevented the progress of operations at surface very considerably, but the weather is now more favourable.

Tyn y Fron -- E. Jones, Dec 31: Having holed to some old workings, we have carefully dialled the mine, and hope soon to be able to report a good discovery east. As you requested, we are proving a fathom of ground in the north lode in different places, which are turning out very satisfactory. The first in the stope west of the cross-cut adit produced about $2\frac{1}{4}$ to $2\frac{1}{2}$ tons of almost pure blende, 15 to 20 cwts of blende mixed with lead, etc., and about one hundredweight of solid steel, and potters' lead ore. We have cut another fathom of ground in the back of the level east, 7 fms east of winze, producing about 15 cwts to 1 ton of rich blende, and about 6 cwts of lead ore. We have commenced another fathom further west, and we think will be equally as good as the others.

Vaughan -- Jan 1: The cross-cut south, at the deep level, is passing through a soft and unproductive part of the lode. In the 30, west of cross-cut, the lode is large and kindly, now yielding 1 $\frac{1}{2}$ tons of lead ore per fathom. In the winze sinking under the 30 east the part of the lode carried contains branches of lead ore, yielding from 18 cwts to one ton of lead ore per fathom. At surface we have again commenced drawing, and are preparing for cleaning up the ore stuff broken.

West Godolphin -- John Pope, Dec 31: Monthly Report: The 80 is being driven west on Wilson's lode, by six men, carrying a width of 3 ft 6 ins of the lode, worth for tin and copper £6 per fathom; driven 10 fms 3 ft. The 80 is being driven east, on Wilson's lode, by six men; the lode is 2 ft wide, worth for tin and copper £4 per fathom; driven four fms 5 ft 6 ins. We think there is more lode standing in the north side of this level. We have opened on this lode in the western level for about three fms long 10 ft wide; it contains branches, and occasionally good floors of tin, but altogether it is low price tinstuff. We have opened on this lode east for about 2 fms long 6 ft wide; the quality and nature of this stuff is just the same as in the western level. The 70 is being driven west on Wilson's lode, by six men; driven 48 fms 5 ft 9 inches; the lode in this level

is disordered by the flookan course, and we expect an improvement in this level as soon as we have got through the flookan, as there is a tolerable good branch of tin gone down in the 60, west of the flookan. The 70 is being driven east, on Wilson's lode, by two men; lode 1 ft 6 inch wide, poor; driven 33 fms 0 ft 9 inches. The 70 is being driven south, on the caunter lode, by four men, 1 ft wide, low price tinstuff; driven 19 fms 1 ft 9 inches. No 1 stope, in the bottom of the 70 west, on Wilson's lode, is being stoped by six men; the lode is 8 ft wide, worth £10 per fathom for tin. No 2 stope, in the bottom of this level, is being stoped by six men; the lode is 4 ft wide, worth for tin and copper £4 per fathom. No 3 stope, in the bottom of this level, is being stoped by six men; the lode is 5 ft wide, worth for tin and copper £6 per fathom. No 1 stope, in bottom of the 60 west, on Wilson's lode, is being stoped by six men; the lode is 5 ft wide, worth for tin and copper £5 per fathom. No 2 stope, in the bottom of this level, is being stoped by six men; the lode is 8 ft wide, worth for tin and copper £6 per fathom. No 3 stope, in the bottom of this level, is being stoped by six men; the lode is 6 ft wide, worth for tin and copper £6 per fathom. No 1 stope, in the bottom of this level east, is being stoped by six men; the lode is 7 ft wide, worth for tin and copper £7 per fathom. We have eight men stoping on tribute at 13-4d in the £, at a standard of £30 per ton for the tin. By reason of the severe frost and snow that we have had during this month, which prevented us from carting any tinstuff to stamps for one week, and the side of our stamps' leat breaking away, forcing us to turn off the water from the stamps for twenty-four hours; and, in addition to these hindrances, Christmas holidays having taken place, all our stamps have been idle for nine days during this month, which will make very much against our sale of tin this time. I shall sell it tomorrow, and calculate it will be about six tons. We have a large pile of tinstuff at surface that was drawn one our stamps was idle, which I think will produce about four tons of tin. We have about £35 worth of copper ores dressed ready for the market, and I calculate about £50 worth at surface undressed. I would here state that by reason of so much copper being mixed with our tinstuff it makes very much against the sale of our tin, it being very difficult for the smelters working it, so we have to sell at a less price in consequence. I have tried extra burning and washing of the tin, but it has had little or no effect on the copper. I would now suggest that we set all our stoping ground on tribute, also give some tribute as well as tutwork for driving the levels; by during this I think the greatest part of the copper will be picked out of the tinstuff as it is being broken, which will improve the quality of our tin, and enable us to get a better price for it, also increase our copper ore sales. I also think that we shall get quite as much tin in much less quantity of stuff, as the tributers will leave the refuse underground. By working thus it will lessen the cost very materially in drawing, carting, stamping, dressing, etc. During these very depressed times I would not recommend making an outlay for sinking the mine deeper (though I should very much like to see the shaft going down), but I would recommend driving more levels in the ground that is already sunk through, which is 110 fms from surface. We have a very fine piece of ground west of our present workings, on Wilson's lode, about 300 fms in length, unexplored. I would recommend driving the 50, 60, 70, and 80 west on this lode and the 80 east. Also drive the 70 south, on the caunter, to cut Pink lode. A little at the north of Wilson's lode is Hope lode, from which we raised a large amount of tin near our western boundary, at Paull's shaft, and the greatest part of the tin raised in West Great Work was raised from this lode; this lode is near our new shaft, which is very nearly holed to the 20. I would recommend holing that shaft and driving the 20, 30, and 40 west on the course of that lode. Between New shaft and Cobbler's shaft we raised a large quantity of tin from the caunter lode at the deep adit level, and I would recommend driving the 20 north to prove the ground deeper. In driving the deep adit level south of Vivian's shaft, on the caunter lode, we drove through a long run of ground, where the lode was about 2½ ft wide, composed chiefly of gossan and peach, and containing a little copper and tin, and I have no doubt if it is opened on a little deeper it will prove a valuable lode. I would also recommend driving the 20 fathom level south of Vivian's shaft to prove it 20 fms deeper; the ground not being very hard I would suggest that these levels be driven by two men in each pare, with the exception of the 80 west, where I would prefer four men. We can get the levels driven much cheaper by two men than we can by six in a pare. I believe all the places that I have named ought to be proved, and

if it is carried out I believe it will result in something good being cut at an early date. I would also state that by working the mine in the way that I have named our monthly cost will be lessened very considerably. Our machinery is all in good working order, and Wilson's pumping engine is going 4½ strokes per minute to keep the water.

West Roskear -- H. Stephens, W. Bennetts, Jan 2: The lode in the 36, west of engine-shaft, is 8 ft wide, mineralised throughout, but not sufficient to value. The lode in the 24, west of Stephens' shaft, contains good yellow copper ore and blende -- a very promising lode. We have just commenced sinking a winze below the 12 in advance of this end in a strong, large lode, but there is not much done here yet to show its value. The water contains in Stephens' shaft, and consequently prevents the sinking. We hope to finish securing the adit by the end of the week.

West Tankerville -- Arthur Waters, Dec 30: The 86, south of boundary shaft, is at present in a lode 5 to 6 ft wide, composed principally of spar, and worth ¾ ton lead ore per fathom. We expect an improvement here shortly, the end being now nearly up to the dip of the ore ground seen in the upper level. The lode in the stope in the back of the 86 south is 4 ft wide, worth ¾ ton lead ore per fathom. There are nine pitches at work, by 20 men, at an average tribute of £4-19-0d per ton, tributers paying all cost, including 20 shillings per ton for dressing. A thaw having taken place we have resumed dressing operations today, and weather permitting shall sample 25 tons lead ore on January 9.

West Tankerville -- A. Waters, Jan 2: The 86, south of shaft, shows signs of improvement, and I think we shall soon have a more productive lode than anything yet seen at this level. We are now just the distance from shaft to catch the dip of the ore ground seen in the 75. We have suspended the stope in the said 86, and intend setting the ground to the men at a tribute of about 90 shillings per ton. The tribute pitches this month have yielded ore in quantities to pay the men fair wages. Hope to be able to sample 25 tons of lead ore on the 9th instant.

West Wye Valley -- John Kitto, Dec 27: The 52 driving east from Brooke' shaft has very much improved in character since the date of my last monthly report, and at the time the pumping-wheel was stopped by the frost it was yielding some very nice ore, and presented every appearance of further improvement. The stopes between this and the 40 are yielding fairly well, but not altogether quite so rich as I expected they would have been, but they will undoubtedly further improve as they approach nearer to the 40. I am very anxious to be able to resume the sinking of Brooke's shaft below the 52, as I have not the least doubt that this level (52) is in a poor floor of ground, and that the next deeper level will prove equally as rich or richer than the 40. The dressing of ore has been suspended by the frost for the last fortnight, but I hope to be able to resume it in a day or two, as the weather is looking more favourable.

Wheal Crebor -- John Andrews, Dec 30: Setting Report: To drive the 120 east, by two men, at £6 per fathom; lode 2½ ft wide, composed of quartz, capel, mundic, and a little copper ore. No 1 stope in the back of the 120, by six men, at £3-5-0d per fathom; lode 4 ft wide, worth £8 per fathom. No 2 stope in the back of the level, by eight men, at 2-10-0d per fathom; lode 3 ft wide, worth £7 per fathom. To drive the 108 east, by four men, at £5 per fathom; lode 2 ft wide, composed principally of quartz and mundic, and yielding good stones of copper ore. To drive the 72 east, by two men, at £5 per fathom; lode 3 ft wide, but is poor. To drive the 48 east, by two men, at £6 per fathom; lode in the end is unproductive. To sink the new shaft, by nine men, at £17 per fathom; lode 1 ft wide, composed of quartz, capel, mundic, and yields occasional good stones of copper ore.

Wheal Grenville -- T. Hodge, Jan 1: We set the following bargains on Saturday last for two months: -- Another 6 ft more sinking at Goold's's shaft will be down the required depth for a 162, at which depth we shall start to drive both east and west on the flat lode; set to nine men, at

£40. The 150 east end is driving by six men, at £9 per fathom. The 150 north cross-cut is driving by two men, at £10 per fathom. Five stopes in the back of the 150 west are working by 46 men, at 6-6d per ton. One stope below the 140 east, by four men, at £4-10-0d per fathom. The 140 east end is driving by six men, at £9 per fathom. Three stopes in the back of the 140 east are working by 18 men, at £4-10-0d per fathom. The 140 west end is driving by two men, at £9 per fathom. The stope in the bottom of the said level is working by four men, at £5 per fathom. The 130 east end is driving by two men, at £8-10-0d per fathom. The stope in the back of the said level is working by four men, at 85 shillings per fathom. -- Western Shaft: The 140 east end is driving by two men, at £10 per fathom. The stope in the back of the 140 east is working by eight men, at 6-6d per ton. The 180 east end is driving by two men, at £10 per fathom. -- Tribute: Four pitches are working by nine men, at an average tribute of 13-1d in the pound, to be paid £35 per ton for black tin.

Wheel Peevor -- W. T. White, Joseph Pryor, Jan 1: Since we sent out our setting report on the 21st ult we are pleased to say that we can now report an improvement in two of our most important points in operation -- the lode in the main rise in the back of the 26, which is now worth £15 per fathom, and the lode in the 26, driving west of same, is now worth fully £16 per fathom. These being the highest points in operation we consider these improvements most important in connection with the mine, and being evident proof of the continuation of the productiveness of the lode not only in depth and length but also in height. The aggregate valuation of our tutwork bargains is now £245 per fathom. We shall this week also commence to drive a cross-cut north at the 80 to intersect a north (or middle) lode. Extensive workings have and are being made on this at the 60 and 70 by our tributers. The average of the stuff produced from this lode is between $\frac{3}{4}$ and 1 cwt of tin to the ton of stuff, and its average width about 2 ft. This we consider another very important feature. We are now very busily engaged in building the new balance-bob to be fixed at the 36, which will be got to work as quickly as possible, and when completed we shall again resume with all speed the sinking of our engine-shaft below the 80.

Wheal Russell -- John Bray, Jan 2: The lode in the 25 is about 4 ft wide, with a leading part on the north wall to ft wide, producing stones of ore and mundic -- very promising.

Wheal Uny -- W. Rich, M. Rogers, Dec 28: The lode in the back of the 60, west of incline-shaft, is worth £10 per fathom. The 130 end east is worth £10 per fathom. The 130 end, east of King's, is poor, and suspended. The 150 end west is worth £5 per fathom. The 150 end east is unproductive. The men are taken from this end and put to force on the rise in the 160 west, where the lode is worth £9 per fathom. The rise in the back of the 160 east, towards King's shaft, carries a little tin. The ground is rather easier in the 172 end west, and the lode looking promising to improve.

Wye Valley -- John Kitto, Dec 27: We have driven a level east from end of winze, between the 22 and 46, about 8 fathoms through a very good lode, worth on an average fully 2 tons of lead ore per fathom, and the end of the level is still as rich as ever. In driving the 46 towards this point we made very good progress up to the time the pumping-wheel was stopped by the frost, but since then nothing has been done in it, and the water is now up to the 22. A thaw has set in, however, and the wheel has been again started; and, if the frost keeps off, I hope to have the mine again clear of water in a very few days. All dressing operations have been entirely suspended, but if the thaw continues they will be resumed in the course of a day or two. Since my last report we have sold to Messrs Nevill, Druce, and Company 40 tons of lead ore, at £9-1-0d per ton, and if the weather is favourable we shall sell another parcel in January.

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Advert.

Mr William H. H. Watson having had some years' experience in Practical Engineering and Mining in Cornwall as well as two years' practice in the London Stock and Share Markets, begs to offer his advice and services to Shareholders and Intending Investors in Mines, and in the Purchase and Sale of Shares.

W. H. H. W. has Special Business in Tankerville, at 2 5/8; Arendal, 3¾; Monydd Gorddu, 2¼; Morfa Du, 17-6d; Wheal Crebor, 5-0d; Cakemore Preference 7½ per cent, at par; 100 Sentien Shares, &c.

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The directors of the London and Westminster Bank have resolved to declare a dividend of 7% for the past half-year, carrying about £60,000 to the rest or surplus fund, which will then amount to £974, 000. For the second half of 1877 the directors announced a similar distribution, and added £46, 650 to the rest.

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The Mining Market: Prices of Metals, Ores, Etc.

Metal Market - London, Jan 3, 1879

Iron

	£	s	d	£	s	d
Pig, GMB, f.o.b. Clyde	2	3	1			
Pig, Scotch, all No. 1	2	4	0	3	5	0
Bars, Welsh, f.o.b. Wales	4	17	6	5	0	0
Bars, Welsh, in London	5	7	6	5	12	6
Bars, Stafford, in London	6	10	0	7	0	0
Bars, in Tyne or Tees	5	5	0	5	10	0
Bars, Swedish, London	8	15	0	9	0	0
Rails, Welsh, at works	4	15	0			
Sheets, Staffs., in London	7	15	0	8	5	0
Plates, ship., in London	6	12	6			
Hoops, Staff.	6	15	0	7	10	0
Nail Rods, Staff., in London	5	15	0	6	10	0

Steel

English, spring	13	10	0	19	0	0
English, cast	30	0	0	40	0	0
Swedish, keg	14	0	0			
Swedish, fag. ham.	15	0	0			

Lead

English, pig, common	14	10	0			
English, pig, L.B.	14	15	0	15	0	0
English, pig, W.B.	15	10	0			
English sheet and bar	15	5	0			
English Pipe	15	15	0			
English Red	18	0	0	18	10	0
English White	24	0	0	26	0	0
English Patent Shot	18	10	0			
Spanish	14	5	0			

Nickel

Metal, per cwt.	18	0	0	20	0	0
Ore, 10 per cent per ton	24	0	0	26	0	0

Quicksilver

Flasks of 75lbs, ware	6	7	6			
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	£	s	d	£	s	d
Spelter						
Silesian	16	10	0	16	15	0
English, Swansea	17	0	0	17	10	0
Sheet Zinc	20	10	0			
Tin						
English, ingot, f.o.b.	65	0	0	66	0	0
English, bars	66	0	0	67	0	0
English, refined	68	0	0			
Australian	61	0	0			
Banca (nom)	64	0	0	65	0	0
Straits	61	0	0			
Copper						
Tough cake and ingot	63	0	0			
Best selected	64	0	0			
Sheets and sheathing	67	0	0			
Flat Bottoms	70	0	0	71	0	0
Wallaroo	67	10	0			
Burra, or P.C.C.	65	0	0			
Other brands	62	0	0	64	0	0
Chili bars, g.o.b.	57	10	0			
Phosphor Bronze						
Bearing metal	105	0	0			
Other alloys	110	0	0	125	0	0
Brass						
		s	d		s	d
Wire			7			7½
Tubes			7¼			7½
Sheet			8			8¼
Yel. Met. sheath and sheet			5⅝			5¾
Nails composition			8			8½
Tin-Plates* per box						
Charcoal, 1 st quality	1	1	6	1	2	0
Charcoal, 2 nd quality	1	0	0	1	1	0
Coke, 1 st quality		16	0		16	6
Coke, 2 nd quality		15	0		16	0
Black per ton	16	0	0	16	10	0
Canada, Staff. or Gla, at Liverpool	11	0	0	12	0	0
Black Taggers, 450 of 14 X 10	30	0	0			

* At the works, 1-0d to 1-6d per box less for ordinary; 10-0d per ton less for Canada; IX 6-0d per box more than IC quoted above, and add 6-0d for each X. Terne-plates 2-0d per box below tin-plates of similar brands.

Remarks -- This week has witnessed the end of one of the most unprofitable and disastrous years on record. A year when instead of profits being made losses have been the rule, and such persons who have been fortunate enough to escape without a loss have in many instances been living more upon their capital than upon the proceeds of their business, and they consequently find their balance at their bankers considerably reduced to what it was at the beginning of the year. This of course is a very unsatisfactory manner to enter upon the New Year, but the prices of metals are now so low, and the political horizon being much clearer, and the prospect of the money market improving, there can be but little doubt that in a very short time confidence will be restored, and a general resuscitation in trade ensue. Sellers, however, must not at first be too exacting in their demands, otherwise they will probably retard and perhaps destroy the progress of the market. At present there appears to be but little speculation in the trade, but owing to the diminished productions, and the curtailment of supplies, and the low value of metals, it seems to be a fairly favourable time for speculators and investors to come forward and purchase, for although no extravagant gain could be looked for on account of the many difficulties that have still to be overcome, yet there can be very little room for any further reduction in prices, and for reasons above stated hopes might be established, on a fairly firm basis, that the present year may prove to be a great deal more promising than its predecessor, and in wishing all the members of the trade a very happy New Year, we sincerely trust it may prove a most prosperous period, and that everyone who incurred losses during 1878 may this year be fully compensated for all their past troubles, anxieties, and misfortunes by having plenty of business, and meet with every success in all their undertakings.

Copper -- One of the best features with regard to this metal is the reduction in the aggregate stock, which, according to the statistics published on the 1st instant, was 52,260 tons, against 53,621 tons on December 1, 1878. Although these figures seem to be very large, they are in reality not of that importance as at first sight they might appear, for smelters and consumers generally, instead of keeping a large quantity in private stores, as previously, now only buy from hand to mouth, consequently the stock is now more concentrated and visible than in previous years, and holders must necessarily derive the immediate advantage of any improvement in business, for to meet any additional demand consumers would have to draw from public stocks. The reason that consumers now adopt a different plan to that which they pursued formerly is owing to the continuous fall in the value of this metal, but it has now reached such a low point as may interfere with the production, and many consider it to be quite at its minimum value. It, therefore, now becomes a question whether it would not be wise on the part of consumers to resort to their former plan of keeping stock, for cheap stock has generally been found to answer very well, and those who are able to effect contracts for forward delivery will probably profit by entering into such transactions.

Iron -- The year opens badly for the iron market, for there is no indication of any improvement in the demand, and stocks have accumulated to such an extent that there is now over 1,000,000 tons of pig-iron in Scotland and Middlesborough; and, as the demand for manufactured iron continues so very unsatisfactory, it seems absolutely necessary that to effect sales prices must be still further reduced, and to enable manufacturers to make the required alterations they must be enabled to purchase their pigs at cheaper prices than before. The depression in the trade is so palpable that in confirmation we need only refer to the fact that in Staffordshire out of 160 furnaces only 40 are in blast, and that there are more than 130 finished iron works standing altogether idle. The statistics of Scotch iron for last year are very unsatisfactory; and, though the production was under 80,000 tons, as compared with the previous year the stock increased about 79,000 tons, leaving a total of over 679,000 tons. The daily papers have lately been furnishing the public with articles on the distress prevailing in the iron producing districts; and although we sympathise deeply with those who are unable to obtain employment through so many works lying idle, still the distress has in too many instances been brought about chiefly by those who are now suffering most, for oftentimes have the employed positively refused to work at reduced

wages; consequently many of the works have had to close, and orders to be returned unexecuted.

The aggregate reduction of ironworkers' wages since 1874 amounts to about 57 1/2 percent, and although this appears to be a very great reduction, still it should be borne in mind that in the more prosperous times masters were paying their men absurdly high wages. The men, however, now do not appear to be over grateful for the liberal allowances made them in former years, but it rather seems to have dissatisfied them with their present rate of wages, and instead of quietly submitting to the reduction they threaten to strike, and thus leave their homes and families entirely destitute of the necessaries and comforts of life. We see that it is reported from Wolverhampton, by Messrs W. Millington and Company, that their firm have made a reduction of 10 shillings per ton on finished iron. They now quote £7 per ton for bars, £8-10-0d for plates, and £9 for best boiler-plates. This reduction in price will probably have some important bearing upon the quarterly meeting, which will be held next week.

Tin -- there is a very little alteration to be noted in the market value of at this metal. Prices have kept tolerably firm and steady at about £61 per ton spot for Australian and Straits. According to a few extracts from the Cornwall Chronicle, dated in Tasmania October 27 last, it states that the price then for tin ore was 8-6d per unit, which shows a falling off in value of 1-9d per unit since last June. Notwithstanding there were buyers for Mount Bischoff shares during the winter season at £20 there are now buyers only at £16 per share. The yield for October was 212 tons, against 250 tons in the previous month. It is stated that the Frome River Company does not answer, and that the Star of Hope Company has abandoned one of their claims, and suspended operations on the other; they were left £400 in debt. Since last summary the receipts are reported to have been at Launceston (from various companies) 154 tons, and 212 tons from Mount Bischoff, and those at Hobart Town (from various companies) 103 tons, making the total export 475 tons. From Launceston to Melbourne 243 tons tin, and 28 tons tin ore from Hobart Town to Sydney. The deliveries during the month of December from Holland and London were over 1200 tons, which is rather smaller than usual, owing to the Christmas holidays. The stock, however, is as near as possible the same as at the beginning of December. The large quantity is being transhipped just now from London to America.

Lead -- The market for this metal remains dull, the demand is very slight, and orders flow in so slowly that sellers are willing to make contracts as low as £14-10-0d per ton for common English pig. During the whole of last year the value of this metal continued to fall, but let us hope that now the price has so considerably decreased since the beginning of 1878 that the lowest point has been touched, and that with the beginning of the new year a more active business may be established, and a general resuscitation in the trade take place.

Spelter quiet, and unaltered.

Quicksilver is unchanged, at £6-7-6d, and fair sales have been made thereat.

Messrs Fry, James, and Company -- the characteristic heaviness of the year 1878 was maintained to its close, and, whatever the causes which led to such a condition, the fact of it's existence is patent to all -- Copper experienced very little fluctuation during the year, but fell gradually in value each month for the first ten months, making a total fall of about £9 per ton, since which it has remained steady. The gradually increasing stocks have been sufficient to account for declining prices, apart from the general conditions of trade, the year having closed with stocks in Europe of 37,800 tons against 26,500 tons at the close of the year 1877; this increased stock of over 11,000 tons is the result of diminished home consumption, and the fact that consumers

have almost entirely ceased to be holders of stock, the quantity exported showing, so far as the returns are made up, an excess over previous years. Of Australian copper there is a very noticeable diminution in supplies, the imports having been 8622 tons against 11,328 tons in the previous year. -- Iron has shown a very little variation, but such changes as have occurred have been in the direction of increased heaviness and lower values. -- Tin has proved an exception to the general rule, prices having fallen about £12 per ton from the opening rates of the year -- the greatest decline having taken place from June to October -- because suddenly, at the end of October an article of special interest, and very heavy buying led to a rapid advance of nearly £10 per ton, of which recovery, however, some £3 to £4 per ton has been lost in the last few weeks. -- Spelter has fluctuated but little, the closing price of the year showing a fall of about £2-10-0d per ton. -- Lead has experienced greater heaviness, and a very heavy fall in value, caused by increased imports and diminished exports. The fall is about £4-10-0d per ton in the year. -- Tin-Plates have had a year of great trial for manufacturers, prices having been unprecedentedly low, but by some reduction of make a shade better tone has been obtained. The fall in coke plates is about two shillings per box as compared with this time last year.

Messrs Pixley and Abell -- Gold: There being no demand for gold for export, all arrivals of the past week have been sent into the Bank, the amount so disposed of being £704,000. Since our last circular we have received £69,000 from the West Indies; £74,120 from India; £29,000 from Australia: total £172,120. For the greater part of the past year the demand for Germany, North of Europe, and Spain was so active that all arrivals were purchased for export, and considerable amounts were also taken from the Bank; during the last quarter of 1878, however, the orders from abroad to a great degree ceased, and some large sums in bars, United States and Russian coin, received from Paris have been sent into the Bank. The following statement of the imports and exports during the past five years may be of interest: -- for the year 1878, £20,497,810; 1875, £22,224,479; 1876, £23,244,470; 1877, £15,251,054; 1878, £20,000,000 -- Exports: For the year 1874, £13,667,868; 1875, £18,079,605; 1876, £16,219,570; 1877, £19,898,905; 1878, £15,000,000. The imports of gold from Australia and the United States for the same periods are also given: -- Australia: For the year 1874, £6,782,990; 1875, £6,780,510; 1876, £4,911,100; 1877, £6,256,300; 1878, £5,200,000. - United States: For the year 1874, £4,320,600; 1875, £8,148,825; 1876, £4,363,740; 1877, £2,059,000; 1878, £867,000. The estimated production of gold in the United States for 1878 is set down as £1,000,000.

Silver -- The difference between the highest and the lowest prices of bar silver during the past year has been rather greater than in 1878. The changes in value have been very numerous, the highest rate of 55½d having been touched in February last: the lowest of 49½d at the close of the year; the average price of 1878 being 52 9/16d per ounce. The demand for the East has fallen off very considerably, and nearly the whole of the exports to India were made in the first half of the year. The price of fine bars would, doubtless, have declined more during the past six months had it not been for a steady enquiry for the Continent, which has absorbed nearly the whole of the arrivals. The supplies have come principally from Germany and America, but the imports show a great falling off as compared with 1877, being £10,225,000 less. The exports have also declined, being £7,087,000 less for the same period. The decrease in the amount of silver produced in the Comstock Lode for 1878 is about \$17,000,000. The imports and exports of silver during the past five years have been: - Imports: 1874, £11,797,994; in 1875, £9,506,757; in 1876, £13,278,380; in 1877, £21,625,652; in 1878, £11,400,000 - Exports: In 1874, £12,385,438; in 1875, £8,650,122; in 1876, £13,596,970; in 1877, £18,887,337; in 1878, £11,800,000. The shipments of silver, &c, during the past year from San Francisco to China and Japan amount to £2,243,000, as against £3,383,000 for 1877. The estimated production of silver in the United States is set down at £27,000,000. The steamer leaving today takes no silver to the East. The exchanges from India are reported lower, and today's price of 49½d is 1½ per cent above the Indian level. We have received during the past week about £49,000, nearly all of which has come from America.

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Lead Markets.

We are glad to hear that the price of lead is improving, and some slight advance already given by the English smelters for lead ores. By the last advices from the American lead markets we are informed that a further considerable advance has taken place in the price of lead, with an upward tendency. This is good news for shareholders in lead mines.

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Page 9 Col. 1

Gold in Venezuela.

Messrs. Somes and Co. write from 55, Old Broad Street: - "Having noticed in the Times of the 30th ult. an extract from a Trinidad newspaper with reference to the fresh discoveries of gold at La Pastora, in Venezuela, we think you may be interested to know that, in confirmation of this news, we have in our possession a nugget weighing 14 ozs 14 dwts., which formed part of a remittance to us last month of 250 ozs. of gold from that district."

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Bell Vean.

At this mine, which adjoins the once celebrated Tresavean, near Redruth, operations are vigorously urged on it intersect the rich Gobbin's Lode of the latter mine, which the proprietors are sanguine will materially enhance the value of the Bell Vean. This district has proved second to none in Cornwall in production of minerals, and it is pleasing to notice one of its mines - South Frances - making a profit of £1700 during the past four months with tin at such an exceeding low price. Shareholders may take heart from the assurances of those authorities identified with the tin trade that it gives promise of an early and decided improvement. The Bell Vean contains many known productive lodes of both tin and copper, which can be wrought by means of adit levels already driven.

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Chemical Composition and Physical Properties of Steel.

An interesting paper on this subject was read before the American Institute of Mining Engineers, by Dr. C.B. Dudley, the chemist of the Pennsylvania Railway Company, in which he remarks that from our present knowledge it may be stated that phosphorus and (in a lesser degree) silicon harden steel, make it brittle, and at the same time make it liable to fracture from percussion or blows. Carbon (and in a less degree) manganese render steel hard and brittle, but at the same time, up to a certain extent, they add to the strength but diminish its ductility or percentage of elongation, carbon doing this almost directly in proportion to its percentage, while manganese does not diminish it as rapidly as carbon. Now, a steel rail must be able to resist strain as well as abrasion or wear. It must be hard enough to resist crushing and not be so brittle as to break under the strains or blows to which it is submitted. Therefore there is a limit beyond which any addition to the amount of these hardeners - phosphorus, silicon, carbon, and manganese - should not go. Now, it is well known that their hardening effect is by no means equal, and that, therefore, comparisons based upon a simple sum of these hardening constituents is not fair. Dr. Dudley proposes the following relations between them. He assumes 0.01 per cent of phosphorus as the unit of measurement, and has called this 0.01 per cent a phosphorus unit. He has likewise assumed that 0.02 per cent of silicon, 0.03 per cent of carbon, and 0.05 per cent of manganese have each the same influence in rendering a steel hard and brittle as 0.01 per cent of phosphorus. In any analysis of steel, therefore, the phosphorus units are found by adding together the phosphorus, one-half the silicon, one-third the carbon, and one-fifth the manganese, expressed in hundredths per cent.

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Advert: Capper Pass and Son, Bristol

Purchasers of Lead Ashes

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Advert: Geo. G. Blackwell, 5 Chapel Street, Liverpool.

Purchaser of Manganese, Arsenic, Fluor-Spar, Wolfram, Blende, Calamine, Carbonate and Sulphate of Barytes, Antimony Ore, Chrome Ore, Magnesite, Emery Stone, Pumice Stone, Ochres and Umbers, China Clay, Lead Ore for Potters Talc, Phosphate of Lime, &c.

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Advert: R.B. Harper, Mining Engineer,

Will Superintend or Examine and Report on Mines on the Pacific Coast. Having had 14 years' experience in Gold and Silver Mining in Mexico, California, and Nevada. Government Mining Engineer for the Province of British Columbia.

Any communications may be addressed Room 49, Nevada Block, San Francisco, California.

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Advert: Henry Wiggin and Co. (Late Evans and Askin).

Nickel and Cobalt Refiners, Birmingham.

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Advert: Enoch and Richard Parry.

Mining Agents and Surveyors, Minsterley, Shropshire.

Mines Inspected and Reported on at Home and Abroad.

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Advert: Mr. J.S. Merry,

Assayer and Analytical Chemist, Swansea.

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Lead Ores.

<u>Date</u>	<u>Mines</u>	<u>Tons</u>	<u>Price per Ton</u>	<u>Purchasers</u>
Dec 23	Central Foxdale	60	£12-11-0d	Panther Lead Company Walker, Parker, and Co.
Dec 28	Foxdale	120	£13-10-6d	

Black Tin.

<u>Date</u>	<u>Mines</u>	<u>Tons-c-q-lb</u>	<u>Price for Ton</u>	<u>Amount</u>	<u>Purchasers</u>
Dec 26	Wheal Coates	7-0-1-4	£35-12-6	£249-17-8d	Daubez

Peruvian Tin Ore sold in Liverpool.

<u>Date</u>	<u>Tons</u>	<u>Price per Ton</u>	<u>Purchasers</u>
Jan. 1	3	£32-10-0d	T. Bolitho and Sons
Jan. 1	4¼	£32-10-0d	R.R. Michell and Co.

Copper Ores - Sampled Dec. 18, and sold at Swansea, Dec. 31

<u>Mines</u>	<u>Tons</u>	<u>Produce</u>	<u>Price</u>
Caveira	84	10⅝	£5-9-6
Caveira	84	10⅝	£5-9-0
Caveira	83	10⅝	£5-9-6
Caveira	91	9⅞	£4-19-6
Caveira	91	9⅞	£4-19-6
Caveira	90	9⅞	£5-1-6
Union	101	9⅞	£4-17-6
Union	114	4½	£2-4-0
Union	91	4⅜	£2-3-0
Union	90	4½	£2-3-6
Algerian	90	5⅝	£2-14-0
Algerian	90	5⅝	£2-14-6
Algerian	89	5⅝	£2-14-6
Algerian	79	3⅞	£1-15-0
Algerian	2	13⅝	£7-0-6
Algerian	2	6¾	£3-1-0
Algerian	1	44¼	£22-10-0
Emily Ore	11	9¾	£5-5-6

Total Produce

Caveira	523	£2734-6-6
Union Ore	396	£1134-11-6
Algerian	353	£911-13-6
Emily Ore	11	£58-0-6

Companies by Whom the Ores were Purchased

<u>Names</u>	<u>Tons</u>	<u>Amount</u>
Copper Miners' Company	43½	£241-5-3
Nevill, Druce, and Company	2	£6-2-0
Vivian and Sons	1	£22-10-0

Williams, Foster, and Co.	403½	£2067-15-3
Mason and Elkington	431½	£1326-3-9
Sweetland and Company	205	£446-9-0
Landore Copper Company	196½	£728-6-9
Total	1283	£4838-12-0

No Sale on Jan. 14

Totals and Averages

	<u>21cwts.</u>	<u>Produce</u>	<u>Price</u>	<u>Per Unit</u>	<u>Standard</u>
Whole Sale	1283	7½	£3-15-5	10-0d	£76-12-2

Copper Ores, Sampled Dec. 18, and sold at Tabb's Hotel, Redruth, Jan. 2

<u>Mines</u>	<u>Tons</u>	<u>Price</u>
Mellaneer	84	£2-10-6
Mellaneer	74	£2-1-6
Mellaneer	72	£2-10-6
Mellaneer	68	£3-14-6
Mellaneer	66	£3-4-6
Mellaneer	62	£3-0-6
Mellaneer	59	£3-2-6
Mellaneer	54	£1-14-0
Mellaneer	40	£8-5-6
East Pool	72	£2-1-6
East Pool	68	£1-17-0
East Pool	54	£1-14-6
East Pool	50	£1-7-0
West Tolgus	63	£5-11-0
West Tolgus	61	£5-17-0
West Tolgus	54	£3-18-6
West Tolgus	44	£4-8-6
West Seton	39	£2-19-6
West Seton	36	£2-17-6
West Seton	35	£2-19-6
South Tolcarne	31	£3-6-6
West Roskear	21	£1-9-0
Wheal Agar	12	£4-18-0

Total Produce

Mellaneer	589	£1806-6-6
East Pool	244	£435-17-0
West Tolgus	222	£1113-3-0
West Seton	110	£323-13-0
South Tolcarne	31	£103-1-6
West Roskear	21	£30-9-0
Wheal Agar	12	£58-16-0
Average Standard		£83-14-0
Average Produce		7⅛
Average Price per Ton		£3-3-6
Quantity of Ore		1219 tons
Quantity of Fine Copper		86 tons 6 cwts
Amount of Money		£3873-6-0

Last Sale.

Average Standard	£88-17-0
Average Produce	6⅜
Standard of Corresponding Sale last Month	£86-4-0
Produce	7½

Companies by Whom the Ores were Purchased

<u>Names</u>	<u>Tons</u>	<u>Amount</u>
Vivian and Sons	212½	£627-3-3
Grenfell and Sons	260	£1261-14-6
Nevill, Druce, and Co.	77	£113-8-0
Williams, Foster, and Co.	266½	£584-14-9
Mason and Elkington	169	£441-8-6
Charles Lambert and Co.	234	£844-17-0
<u>Total</u>	1219	£3873-6-0

No Sale on Thursday next, Jan. 8, or Thursday week, Jan. 16

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Report from Cornwall.

Jan. 2. - It is not a pleasant duty to write the mining review of such a year as 1878. It is the darkest and the most oppressive which the present generation, at least, have had to record. It has defeated all hopes, defied all forecasts, and yet though staggering under the burden, and though driven out of many once prosperous districts, metalliferous mining here in the West has not only survived the shock but has even given promise of future prosperity - the sole bright spot in the aspect of the 12 months. To two main causes are the continued existence of mining and the revived hopes of the future due. Stern necessity has compelled an improvement in operation and an economy in production, which have led to results far beyond the most sanguine expectations. And withal Nature has been kind. So far as we can see the mineral wealth of Cornwall is practically inexhaustible. The deeper our mines are sunk the richer in tin do they become. The whole question, therefore, resolves itself as far as we are concerned into one of return for produce. Given a fair price, Cornwall can supply the world with tin as well now as it did ten centuries since.

But this is not so with its great modern rivals. If 1878 has done nothing else, it has proved the old country to possess the superior staying power on which we have in these columns been accustomed to reckon. We were told not so very long since that the stream tin deposits of Australia and Tasmania were inexhaustible. We have struggled on to see them, so far as profitable working is concerned, practically exhausted. When it came to a fair fight, mining against mining, we had no doubt that Cornwall would hold her own; but then we were told of "mountains of tin", which made tin mining in the Antipodes neither more nor less than a matter of quarrying and simple excavation. Within the last few weeks of the year that bubble has been burst. We have now every reason to believe that we have seen the worst of this foreign competition, Given, then, only a fair revival of general trade a fairly prosperous future seems absolutely assured.

The course of the tin standards have been depressing beyond precedent. The year was not a fortnight old before a renewed drop brought the standards down to 61-0d and 62-0d.; figures within 1-0d of the lowest point touched in 1877. At these official rates the standards practically remained until March, when there was first an advance, followed only too speedily by a couple of falls, and then by another in the first week of April. These brought the standards down to the lowest point then upon record; but there was still a lower deep. At the end of April there was another fall, and though June saw a little improvement the tendency was still downwards, so that when September opened the lowest point of 1877 had been distanced by 7-0d per cwt., the standards being 53-0d and 54-0d only, but still the price went down and down, fall after fall annihilating hope everywhere but in the most sanguine breasts, and among those best informed on the condition of foreign competition. And then, happily, the turn came. In the early part of October English ingots were selling in the London markets at £59 a ton, and in the middle of the month the standards stood at 51-0d and 52-0d. Now came the turn in the tide so long awaited. Rise rapidly followed rise. By the end of October the standards had been put up to 55-0d and 56-0d. November raised them first to 57-0d and 58-0d, and then to 59-0d and 60-0d, and though on December 7 there was again a reduction of 3-0d bringing the standards back to 56-0d and 57-0d, or about 5-0d lower than the point at which they stood when the year commenced, we have better reason to hope from an improvement with the New Year than we have long had. It really does seem at last as if the lowest point had been touched, and that the

deep mining of Cornwall, aided by the latest appliances of scientific skill, has proved more than a match for its competitor. That tin will ever touch the extravagant prices of a few years since again we have neither expectation nor wish. A moderately remunerative price, encouraging and repaying legitimate enterprise, but not stimulating random speculation, is what we desire and anticipate.

The course of the copper standard has been marked by depression likewise, though the fluctuations have not been quite so decided, and the ups and downs were nearly and were closely balanced by each other. The last sale of 1877 gave a standard of £96-8-0d, but with the new year reductions set in; and though on Feb. 21 the standard stood at £97-8-0d - the highest point touched for the year - May 2 saw it down to £83-2-0d, which was the lowest. Subsequently there was a partial recovery, but fluctuations still ruled, and towards the end of the year there were other falls, so that at the last Ticketing, Dec. 19, the standard was but £88-17-0d, against the £96-8-0d of the corresponding sale of the previous year.

As was to have been anticipated, there has been a serious falling off in the amount of copper returned, and this although a new mine - Mellanear - has entered the Dividend List. In 1875 the copper ores sold at the Cornish Ticketing amounted to 57,985 tons, realising £25,418 (?). In 1876 the total had fallen to 53,791 tons, realising £213,336. But 1878 could muster no more than 47,591 tons, which brought in but £168,257 - a falling of in one twelve months of 6,200 tons of ore, and £45,079. The copper mining of the West has, therefore, been perilously near extinction, and has now dwindled to a miserable shadow of what it was barely a generation ago.

Lead mining, too, has sunk to a very low ebb. Not many years since the lead mines of Cornwall and Devon was largely productive, not merely in lead, but in the silver which the galena contained for the most part in exceptional quantity. Now, save in the distant district of Combmartin, where a promising speculation is still pursued, lead mining in Devon is extinct; and while it yet lingers in Cornwall, around Liskeard and Truro, the prices are too low to admit of dividends. Herodsfoot, which is paying its way, is to be sold as a going concern; and West Chiverton, in spite of its riches, has found the struggle against low prices too much for the continuation of profits. But surely here also a good time must be coming.

The china-clay trade also is in a very miserable state. Stocks are very large, and the demand continues small. This industry has been untowardly affected by two distinct sets of causes. In the first place it has of necessity shared in the effects of the general depression of trade, in the second it has suffered from over production, tempted by the large profits which they imagined were to be made. Many inexperienced folk rushed into the business, opened pits wherever there appeared to be a chance of favourable development, and then in the struggle for existence threw such quantities of clay upon the market that all hopes of profits disappeared. Fortunately for the future of this industry these very speculative adventurers have had to give up the contest.

Of the more general products there is but the same tale to tell. Arsenic has been a drug; blende has been unsaleable, save at very low figures, iron mining is suspended, chemical works for the extraction of metals from old burrows by the wet process have been talked of, but nothing has been done; pottery and brickworks have had but a moderate trade, and their proposed extension has been of necessity postponed; granite and slate quarries have shared a similar fate, though the De Lank have now got a large job on hand in the province of the stone for the new Eddystone light-house.

That under such terrible untoward conditions as those to which we have referred there should be any dividend mines left in the country is, perhaps, the most wonderful fact in the long

history of mining in the West of England. Ten years ago nothing less than absolute annihilation of all our mining industry would have been predicted as the result of the terrible ordeal through which we have passed. Five years since the idea that under such conditions mines could do more than barely exist much less pay dividends, would been scouted as utterly beyond belief. And yet so great are the mineral riches developed in our deepest mines, so enormous have been the strides made in economy of working through the introduction of new appliances and in other ways, that tin is raised £20 per ton cheaper at the least on the average than it was when the prices were at their highest, and that handsome dividends are now possible on returns that aforetime would have failed to meet cost. The most singular phenomenon of the year was the entrance of Wheal Peevor into the Dividend List when the standards were at their lowest. Here tin is now raised, including dues, at a total cost of only £26 per ton, and the mine is developing so well that the next dividend is anticipated to be 7-6d.

There were absolutely 13 dividend mines in 1878 - the same number as in 1876, only two less than in 1877, and but four behind 1874. There is, however, a falling off in the dividends so far as their amount is concerned compared with either of these years. In the review of last year we were unable to state the exact total divided on account of the uncertainty attaching to the declarations in Holmbush and Wheal Newton, the estimated dividends in which were, as we anticipated, largely in excess of the actual percentage on the real capital. Thus the true gross total of the dividends declared in 1877 was £49,194, against £40,871 in the previous year: 1878 is considerably behind 1877, but still it compares not unsatisfactorily with 1876. The figures of publicly announced dividends are:-

Mine	Shares	Per Share	Amount
Dolcoath	4,296	£1-0-0d	£4,296
East Pool	6,400	£0-9-6d	£3,040
Glasgow Caradon	40,000	£0-1-0d	£896
North Busy	1,034	£0-5-0d	£256
Mellanear	10,000	£0-5-0d	£2,500
South Caradon	512	£3-0-0d	£1,536
South Condurrow	6,123	£1-3-0d	£7,041
South Frances	4,500	£0-12-0d	£2,700
West Chiverton	3,000	£0-10-0d	£1,500
West Tolgus	512	£6-15-0d	£3,456
West Seton	600	£0-15-0d	£450
Wheal Eliza	1,024	£4-0-0d	£4,096
Wheal Peevor	3,000	£0-15-0d	£2,250
Total			£34,017

Of these mines seven have paid dividends continuously from 1876 - Dolcoath, East Pool, Glasgow Caradon, South Caradon, South Condurrow, West Tolgus and Wheal Eliza. North Busy and West Chiverton paid dividends in 1877. Of the other four West Seton and South Frances re-entered the Dividend List in the past year; and Mellanear and Peevor appeared therein for the first time. At present West Seton and West Chiverton have again suspended dividends. In comparing the list above given with the dividend mines in 1877 we miss Devon Great Consols, Holmbush, Pedn-an-Drea, Tincroft, Wheal Prussia, and Wheal Newton. At the present moment, therefore, Devon does not contain a single dividend mine, and Cornwall but a dozen. A moderate improvement only in the standard would, however, at once treble that number.

The calls for the year have been unusually heavy. The materials are not before us to allow of their being more than approximately estimated, but in round numbers we may say that

calls have been made in nearly 40 mines, reaching to an aggregate total of something like £133,000. This is a very large sum, but it must be borne in mind that it is very far in excess of the actual loss on the operations of the year. Some of the calls were made to cover deficiencies which had been accumulating for years. Against this there are large quantities of tin in stock to be set, and when we take into account also, in addition to the dividends declared, the actual profits made which were undivided, it is probable that the real current deficiency in the mining of Cornwall and Devon for 1878 is not at all in excess of that of the previous year, and bears but a small relative proportion to the aggregate total as stated. In a few mines the calls have been so heavy that they alone will account for much of the seeming excess. The £20 call in Carn Brea figures for £20,000, and the £2-10-0d call in Tincroft for £15,000. The £62-10-0d call in Wheal Owles is bigger in seeming than in actual fact, for as there are only 80 shares it totals up but to £4,960. Another £25 was, however, called up in this mine, which made the aggregate £7,000. Against this we have, of course, to set the tin in stock. Other heavy aggregate calls of the year were in Great Wheal Eleanor, 17-6d; Medlyn Moor, 12-6d; East Wheal Lovell, £1-5-0d; North Treskerby, £4; North Levant, 14-0d; East Caivert, 11-6d; South Roskear, £1-15-0d; South Wheal Crofty, £1-10-0d; West Basset, 6-6d; Wheal Agar, 10-0d; West Roskear, £3-10-0d; Wheal Basset, £9; Wheal Grenville, 17-6d; and Wheal Uny, £1-3-0d. It would be unfair to some of these mines to compute the total called up on the nominal number of the shares, because there are comparatively few in which relinquishments and the like have not reduced the number of shares available for calls, often seriously, but it is certain that in all these cases the adventurers have during the year been called on to contribute some thousands of pounds, ranging up to £9,000 or £10,000 or more, and averaging fully half that amount. The other calling mines, in which the demands have been less heavy, include Blue Hills, Botallack, East Caradon, New Cook's Kitchen, Killifreth, Prince of Wales, Phoenix, West Phoenix, West Frances, Tolcarne, Gawton, West Godolphin, West Mary Ann, Wheal Comfort, and Wheal Crebor. The list is not complete, but enough has been said to indicate what a heavy drag 1878 has been upon the adventurers, and to lead us probably to wonder that, with the conditions what they were, the results were not even far more serious.

It is a noteworthy fact, too, that the stoppages have been very few. South Crofty it was once thought would have been wholly closed, but a rise in the standard came quickly enough to save the mine from utter extinction, though the operations were very seriously curtailed. At the Phoenix Mines and elsewhere also operations have been reduced. There was a talk of offering Wheal Owles for sale as a going concern, but it was saved; and though this fate has overtaken Herodsfoot there is little reason to doubt that that mine will be carried on by a new company. Such names as Cargoll, Belstone, Ambrose Lake, New Fowey Consols, and a few others of minor importance, have disappeared from the lists; but the only mine of real importance that has absolutely stopped is Ding Dong, which succumbed very early in the year. Of course, the abandonments of previous years had already so far reduced the area of possible stoppages that the proportion was of necessity smaller, if there were not to be absolute annihilation.

One very encouraging sign of the times is the extent to which the adoption of boring apparatus has progressed in the county during the year. A very short time since we had only the Barrow at work at Dolcoath, and the Beaumont at Carn Brea, and the work of these was considered rather in an experimental light than otherwise. Now, however, the value of boring mechanism is not only manifested, but acknowledged on all hands. It has been proved that machine boring is not only three or four times as speedy as hand-labour, but much cheaper. Moreover, the problem of the form of machine best adapted to our special wants is in a fair way of being solved, for instead of a couple of machines only being at work in Cornwall, there either are at present or shortly will be something like a dozen. The question now is, not whether machine boring is practical or advantageous, but which machine is most so; and thus we have in virtual, if not in actual, competition not merely the Beaumont and Barrow, but the McKean, the Eclipse, the Champion, the Ingersoll, and other powerful borers, with the Jordan and the Fritz

worked by hand. Here, therefore, there has been notably progress made, and machinery has come to the aid of the miner in a very remarkable and satisfactory fashion. In other directions the introduction and improvement of machinery has not made quite so much progress, but a good deal of attention is now being given to stamping gear, and it is certain that ere long, the efforts made must result in great economy in this department also.

One very marked and regrettable result of the depression in the tin market was the stoppage of the Bissoe Smelting Works in July. It was said at the time that they might be resumed, but that, if so, it would be in Wales. Cornwall is not so rich in industries that it can afford to lose a single fragment of any. As a necessary result, too, of the bad times, the lead smelting works at Par were thrown idle, though it is stated that they will be continued under new auspices. With the iron mining of the county for the nonce wholly annihilated, we have seen nothing of the blast-furnaces which it was proposed to establish at that handy port.

There appears to be a hopeful future in store for the West of England Compressed Peat Company, which has commenced operations on Dartmoor, and for the purposes of which a branch railway is being made from the peat beds to the South-Western Railway, near Bridestowe.

One of the most notable points in the general record of the year was the strike at Devon Great Consols against the re-introduction of the five-weeks month, which, after much controversy and some little display of feeling, was finally settled in an amicable fashion. Apart from this, the West has been free from any appearance of labour difficulty. While the strike lasted a relief fund was raised and administered. There has been a steady stream of emigration almost throughout the year, but notwithstanding this, and, indeed, partly because of the poor circumstances in which many families were left at home, a great deal of distress has recently shown itself, and it has been found needful to revive the County Distress Committee.

The mining and allied industries of the two counties were fairly represented in the Paris Exhibition. Chief honours fell to Messrs. Candy, of Chudleigh Road, who had a silver medal for their admirable pottery manufactures from waste clay, for their utilisation of which they received the Mining Journal prize at the Polytechnic. Other exhibitors were - the Watcombe and Torquay Terracotta Companies; Messrs. Emmens and Co. (Limited) ores, &c., and plans of Wheal Newton and Holmbush, with a geological model of the district; Messrs. Thriscutt and Bale, St. Austell, china-clay; the Tamar and Kit Hill Granite Company, samples of granite; and Prebendary Kinsman, roofing tiles from Tintagel.

The obituary of the year has been somewhat heavy. We have lost that fine old mining veteran Captain Josiah Vivian, the very Nestor of Mining Enterprise. At a much earlier age there passed away Capt. James Richards, under whom Devon Great Consols realised its fabulous stores of wealth. Another well-known man was Mr. Harvey Williams, of Alma. Mr. Charles Fox, too, the brother of Mr. R.W. Fox, himself a helper of scientific work in all directions, is among our losses. And suddenly, in the very prime of life, there died Sir Frederick Martin Williams, M.P., who was associated with every form of special enterprise the county knows, and in every relation of life had won the esteem and respect of his fellows.

The county scientific societies have been doing good work during the year. The Polytechnic has held the most successful exhibition, pecuniarily, on record, and one of the most useful in a practical sense likewise. The Mining Institute has also had an important and successful exhibition, and at its ordinary meetings has discussed several most important questions, amongst them those of pumping and boring machinery, and dressing apparatus. The Miners' Association has taken a somewhat new departure in the arrangements between the central body and the associated classes which is likely to extend its usefulness. The work done by its pupils has been highly satisfactory. The Royal Cornwall Geological Society, under the presidency of Professor

Warrington Smyth, has steadily pursued its career. It has the finest public collection of minerals west of London, and the finest collection of Devonian fossils in the world. At the last meeting Mr. J.H. Collins, F.G.S., read a paper of the most important character of the stratigraphy of the western part of the county. And here also, seeing that it owes more to his indefatigable exertions than to any other cause, and that it is thus and in other ways closely connected with the county, we may mention the success achieved by the Mineralogical Society of Great Britain and Ireland. It is very satisfactory to find, though the ways and means are not in all respects adequate to the needs, that scientific work is thus keeping fairly abreast of and guiding practical progress.

So far as we are enabled to judge the accidents of the year may be regarded as about an average. There have been many minor casualties, sometimes following each other as closely as if they were epidemic, but serious ones have fortunately been few. The worst was an explosion of dynamite in September at Carn Brea, by which two men were killed, and others seriously injured. Dr. Foster, the Inspector of Mines, has been chiefly interested, so far as the necessity of appealing to the magistrates was concerned, with the fencing of shafts, 64 of which were found open on one sett, and with the inadequate ventilation of clay-pits in Devon.

Dr. Foster has always carried out his onerous duties with a tact and firmness that cannot be praised too highly. An ill-informed or inconsiderate man in his position might have so administered his office as to make the burden on mining almost too grievous to be borne. He has watched the Act not only well, but judiciously and shrewdly. This week he has given notice to all the mine managers in his district of the requirements of the recent educational legislation. Under the Education Act of 1876 no boy can be employed underground between the ages of 12 and 14, who either does not attend school, has completed the prescribed number of attendances, or has obtained a certificate of proficiency, save and except those boys who are aged 11 on January 1, 1877. The manner in which children can be employed at surface does not, however, come within his purview, but is regulated by the Factory and Workshop Act of last year, which came into operation yesterday, and which is enforced by the Inspectors of Factories. Dr. Foster has also given notice of the need for all mine managers at once to fill up and forward to him the annual return required under the Act not later than February 1.

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Coal Mining in 1878.

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Production and Consumption of Tin for Europe.

		1878	1877	1876
Production in Cornwall and Devon	Tons	9485	9385	8500
Sales of Banca in Holland	Tons	3960	4224	4381
Imports of Billiton in Holland	Tons	3417	3053	3305
Imports of Straits in London	Tons	3375	3014	5767
Imports of Australian in London	Tons	9674	8558	7178
Imports of Bolivian in Liverpool	Tons	250	290	380
Total Supply for Europe	Tons	30161	28524	29511
Total Consumption - Europe	Tons	28779	27426	26897
Shipments from Straits - Europe	Tons	4262	2882	6398
America	Tons	3930	4282	2900
Shipments from Australia - Europe	Tons	8593	8932	7062
- America	Tons	388	640	---
Average Price of Straits in London		£61-10-0d	£69-0-0d	£74-10-0d

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Husband's Pneumatic Stamps.

The following letter addressed to Mr. Husband by Mr. Smeddle, who was formerly manager of the Chontales Company's mines in Central America, and is now working some mines on his own account in the same district, will be interesting to all who are connected with mining. The head weighs with everything attached 820lbs, and the result, it will be seen, is very good, giving at the rate of nearly 29 tons of stuff through fine grates in 24 hours for one head: -

Smeddle and Co.'s Mines, Libertad, Chontales, Nicaragua, Nov. 5

Dear Sir,

Having a few minutes to spare before the departure of the mail, I feel sure you will be interested to hear how we are getting on with your large sized pneumatic stamp. After numerous delays in getting the machinery up the San Juan river, we have at last got fairly to work, and I am pleased to say the stamp gives the utmost satisfaction. Although we use fine grates there is not the least sign of choking, no cams or tappets coming loose, as with the old stamps, and, in fact, requiring no stoppages whatever except for occasional oiling. I cannot obtain sufficient quartz to keep the mill fully supplied, only working 10 hours per day, during which time we reduce 12 tons of ore, which I consider most satisfactory.

W. Smeddle

REPORT FROM DERBYSHIRE AND YORKSHIRE.

Jan. 9. - Work has now got into the old groove again after the holidays, but, with the exception of the colliers, workmen are no better off than they were before the Christmas holidays set in. The Iron Trade in all branches is still quiet, without signs indicating any improvement. Makers of pig have found some difficulty in effecting sales, even at existing low rates, owing to the competition of the Cleveland and other makers in all markets where the consumption is at all large. Finished iron is also in but dull request, there being a very moderate demand for mill or foundry material; so that the year has opened out with a less number of men at work than there was in the early part of 1878. The works at Dronfield have been kept well going during the past year, but now some alterations are going on with respect to increasing the production of Bessemer rails that will keep the men idle for a time. So keen, indeed, is the competition on the part of the Bessemer railmakers, and so low have the prices come down, that it requires every effort, and the most economical appliances, to ensure even a very small profit. For some time past statements have appeared in the papers to the effect that a large number of colliers were about to strike, in consequence of having received notice of a reduction of wages to the extent of 12½ per cent. It turns out, however, that so far only the men at two or three collieries have received notice, and those belong to what is known as the Coalowners Association, a body started a few years ago, on the limited liability principle, for the purpose of supporting the members against attacks from the men on the wages and other questions. In Derbyshire, however, the Coal Trade has been rather active of late, with a brisk demand for the London market, prices in which during the last week have advanced fully 1-0d. per ton, so that consumers have now to pay more than they did during nearly the whole of last year. Some delay, however, has taken place during the week in getting the empty wagons returned, a by no means uncommon complaint under ordinary circumstances, but now to some extent excusable, owing to the strike of the goods guards and others.

Several of the Sheffield trades have opened out better than was expected, two or three of the leading firms engaged in the finest qualities of cutlery being able to keep their hands very fairly going; but in inferior pocket and other knives there has been no change for the better. Some of the mills have been running tolerably well, while the Bessemer establishments are working full time; but it is evident that there is not that activity there was during the greater part of last year, and it is said that orders are fast being worked up. In cast-steel there has not been any material change so far, but there is every prospect that this important department will be much better than it now is, seeing that steel is now being adopted for many purposes for which iron alone was formerly used, the only thing required being to have steel uniform in quality, and at a moderate price.

Barnsley, as the head centre of the Miners' Association, during the last week has become a place of more than ordinary importance, seeing that we are told that from 80,000 to 100,000 men are likely to come out on strike. From personal enquiries made on the spot, we find that the number of men who have received notice of reduction of wages in South Yorkshire and North Derbyshire does not exceed 9,000. At a meeting of the delegates of the various lodges connected with the Association of Miners, held on Monday at Barnsley, it was agreed that the proposals of the masters should be most strenuously opposed. The notices given are principally those colliery owners who belong to the Colliery Proprietors Association, and who are indemnified for any losses occasioned by strikes. There is, however, a very strong feeling that should there be a strike it will be confined within a very limited area, as the great bulk of the colliery owners are

opposed at the present time to any movement that will curtail the trade, which at the present time is more active and more profitable than it has been for a long time past.

In steam coal very little has been done, and prices are remarkably low; 6-0d. to 6-3d. per ton not even tempting merchants to buy. Engine coal has been very quiet, and there has been a marked falling off in the consignments to the Lancashire and Cheshire markets.

Colliery Managers Certificates.

A meeting of the Board of Examiners for Colliery Managers' Certificates of Competency under the Coal Mines Regulation Act, 1872, for the North and North-East Lancashire district, was held on Dec. 19, at Manchester: 60 candidates presented themselves for examination, and of these 17 obtained certificates, the remainder being referred back to their studies. The examiners present were: Mr. J. Waddington, Burnley Collieries, Burnley; Mr. J. Ridyard, Walkden, near Bolton; and Mr. H. Fletcher, Ladyshaw Colliery, near Bolton; and the Hon. Secretary to the Board, Mr. Maskell Wm. Peace, Wigan, was also present. The following are the names of the successful students:-

Carrington S.H., Cortonwood Collieries near Barnsley.
Phillips, E.H., Newstead Colliery, Mansfield.
Banks, J., Stand Lane Colliery, Ratcliffe.
Dodd, M., jun., Fence Houses, Durham.
Gilchrist, J.R., Fence Houses, Durham.
Pemberton, N., Little Hulton, near Bolton.
Ridings, George, Little Hulton, near Bolton.
Stewart, A., Ardrossan, N.B.
Andrews, Thomas, Blackrod, Chorley.
Hallas, G.H., Hindley Green Colliery, Wigan.
Reynolds, J.J., Atherton Collieries, near Manchester.
Stones, T.H., Wigan Coal and Iron Company.
Files, R.B., Manor Colliery, Kearsley, Manchester.
Bonser, Harold, Newcastle, Staffordshire.
Scott, Alex., Pease's West Colliery, Crook-by-Darlington.
Kennedy, Matthew, Wigan Coal and Iron Company.
Brindle, Peter, Westhoughton.

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COLLIERY ENQUIRY.

Mr. H.C. Rothery sitting with Mr. Thos. Cadman, Inspector of Mines for the South-West district, as assessor, suspended for six months the certificate of Mr. Evan Foster, manager of the Ystradfawr Colliery, Swansea, for gross negligence or incompetency, and endangering the lives of his men. The enquiry was held at Swansea, by direction of the Home Office.

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Registration of New Companies.

Joseph Bickerton and Company (Limited).

Capital £10,000 in shares of £10. The acquisition of the company from Joseph Bickerton, the Richmond Hill Ironworks, in Oldham, Lancashire, together with plant and stock of same. The carrying on the trade of machinists in all its branches. The purchasing or otherwise acquiring any lands, buildings, &c. The subscribers are - J. Bickerton, Altrincham, 2; J. Curedale, Oldham, 20; J. Robertson, Oldham, 5; B. Waugh, Oldham, 10; T.W. Ulph, Manchester, 5; A. Holme, Manchester, 2; G. Greenwood, Oldham, 1.

Berlanga Agency Company (Limited).

Capital £24,000 in shares of £25. The acquiring from Messrs. Moses, Levy, and Company, a contract made between the Berlanga Silver-Lead Mining Company (Limited) and Messrs. Moses, by which the latter were appointed factors and agents for receiving all consignments and making all sales of the products of the company's mines or works, carrying the said agreement into effect, and acting as factors and agents of the mining company. The subscribers (who take one share each) are - A. Morton, Manchester, merchant; A.H. Moses, 57, Cleveland Square, merchant, E.H. Moses, 55, Maida Vale, gentleman; A.A. Levy, 6, Fenchurch Street, merchant; M. Moses, 134, Westbourne Terrace, merchant; E. Hooten, 136, Church Road, merchants' clerk; R. Folkurd, 58, Beaumont Square, merchants' clerk.

Llansaivel Lead Mining Company (Limited).

Capital £30,000 in shares of £5 each. The purchasing of a lease of the veins, mines, lodes, and seams of lead and copper ore and all other minerals and metals under the land, containing 201 acres, known as Talley Demesne, Panseygarrey, Cil-llynfawr and Bulchyrddyd, in Carmarthen. The adoption of a certain agreement made between J.H. Outhwaite and A.J. Groom, on behalf of the company. The acquiring by purchase or otherwise any mines, lodes, &c., and the carrying on the business of a mining company. The subscribers are - H. Robinson, east Moseley, surveyor, 5; L. Beck, Brockley Road, S.E., professor of music, 5; G. Crickmay, Barnes, stone merchant, 5; A.B. Weston, Putney, tea and wine merchant, 4; H.E. Pollock, 13, John Street, Adelphi, architect, 1; W. White, 3, West Street, assayer, 1; E.G. Wyatt, Hammersmith, architect, 4.

E.W. Oakes and Company (Limited).

Capital £30,000 in £50 shares. To purchase a business carried on by E.W. Oakes and Company at the Washford Smelting Works, Attercliffe, Sheffield, and the goodwill thereof, together with the plant, tools, stock in trade, contracts, &c. The carrying on the business of smelters, silver refiners, and brass founders, as carried on by the said firm. The subscribers (who take one share each) are - E.W. Oakes, Sheffield, Henry Pawson, Sheffield; W. Marsh, Sheffield, E.W. Oakes, jun, Sheffield; C. Wright, Worsborough; J. Gillies, Sheffield; J.C. Colver, Sheffield.

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MANUFACTURE OF IRON AND STEEL.

An improved process for readily and cheaply manufacturing a soft pure homogeneous iron, in character resembling Norway iron and a strong pure homogeneous steel, similar to crucible steel, has been invented by an American puddler - Mr. David Thomas, of St. Louis, Missouri, and in practice it is said to have given very good results. The process consists in melting wrought-iron and cast-iron combined in suitable proportions with charcoal or other carbonaceous fuel until the compound (that is to say, of wrought and cast iron) is thoroughly melted and brought into the condition of a molten mass. A very hot air current (preferably at a temperature of 3500 or 4000 degrees Fahr.) is then passed through all parts of the molten mass, and meanwhile the outer atmosphere is carefully excluded, and suitable chemicals, such as lye, soda, ash, manganese, and salt, are introduced into the molten mass. This subjection of the molten mass to the influence of the heated air is continued to (say) 15 to 45 minutes, when the metal becomes purified to a remarkable degree, and thus steel or wrought-iron, as the case may be, of a very superior quality is readily produced. The apparatus used is of somewhat peculiar construction. A furnace is placed on posts, and is open at the top to receive the charge and to allow the products of combustion to pass off; but instead of allowing the latter to pass directly off into the open air they are first made to return from the furnace top downward, and around the outside of the furnace, thence to escape into a flue or flues. For this purpose the furnace proper is enclosed above and at its sides by a casing, which rests upon an annular plate that closely surrounds the furnace, and that in turn is supported by posts.

The casing is large enough in diameter to form an annular space around the furnace, which space serves as a flue to carry off the products of combustion. An exit flue leads from the said space or flue through which the products of combustion finally escape to the open air. By thus enclosing the principal portion of the furnace, and causing the products of combustion to circulate around it before escaping to the open air, the furnace is not only kept very warm, but the outer air is effectually prevented from entering the furnace, and unfavourably affecting the character of the metal being made therein. The furnace proper immediately outside the casing is walled about with fire-brick, that rests upon the aforesaid plate, and the casing is composed chiefly of fire-brick contained in a shell. The hot-air blast may be produced in any desirable manner. He preferably, however, utilises the annular space as an oven, and by causing a pipe to wind around therein before entering the furnace, takes advantage of the heat escaping from the furnace to heat the air. The pipe is carried up and down and around in the said space until finally it is made to encircle the furnace. From this pipe two series of tuyeres lead into the furnace.

In charging a mixture of wrought and cast iron, together with charcoal, is put into the furnace through the doorway, which, excepting when the furnace is being charged, is kept closed by the door. The charge comes under the influence of the hot-air blast, entering through the upper tuyeres, and is brought into a molten condition. It falls or sinks as a molten mass, encountering the hot-air blast entering the lower tuyeres. This last-named blast operates to intensify the heat of the molten bath, and to increase the fluidity of the same. While the molten metal is under the influence of the blast suitable chemicals, such as concentrated lye, soda ash, manganese, and salt, are introduced into the molten metal. He uses for making iron about 1 oz. of each to 100 lbs. of metal, and for making steel a larger quantity of lye and manganese. If desired a third series of tuyeres, arranged at a still lower level, can be employed. The tuyeres are furnished with slides to enable the chemicals to be introduced into the furnace through the same. The lower part of the furnace is lined with blacklead to protect it from the heat.

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STONE BREAKING MACHINERY.

An improvement calculated to render the stone-breaker far more effective and economic than hitherto has recently been patented by Mr. Wm. Lester, of Minera, near Wrexham. It consists of an improved method of giving motion to the movable jaw, and also in constructing the fixed jaw so that it can be reversed end for end and face for face, and its position adjusted as required. For this purpose, in carrying out the improvements, he suspends the movable jaw upon an axis supported by the side framing of the machine. At the back, near the lower end of the movable jaw, an axis is supported, and revolves in suitable bearings, and on the centre of the axis an eccentric is mounted, which in its revolution acts against the back of the jaw to force it towards the fixed jaw, and thus crush and break the stone between them in the usual manner. The movable jaw is drawn back by a spring or otherwise. The fixed jaw is so formed in one solid piece that it can be reversed end for end in order to equalise the wear upon the wearing surface from time to time, as may be required. The working faces of the fixedjaw can also be reversed.

This method of adjustment enables the otherwise fixed jaw to be removed, reversed, and changed with the greatest ease, and the jaw is so made as to work with the one face as a road stonebreaker and with the other as a crushing jaw; it has also the additional advantage of working with either end, thus giving in one piece the equivalent of four fixed jaws. The usual revolving screen is substituted by a simple arrangement in attaching a moveable screen to the jaw, which gives it a riddling motion, enabling the dust to be taken out most effectually. The moveable screen and trough can be used or not as desired. The position or angle of the fixed jaw in relation to the movable jaw may be adjusted as required by means of a bar, which can be slid through openings in the side frames of the machine, so that the lower end of the jaw rests against the back of the bar, the width of which can be varied to suit the angle at which the jaw is to be placed.

The alleged advantages of this improved construction of stonebreaker are - Cheapness of production in consequence of the less weight of metal required; extra strength in the working parts, and the simple and easy method of changing or renewing them; its compactness and portableness; the extra power gained by the direct action of an eccentric at the point most required for crushing by the movable jaw; the simplicity and strength of the regulating or adjusting arrangement by means of a removable bar; which opens or closes the otherwise fixed jaw; the complete and powerful direct eccentric crushing action without any complicated joints, pins, screws, toggles, or adjusting wedges, the eccentric shaft bearings only requiring hard metal or brass.

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LINCOLNSHIRE IRONSTONE AND IRON.

From the returns already received it is evident the quantity of iron ore raised throughout the kingdom in 1878 will fall considerably short of the production even of the previous year. To some extent this may be attributed to the falling of in the make of ordinary pig, and also to the large quantity of foreign hematite ore which is imported, in consequence of the increasing demand which has grown up for Bessemer steel, but which cannot as yet be produced from the Cleveland and other argillaceous ores, although no doubt in time even that change will be effected, for according to Mr I. Lowthian Bell and others the eliminating of the phosphorus and sulphur from it, which is all that is required, has been all but accomplished. The decline in the output of ore, however, has not been confined to any district in particular, but has been general for it has been felt in the most recently discovered of our ironstone fields - Lincolnshire. The part of that county where iron is made and ironstone worked has been a terra incognita to correspondents and newspaper writers, for the representative of the Mining Journal appears to have been about the only person who has visited the out-of-the-way district to note what is going on in it from time to time. This is all the more surprising seeing that North Lincolnshire promises to become one of the most important mining districts in the kingdom, for its growth has been almost as rapid as Cleveland, whilst Frodingham, the village occupying the central position, with its reading room, public hall, and other buildings, is fast assuming a town-like aspect, and bids fair to become a second Middlesborough, for which it has all the necessary surrounding elements. To that end a great deal has been done by the owner of the estate on which the ironstone is raised and the furnaces erected -- Mr. R. Winn, M.P. - and who has been ably seconded by his energetic agent and engineer, Mr. J. Roseby, of Haverholme House. Looking however, at the business done, as before stated, the exports of stone were not quite so large as usual, owing to the many blast furnaces which have been out in Staffordshire and other districts, where a great deal of the Lincolnshire stone has been used. A good deal, however, has been raised by the Messrs. Dawes, who indeed were about the first persons that ever smelted it, their connection with the district dating so far back as 1861, when they commenced a railway from the Trent to the field of ironstone to a wharf on that river so as to send it to their works in Yorkshire, where it has ever since been used in connection with the local ore, and has been found to answer well for both forge and foundry purposes. The Staveley Company some time since recognised the value of the stone, and raised a tolerably large quantity during the past year for their own works, which are about the largest in Derbyshire. The ore has also been extensively worked by the Parkgate Company, near Rotherham, well known for the production of both heavy and light plates, and by Messrs. Cooke and Co., Tinsley, near Sheffield. A considerable tonnage has been sent into several districts by one of the principal iron merchants connected with the locality - Mr. W. Roseby - who is the managing director of the Appleby Company, who have two furnaces in the Frodingham district. Mr. W. Roseby has also been instrumental in opening out a fine field of ironstone near to the city of Lincoln, where the work is being carried on by ordinary mining, some of the stone giving a high percentage of iron, and being comparatively free from sulphur or phosphorus; but of this more hereafter.

The local consumption has been well maintained and towards the close of the year increased more than otherwise. There is, however, every probability that the present year will see a change for the better both as regards the local and foreign requirements, for there can be no doubt but what the iron trade has reached its worst. The stone, too, has certain advantages that will adapt it for mixing with other ores, but worked by itself the advantage, unless great care in selection is taken, would be just the reverse. In the Frodingham district a great deal of lime is found along with the stone, even to the extent of being in excess of what is required for

smelting. This is certainly an advantage where it is used with ore of a more silicious character, but in using by itself great care has to be taken in the selection of the stone. The difficulty at times has been so great that even at Frodingham it has been found necessary to have stone from a distance to mix with that raised in the locality. But still by itself if the stone is properly selected, for it varies considerably, a very good quality of pig can be produced, and has been found well adapted for the making of sheets, plates, wire, as well as for all ordinary foundry purposes. It is of a very fluid character, is well suited in consequence for mixing with the Cleveland, and so mixed has been used instead of Scotch. The stone from the Lincoln mines is much richer in metallic iron, and when mixed with the Frodingham not only corrects any excess of lime in the former, but produces an excellent quality of iron. The two sorts have been successfully used by the Appleby Company in particular, and some shown us by Mr. W. Roseby were remarkably good in both grain and colour, and evidently suitable for almost any purpose for which ordinary iron is used. The depth of the bed varies considerably, in some places being upwards of 18 ft. thick, and as the royalty is a very moderate one indeed, it no doubt with a revival of trade will be found a sufficient inducement to capitalists to operate in a field where iron-making can be conducted more economically and at a less cost than probably in any other district in England.

The early history of mining in Lincolnshire is by no means an uninteresting one. As in Cleveland, we believe the discovery of the ore was accidental, but it had the effect of transforming a vast tract of swampy and unprofitable land into a comparative El Dorado, finding profitable employment for a large number of workmen, and laying the foundation of a thriving industrial community that bids fair to become the rival of Cleveland and Middlesborough in mineral wealth and population. On the first discovery of the ore the task of finding a market for it devolved upon Mr. John Roseby, who was then, as now, well known as an engineer and geologist, and he found that to get ironmasters to even make a trial of it was no easy matter. The appearance of the ore itself was certainly anything but captivating, bearing a strong resemblance to the Northamptonshire, which took many years before its value was recognised by ironmasters. There was also the disadvantage of no direct railway communication with other ironmaking centres. After many difficulties Mr. George Dawes was induced to try the ore in one of the Yorkshire furnaces, and the trial was so far satisfactory that the Messrs. Dawes took a lease from Mr. Winn of a considerable area of the minerals at Frodingham. The progress made in developing the ore was slow at first, but in 1865 a change for the better took place, and from that time up to the present the progress made has been rapid, and Lincolnshire ironstone is now well known in Staffordshire, Derbyshire, the West Riding of Yorkshire, and Cleveland, as well as in many other parts of England, and thousands of tons are sent away monthly, there being now a branch line of the Manchester, Sheffield and Lincolnshire Railway, which affords direct communication to all parts of England, as well as to the shipping ports of Grimsby and Hull. After the stone had been tried at Elsecar by the Messrs. Dawes, that firm determined to erect some furnaces at Frodingham, and in a few years afterwards that firm was followed by others, and thus was laid the foundation of the present extensive ironmaking district of North Lincolnshire, which, for the production of ironstone alone, now holds the fifth position amongst the counties of England and of South Wales in which iron ore is raised. The progress made since the opening out of the ore at Frodingham will be seen from the following figures showing the tonnage produced in each year: -

1850	Tons	2,000	1869	Tons	220,524
1860		16,192	1870		216,829
1861		32,709	1871		217,769
1862		50,323	1872		256,149
1863		69,618	1873		350,281
1864		74,619	1874		463,239
1865		124,958	1875		626,627
1866		175,724	1876		573,374
1867		192,213	1877		508,749
1868		200,699	1878	Estimated	520,000

It may, however, be stated that in different parts of Lincolnshire there is a very large area of mineralised ground as yet untouched, but the actual productive power of the Frodingham district has not yet been tested, and no doubt twice the present quantity could be raised in it for a long series of years to come. The stone varies a good deal in richness, for whilst that at Frodingham gives from 27 to 32 per cent. of metallic iron, that at Lincoln, worked by the Mid-Lincoln Iron Company, of which Mr. Roseby is the chief, yields in some instances 50 per cent. and upwards.

As to the furnaces, as before stated, the Messrs. Dawes commenced the first one in 1862, and have now seven, three of them having been in blast during the present year. Following that firm, the Messrs. Cliff (the Frodingham Iron Company) commenced the erection of furnaces in 1866, and for a long time had two constantly going, but in 1875 we believe they built two more, but of the four only two have been in blast for some time past. Mr. Daniel Adamson the well-known boiler maker, of Hyde, near Manchester, was the next to patronise the district. Ultimately three other furnaces were added, and the establishment is now known as the North Lincolnshire Iron Company's works. Again, in 1872, the Lincolnshire Smelting Company commenced two furnaces, and were followed by the Redbourne Hill and the Appleby Company, so that there are now 21 furnaces within a short distance of each other. The depressed state of trade, however, during the last year was such that until April only nine were in blast. In that month, however, the Lincolnshire Smelting Company put one of their furnaces in blast, and later on in the year the second one, both being set in operation by Mr. J. Roseby, one of the directors. The furnaces in blast during the year will have been as follows: -

	In.	Out.	Total
Appleby	2	0	2
Frodingham Iron Company	2	2	4
North Lincolnshire Iron Company	2	2	4
Redbourne Hill Iron Company	0	2	2
Lincolnshire Iron Smelting Co.	1	1	2
The Trent Ironworks (Dawes)	3	4	7
Total	10	11	21

When smelting was commenced by the different companies considerable difficulties were met with, owing to the peculiar nature of the stone, so that heavy losses were sustained. This appears to have been the result of smelting stone all of one character as found close to the furnaces, but when the soft ore was mixed with silicious stone found near Lincoln the difficulties disappeared, and the iron was made to pay. The Lincolnshire Iron Company lost a good deal of money, but Mr. Winn met the directors in a very liberal spirit, making an abatement in the royalty, and so allowing of operations being resumed in the early part of last year.

Mr. Adamson who was amongst the first to try the Lincolnshire stone, and built the largest furnace at Frodingham, which at first was any-thing but profitable, now speaks more highly of the stone. He says that if the stone were worked simply as an ironstone, and the limestone thrown out purely as a limestone, the Lincolnshire iron field would be able to hold its own under almost any circumstances and conditions of trade that might arise in this country, and some of the more favoured and less variable mineral districts, taking Cleveland for instance, would not certainly be able to produce a ton of iron more cheaply than it could be made in Lincolnshire if that proper and moderately careful selection was adopted instead of one of random and recklessness, where the value and character of the material was not taken into account. The experience gained in North Lincolnshire shows that ore containing a large quantity of lime must have a certain quantity of silica and alumina introduced for fusing at the ordinary temperature of a blast furnace. We are however, told by Mr. Dove, the manager of the Redbourne Hill Company, who has given a good deal of attention to the nature and variable properties of the Lincolnshire ore, that when the lime in the charge is greater than what is absolutely required as a flux the iron resulting is singularly deficient in sulphur and silicon, while with the lime below the amount required the proportion of these two elements is at once increased at the expense of quality. But that both extremes can be avoided is satisfactorily proved by the fact that the stone has been for years and is now being smelted without any admixture of other stone or fluxing material whatever. We think that we have shown that the Lincolnshire iron field is a most important one, and, considering the vast area of the mineral ground, that there is a great future before it does not admit of a doubt. As to the progress made in the production of iron the following figure will show: -

1866	Tons	13,765	1873	Tons	52,076
1867		25,579	1874		67,260
1868		33,999	1875		110,000
1869		33,786	1876		125,198
1870		31,690	1873		116,857
1871		30,122	1878	Estimated	112,000
1872		36,989			

In conclusion, it may be stated that at one time a good deal of the coke used was imported from Durham, but during the last year or two the colliery owners in South Yorkshire have turned out a quantity of coke equal to the former, which is now being largely taken by the ironmasters of Lincolnshire, the two districts being within a comparatively easy distance of each other, so that there is a considerable saving effected in the railway rate alone.

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IRONSTONE MINING IN 1878.

Like many other descriptions of raw material for manufacturing purposes obtained at home, the production of ironstone has declined during the year in nearly every district where it is principally obtained. This, of course, is only what has been expected, seeing that the consumption of pig for all ordinary purposes, with the exception, perhaps, of that required for converting into steel for Bessemer rails, has been below that of some former years, as evidenced by the depression in the finished iron department in Sheffield and other places, the number of furnaces that have been out of blast, the many plate and other mills that have been standing, and the comparatively limited business done in every description of foundry material. Hematites have kept up better than other qualities, but they only amount to about one-sixth of the entire yield, Lancashire and Cumberland furnishing the principal supplies, Ireland standing next, whilst for some years past less has been raised in South Wales, whilst there has also been a decrease in the ordinary argillaceous ores of the coal measures obtained in that part of the Principality. On the other hand, our imports from Spain, Algeria, &c., have been up to about the average. In the production of British ores Cleveland takes the first place, being credited with about two-fifths of all the stone worked in the various mines in the kingdom, or got from the surface, and which for 1878 is estimated at 16,000,000 tons, being less by about 600,000 tons than given in the returns of 1877. Seeing that the make of pig last year was less by about 100,000 tons than in the previous year, the falling off for the year is expected to be about 400,000 tons, so that the yield will be about 5,900,000 tons out of a total for the United Kingdom of something like 16,000,000 tons.

In the West Riding of Yorkshire, where the ore is principally worked in connection with the coal measures, there has been very little change, and there is not likely to be any material falling off as compared with 1877, the quantity being close upon 400,000 tons. Next to Cleveland in productive power is Northamptonshire, a field which has grown rapidly during the last few years. A proof of this is shown by the annual returns, from which it appears that the quantity of ironstone raised in the county in 1868 was 449,116 tons, whilst in 1878 it had reached to 1,049,806 tons. For this great in such a short time the author of the "History and Directory for the County of Northamptonshire" states in that work that the credit in a great measure is due to a series of articles which appeared in the Mining Journal with regard to the ironstone of Northamptonshire, which was the means of directing the attention of the ironmasters in other districts to the vast field of stone which was lying fallow close to the surface, and offered at a very reasonable royalty. Wellingborough is still the head-quarters of the trade and from there about 35,000 tons a month are sent northwards, principally into Derbyshire, to which the Midland Railway Company gives a moderate rate. A good deal is also sent to South Wales from the neighbourhood of Blisworth and Towcester. At the latter place, Dr. Siemens, in connection with some other gentlemen, has established works for making iron and steel by the direct process, although many persons considered the ores of Northamptonshire were not suited for that purpose. The ironstone of Lincolnshire is similar to that of Northampton, with the exception that there is more lime in it, and it has met with a fair demand during the year in Yorkshire, Derbyshire, Staffordshire, &c, but this year will show a slight falling off, but the county since 1859, when the stone was first worked, has made very rapid progress indeed, the production having increase in 20 years from 2,000 tons to 508,740 tons. Staffordshire, before the Cleveland district was developed, raised the largest quantity of ore in England, but now it holds a comparatively subordinate position to what it did, and has to depend largely upon other districts to supplement the local output. In 1855 there was raised in that county 2,500,000 tons, whilst last year the production was about 1,800,000 tons. There are extensive beds of stone in

Derbyshire, especially in connection with the coal measures, but very little attention is paid to them, for ironmasters in that county appear to prefer taking supplies from Northamptonshire to working their own ores. The ores in the former county, it may be said, are more silicious than those of Derbyshire, and are therefore well suited for mixing with the more argillaceous ores of Derbyshire. Shropshire is another county where during the last few years there has been a gradual falling of in the output of ironstone, the quantity being comparatively small. Northumberland and Durham at one time raised a fair quantity of hematite, but not so much of late years.

From some of the collieries also a good deal of stone has been obtained, but the two counties named have ceased to be of any importance as producers of ironstone. Warwickshire and Nottingham of late years have given us some stone from the coal measures, but only at the rate of about 90,000 tons a year. During 1878 the iron trade of Lancashire was by no means brisk, but as the stone raised there is hematite of a very fair quality, and whilst a large tonnage is consumed in the furnaces at Barrow, Kirkless Hall, Carnforth, &c., a considerable quantity is sent into North Wales, Scotland, Staffordshire, Yorkshire, &c. The estimated produce for the year is put down at about 900,000 tons, and that total is not likely to be exceeded. Cumberland ore is similar to that of Lancashire, and some portions of it are unequalled in richness of metal. About two-thirds of the output is consumed by the local furnaces, and the rest sent into other districts. The produce is not likely to be equal to last year, when 1,351,441 tons were turned out, for the mines have not been regularly worked. South Wales some 25 years ago used to produce fully one-sixth of all the stone worked in the kingdom, but now it does not raise more than one-fifth of what it did, and now depends upon Northamptonshire and other counties for what it requires, which last year unfortunately was by no means large, but the prospects are now brighter than they were. In Scotland the produce of pig in 1878 amounted to 902,000 tons, against 982,000 in 1877, being a decrease of 80,000 tons. It may, therefore, be assumed that there will be a decrease in the consumption of ironstone last year of about 200,000 tons, as compared with 1877.

Ireland has some good fields of iron ore, but they are not developed with that energy that might be expected, seeing that labour is cheap in the country - some of the ore giving as much as 45 per cent. of metallic iron. In Leitrim the clay ironstones are found in the shales of the coal measures as well as in the beds below, and are, perhaps, the richest found in Ireland. They were formerly smelted at furnaces at what were known as the Tongue Ironworks, on the shores of Lough Allen. In Antrim there are some fine beds of blackband ironstone, which is calcined after being brought to the surface, when it is then shipped to the opposite coast of Ayrshire, and smelted at the furnaces in that county. In summing up the production of stone for last year we believe it will be found to be about 800,000 tons less than 1877, and will, therefore, be slightly under 16,000,000 tons. It is likely, however, that during the present year we shall have a change for the better. As showing the growth and decline of our several ironstone fields we append the percentages raised in each of them in the years 1855 and 1877-8, as follows :-

	Per cent. 1855.	Per cent. 1877-8.
Cornwall, Devon, and Somerset	0.25	0.5
Gloucester	1	0.5
Northamptonshire	0.75	6.25
Stafford and Worcestershire	26	10
Lincolnshire	-	3
Shropshire	4	1.25
Derbyshire	4.25	1.5
Yorkshire	12.75	40
Northumberland and Durham	2	1

Cumberland	2		7.5	
Lancashire	3.5		6	
North Wales, &c.	1		0.5	
South Wales	17.5		3	
Scotland	25		16	
Ireland	-		1	
Wiltshire, &c.	-	= 100	2	= 100

Lincolnshire and Wiltshire were not discovered in 1855, whilst very little stone was sent from Ireland in that year.

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IMPORTANT COLLIERY ARBITRATION.

The commencement of the arbitration case, Martin v. Griffiths, Griffiths, and Bickley, took place on Tuesday and Wednesday, at the Queen's Hotel, before Mr. Bosanquet, to whom a judge referred the case. The plaintiff is the owner of 10 or 12 houses at Dudley Port, and the defendants have recently been working the New Denbigh Hall Colliery. Mr. Alfred Young (instructed by Mr. S.T. Fellows) was for the plaintiffs, and Mr. Underhill (instructed by Mr. Stubbs) was for the defendants. Mr. Martin claimed damages for the racking of his houses and the destruction of a water-course by the mining operations of the defendants. The plaintiff's case had not been completed when the Court adjourned until the end of the month. For the plaintiff the following mining engineers are engaged:- Mr. David Peacock, Mr. Joseph Cooksey, Mr. W.J. Hayward, and Mr. J. Tomson. For the defendants:- Mr. Henry Johnson and Mr. John Field.

Birmingham Daily Post.

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THE LIABILITY OF COLLIERY AGENTS.

At the Longton Police Court Martin Forrester, agent of the Weston Coyney Colliery Company, was summoned, by direction of the Home Office, for having neglected on Oct. 12 to cause the pit to be adequately ventilated. Mr. Booth appeared for the prosecution, and Mr. Welch for the defence. It may be recollected that several weeks ago Mr. Forrester was summoned for a similar offence on another date, and at the same time the manager of the colliery was charged with a like violation of the Act. The latter was convicted, but the stipendiary held that Mr. Forrester was not responsible for the condition of the mine, and dismissed the charge against him. On that occasion Mr. Gilroy, assistant inspector, spoke to having visited the colliery on Oct. 12, and found it insufficiently ventilated. He directed certain things to be done, which, on subsequently going to the pit, he found had not been done. The present proceedings were taken to test the liability of the agent, as representing the proprietors of the colliery. When the case was called on Mr. Welch admitted that the question had been already decided in the case previously tried, but Mr. Booth argued that this was a different offence, being on a different date. Mr. Greenwood said he still held that the agent was not responsible, but the manager, and he regarded the new proceedings as an attempt by a side wind to upset his previous decision. - Mr. Wynne, Government Inspector, said he wished to have a legal decision as to the liability of the agent. - Mr. Greenwood said that if the case was reopened that question would not be affected. The prosecution had better go to a superior court. - Mr. Booth asked for a case, but as there was now no charge formally before the Court, and the time for obtaining a case on the former decision had elapsed, this could only be granted by consent. - Mr. Welch said he would not object to the question going to a superior court if his client was freed from any cost in the appeal. - Mr. Wynne said he had no power to give an undertaking that the Home Office would pay the cost. - Mr. Welch said if the Home Office was not satisfied with the decision of the magistrates it was not fair to make his client pay for taking the question to a higher tribunal. - After some discussion it was agreed to adjourn the matter for a week, with a view to an arrangement in the interim as to the course to be taken in respect to the case.

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THE NORTH OF ENGLAND IRON TRADE.

Cleveland has made up its books for 1878. It was indeed a gloomy year for that not long since extremely prosperous and vigorous district. The story of Cleveland depression may be told in very few words. Pig-iron had fallen at the close of 1878 to 34-6d. per ton in Cleveland, and it does not require a very powerful intellect to establish the stern pitiless fact that at such a price the manufacture of pig is carried on at an infinitesimal profit - if, indeed, at any profit at all. However, Cleveland may still be said to have put a bold face on matters in 1878. No fewer than 13 blast-furnaces were blown out in the district in 1878, and yet the production of pig-iron for the year was maintained at 2,023,000 tons, as compared with 2,124,831 tons in 1877. The past may be said to be the first year in which there has been a diminution in the production of Cleveland pig, which until 1878 grew steadily year by year. The wave of Cleveland prosperity has thus sustained a check, and is even slightly on the recoil; nevertheless, the reduction in the production noted for 1877 is less than might have been anticipated, perhaps, under all the circumstances. We must not, however, overlook the fact that stocks of pig increased in Cleveland in 1878 to the extent of a few thousand tons.

The exports of pig from Cleveland experienced a slight increase last year; thus they amounted to 335,000 tons, of which Germany took 150,000 tons, France 60,000 tons, and Belgium 50,000 tons. It is curious to find that, notwithstanding the loud talking which we hear in regard to Belgian competition, Belgium all the while is an importer of no inconsiderable amount of Cleveland pig. The deliveries of Cleveland pig to Scotland in 1878 were 325,000 tons, or 60,000 tons less than the corresponding deliveries in 1877. This result was due to the severe and even bitter competition which has arisen between the makers of Cleveland pig and Scotch pig; in other words, Scotch ironmasters made a desperate effort in 1878 to recover the connection which appeared to be escaping them. Wages were reduced in Cleveland in 1878 to the extent of 15 per cent. at the blast-furnaces, and 10 per cent. at the ironstone mines; but these reductions, substantial as they may have appeared, failed, we fear, to keep pace with the severe and relentless decline in prices by which 1878 was memorably distinguished.

Steel rails were produced upon a large scale in Cleveland in 1878; the great establishment of Bolckow, Vaughan and Co. (Limited) alone turned out 75,000 tons. This enterprising - and marvellous to relate in these times, still comparatively successful - company is endeavouring to still further increase its production, and expects to carry it shortly to something over 100,000 tons per annum. But even steel rail making is carried on in Cleveland under very depressing conditions as regards prices, the quotations for steel rails having fallen of in Cleveland in 1878 from £7 to £5-15-0d. per ton. Experiments are proceeding with the view of eliminating phosphorus from Cleveland iron, so as to adapt it for the production of steel. Should these experiments - which are being prosecuted more particularly by Mr. I. Lowthian Bell, M.P., and Messrs. Bolckow, Vaughan, and Co. (Limited) - be crowned with success the value of Cleveland iron will obviously be rather materially increased. The great thing now needed in Cleveland is better prices for the iron and steel manufactured. Wages and raw materials have fallen, and so far the Cleveland ironmaster has obtained some relief. Still, with raw pig at 34-6d. to 35-0d. per ton, and with steel rails at £5-15-0d per ton, it is clear that the production of iron and steel is being carried on in Cleveland under very serious difficulties, and very depressing conditions. The one element of hope in an extremely dreary outlook is the possibility that low prices will eventually stimulate consumption to some extent. Should this anticipation be realised this year the whole of the wonderful Cleveland group would be enormously benefited. Meanwhile

Cleveland ironmasters have endeavoured to turn even adversity to good account, and have cheapened, simplified, and improved several details of their operations.

The Mining Journal.

Page 62 Cols. 2-3, 18th. Jan. 1879.

COLLIERY EXPLOSIONS IN SOUTH WALES.

Whilst the enquiry into the cause of the explosion at the Abercarne Colliery was being proceeded with, and evidence given showing that previous to the catastrophe a large quantity of gas was given off in at least one district, the public is again appalled by the announcement of another fearful explosion with a loss of about 62 lives. The valley of the Rhondda has thus added to its unfortunate reputation for mining fatalities, and how it should be so is a question on which it is to be hoped more light will be thrown than has hitherto been the case with respect to such occurrences, for as a rule the results of the investigations made to trace their actual source have been most unsatisfactory. Our information, however, as to the explosion at Dinas is as yet but scant, for we are not informed as to the system on which the coal was worked, the lights used, the mode of inspecting the working places, or whether there were safety lamps so made that they could not be opened. But there is the unmistakable fact of a body of gas coming in contact with a naked light by some means or other, and the probability is that we are not likely to be made acquainted with how the two combined together to lead to the explosion, seeing that those who could enlighten us on that point are numbered with the dead. Still we are told that the colliery had been worked for many years, opened out most extensively, and consequently required the most complete system of ventilation, so that the air should reach the furthest places where men were employed. The explosion took place late on Monday night, those who descended being engaged to make the necessary repairs and clear the various working places for the ordinary colliers, who would be in them early in the morning, and we are told that on that day the barometrical readings showed a heavy atmospheric pressure.

The fact of the barometer indicating a change should have led to the ventilation being carefully and vigilantly watched, and no naked lights allowed into any part of the workings. Under any circumstances, as we have frequently pointed out, the ventilation at all times should be such as so render an explosion all but impossible, and that there can be no excuse for not carrying out the special clause in the Act of Parliament requiring that an adequate amount of ventilation shall be constantly produced in every mine to dilute and render harmless noxious gases, so that the roads, working places, &c., shall be in a fit state for working and passing. If this is done an explosion is impossible, excepting, indeed, from a sudden outburst of gas from the floor or roof and where ordinary instead of the best safety lamps are used. We are informed that the pit in which the explosion took place was the one in which the first great explosion took place in that part of South Wales just 35 years ago, when 12 lives were lost. Since then the works must have been opened out to a great distance in all directions, rendering complete ventilation a somewhat difficult task, requiring the watchful care of thoroughly experienced practical managed, with a steady and reliable staff. But it is stated that of late the thorough ventilation of the pits has been deficient, and had led to the attention of Mr. Wales, the Government Inspector, being drawn to it; and the result was that the late manager occupied the place of overman, and the late overman became the manager, Mr. James Mening, engineer, of Merthyr, being appointed chief. We are not informed of the qualifications of the overman who was appointed manager, or whether he was in possession of a certificate or not, but the change for him must be looked upon as an unfortunate one, seeing that whilst the mine was under his management the explosion took place, involving a loss of 62 lives. With the limited knowledge we have at present with respect to the sad occurrence it would be premature, as well as unfair to those connected with the colliery, to even hazard an opinion as to the cause of the explosion, or to anticipate in any way the inquiry that must take place. We would, however, suggest to the authorities how beneficial it would be were an inquiry to be made into the mode of appointing persons to positions in which they have entrusted to their care the lives of hundreds of men and boys in

connection with the coal mines of South Wales. If it is correct that an overman can be appointed manager without undergoing the ordeal of an examination and obtaining a certificate, then the sooner a change is made the better.

The Mining Journal.

Page 74 Col. 1, 18th. Jan. 1879.

Registration of New Companies.

Rhine and Moselle Mining Company (Limited).

Capital £30,000 in shares of £1. To acquire by purchase the several mines and effects comprised in a contract made Dec. 4th. 1878, between Robert Smith on the one part and Charles Stephen Hill as trustee for the company on the other part. To acquire by purchase in whole or part mining setts, grants, leases, licenses, concessions, or other interests in lands, mines, mineral properties, rights, and effects in the German empire and elsewhere. To search for, mine, work, dress, smelt, fuse, and reduce or otherwise to improve and render saleable ores, metals, &c., that may be obtained. To make roads, railways, tramways, sidings, &c., and to purchase or otherwise acquire such land as may be necessary. To carry on the business of a mining and smelting company in all its branches. The subscribers (who take one share each) are - E. Vansittart Neale, 12, Church Row, Hampstead, barrister; C.S. Hill, Beckenham, gentleman; G. Gourland, The Downs, Clapton, coal merchant; W.C. Parkinson, Cottage Lane, City Road, gas engineer; S. Mart, 3 Crown Square, Bow, wine merchant; W. Fullford, 251, Pentonville Road, stationer; C. Cakebread, 223, White Street, machine maker. Qualification of directors 200 shares each.

Par Smelting Works (Limited).

Capital £15,000 in shares of £20. To acquire by purchase or otherwise the Par Smelting Works, in Cornwall, together with the plant, buildings, and machinery belonging to the same, as well as rights and powers. To dress, reduce, smelt, and prepare, and to purchase and sell minerals and metals of all kinds. The subscribers are - W. Gundry, 7, Draper Gardens, stock jobber, 100; J. Alington, Little Barford, gentleman, 50; T. Gundry, Torfrey Par Station, Cornwall, gentleman, 100; W. Page, Holland Road, gentleman, 100; F.L. Slous, Stock Exchange, gentleman, 50; F. Hunt, Stock Exchange, sharedealer, 100; R. Oldrey, Weedon, gentleman, 100; E.P. Oldrey, Willesden Lane, stock jobber, 50; H.D. Broome, 34, Avenue Road, stock jobber, 100.

The Mining Journal.

Page 74 Col. 2, 18th. Jan. 1879.

UTILISATION OF SMALL COAL.

Although from the abundance and comparative cheapness of round coal in this country little attention has hitherto been paid to the manufacture of small coal into a marketable article, it forms an important branch of industry in France, Belgium, and many other places, and there can be no doubt that in many instances the utilisation of the slack makes the difference whether the colliery is worked at a loss or at a profit. Under these circumstances it is not surprising that the fact should now be recognised that one of the principal questions of the present day with all our large collieries is how to reduce the proportion of small coal, and how to utilise the same in the most profitable manner. In many collieries the loss is not felt to be very serious in consequence of the small coal being made into coke, which finds a ready market amongst ironworks when trade is moderately good. This, however, which can only be done with certain qualities of coal, involves a considerable outlay in washing apparatus, coke ovens, &c., so as to materially affect the profit on the same, particularly when, as in times like the present, the iron trade is in such a wretched condition that it is very difficult to obtain a profitable price for the coke when made.

Others again, as in South Wales, utilise the small coal by making it into artificial fuel; but in addition to the process of manufacture adopted there being very expensive, the machinery is also very costly, whilst the blocks themselves when made are heavy and cumbersome, and quite unfitted for household, locomotive, or other purposes, little, or any, being used at home. For some time there has been felt to be a want of some simple and economical plant and process for utilising the great quantity of small coal which is lying useless and profitless at so many of our collieries.

Some time ago M. Fagès, the general manager of one of the largest collieries in Belgium, visited this country, for the purpose of obtaining the best machines and plant for utilising small coal, and making it into "briquettes," or blocks of artificial fuel. After carefully examining the different processes of manufacture he communicated with Messrs. Yeadon and Co., of Leeds, the well-known colliery engineers and contractors, who supplied him with two of their patent briquette machines, together with the complete plant in connection with the same, and which, after working and thoroughly testing for some time, M. Fagès pronounces to be the "best machines he knows of, after having carefully studied all the briquette machines at home and abroad." In these days, when so much is said about foreign and particularly Belgian competition, such a testimony to the pre-eminence of English manufacture is all the more gratifying.

We have pleasure in illustrating this machine this week, and giving the following particulars as to the process and cost of manufacture. The smudge or small coal is raised by elevators into a hopper, which has two horizontal sliding doors, so as to measure the quantity. The cohesive material is ground in an ordinary mill, mixed with water or other liquids and a certain proportion of this put into the mixing pan with the smudge, where it is thoroughly mixed together; it then falls into the hoppers of the briquette machines, where it is fed into the vertical mould plate, moulded, compressed, and turned out at the rate of 60 briquettes per minute from each machine, equal to about 25 tons per day.

One great advantage in this machine and process is that no skilled labour is required the size of the briquettes makes them specially suitable for household, locomotive, or other purposes, being only from 2 to 3 lbs weight each; but the principal advantage lies in the cheapness of the process, the whole cost of making, preparing, and mixing, including cohesive material, is under 1-0d. per ton. The cost of a complete plant, including engine, boiler, &c., to make 50 tons per

day is under £1100. Of course, it will be at once understood that the machines cannot either improve or reduce the quality of the briquette, in cases of inferior quality of coal, gas tar, shale oil, petroleum, or other cheap liquids are added in the mixing, to produce the required quality. We may say that Messrs. Yeadon and Co. are already in treaty for supplying some of the largest collieries in this country and on the Continent with briquette plants; and from the simple and inexpensive nature of the plant and process we have no doubt many other collieries will be glad to adopt such a feasible means of increasing their profits.

The Mining Journal.

Page 88 Cols. 1-2, 25th. Jan. 1879.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

Jan. 23. - Since the dispute between the Midland Railway Company and their employees terminated the mineral traffic from Derbyshire to the South has again got into its old groove, but whilst it lasted it created no small inconvenience, and caused coal merchants in particular to go into other districts. This state of things was felt all the more in consequence of the severity of the weather having led to an increased demand for house coal, as well as to an increase in its price. The collieries, however, are now working very well, and the business may be said to be favourable for soft coal. Prices, however, have been rather unsettled, for there was a jump in London in one day of no less than 2-0d. per ton, but it did not last for a week. Still the rates are higher than they were during any part of last year, and colliery owners say that nearly all the difference goes into the pockets of the merchants, who fix the prices independent of those from whom they obtain supplies. Steam coal, however, still meets with a very dull sale, and the same may be said with respect to engine fuel, slack, and smudge. The consumption of coke is not by any means so large as it has been, more particularly in the Sheffield district. As yet none of the miners in Derbyshire have, we are pleased to say, come out on strike, and whether they will or not will be decided upon on Tuesday next, when there is to be a meeting between a deputation representing the men and another the Employers' Association. Most of the collieries, however, under any circumstances will go on working as usual, whilst the men who are under notice believe that they will be able, from the promises of support received, to stand out for a considerable time. At the ironworks in the Chesterfield district, as well as those along the Erewash Valley, trade has been quiet. The business doing in pig is at very low rates, and sales are not easily effected cheap as raw iron is. Mill material is still in but moderate request, and many ironworkers are still standing. At one place the men had notice of a reduction of 10 per cent., and all without hesitation accepted it, excepting about 20, whose places were at once filled by men who had been idle for some time, thus showing that striking at present is out of the question, for the men are glad to obtain work to maintain their families, so that principle has to be thrown overboard in favour of provision. In the lead districts work moves along much in the usual way, the miners being more easily satisfied than those engaged in collieries, and who have long been used to high wages and short hours.

In Sheffield the distress has been much greater than was expected, and the visitors find a great deal of quiet suffering, and uncomplaining poor living on their furniture and clothing till they had none left. There is, however, an active committee of both ladies and gentlemen, and blankets, clothing, and coal, as well as provisions, are supplied to those in want. The Mayor's Fund now amounts to about £10,000, and there is every reason to think that it will all be required, if not more, for trade does not seem to mend. There are two or three branches that are doing tolerably well, but the majority are just the reverse. A very fair business continues to be done in Bessemer rails, as well as in Bessemer for other purposes, for in some instances it is being used instead of crucible steel, being much cheaper. In cutlery goods there has not been much change lately, one or two firms doing tolerably well, in the best qualities of table, pocket, and penknives, but there is not much doing in inferior qualities, some of the German manufacturers now meeting us in our own markets in secondary descriptions of pocket knives in particular, which are generally well finished and attractive, as well as low in price. Attention is now being devoted by several well-known firms to the production of steel plates for defensive armour for ships, seeing that iron plates are not likely to be so extensively used by the Admiralty as they have been, and one of the partners of the Phoenix Bessemer Works has just taken out a patent for piled plates which can be made of Bessemer or other steel.

The ship and boiler-plate mills have been running tolerably well, considering the state of trade generally, while the foundries are rather worse off than they have been, many of the moulders being on short time. In South Yorkshire the coal trade has kept up very well, and a heavier tonnage than usual has of late been sent over the Great Northern to the Metropolis. On the other hand, steam coal does not sell at all well, so that a great deal of it has to be stacked, and, of course, is much deteriorated by the present weather, for it has to lie on the ground for a considerable time. The wages question has become quiet of late, and at Barnsley, on Monday, at a meeting of the Council of the Miners' Association, it appears not to have been much talked about. The men, however, are evidently firm in their intended resistance to it, and they have been promised support from the miners in West Yorkshire equal to a levy of 2-0d. a week per man.

At the Denaby Main Colliery, near Doncaster, the men have resumed work after a struggle which has lasted some time. They state that the dispute has come to an end by their submitting to a reduction of 5 per cent. in wages, and losing their check weighman whom the owners determined should not be allowed to act for them.

On Monday evening the directors of the Hoyland Silkstone Colliery called their creditors together for the purpose of obtaining an extension of time to meet the liabilities, some of the creditors having pressed them very hard. The meeting was adjourned for a week. The company was established about four years ago, with a capital of £50,000, but, like most other collieries, low prices have told against it. The chairman is Mr. Lodge, who recently wrote a letter to the local papers deprecating as uncalled for any reduction of miners' wages.

On Wednesday the Dodworth and Silkstone Coal Company was summoned before the Barnsley Bench of magistrates for non-payment of rates. The usual order was made.

Mr. Howe, engineer, who has long been connected with the Clay Cross Collieries, died a few days since. He was the inventor of the link motion, and was an old friend of the late George Stephenson.

A Bill for the supplying of certain colliery districts in South Yorkshire with a supply of good water will be introduced during the ensuing session of Parliament. It is similar to that obtained by the Wakefield Corporation in 1876, slightly modified by the engineers. There are some signs of an opposition on the part of a small company which supplies a township with water from a well. As the purity of such water is always questionable, and that alluded to strongly impregnated with iron, the opposition is not likely to interfere with the progress of the Bill.

The Mining Journal.

Page 81 Col. 2, 25th. Jan. 1879.

Registration of New Companies.

Borough Ironworks (Limited).

Capital £15,000 in shares of £5. Carrying on the trade of ironfounders, manufacturers, engineers, and general machinists. The selling, mortgaging, leasing, letting, &c., any property. The subscribers (who take one share each) are - J. Mills, Oldham; W. Robinson, Newton Heath; J.F. Howarth, Dwyesden; W.E. Clegg, Oldham; W. Whittaker, Oldham; W. Dromisfield, Oldham; J. Walker, Oldham.

The Mining Journal.

Page 86 Col. 3, 25th. Jan. 1879.

The Liabilities of Colliery Agents.

The Staffordshire Potteries Stipendiary has decided that a colliery agent was not responsible for a neglect of duty beside the certified manager. Mr. Richard Forrester was summoned for a breach of the Mines Regulation Act at Weston Coyney Colliery, Longton, of which he was agent, the manager having been fined £20 for the same offence. The summons was taken out at the instance of the Home Office. A case was granted.

The Mining Journal.

Page 86 Cols. 2-3, 25th. Jan. 1879.

THREATENED STRIKE OF MINERS.

For some time past statements have appeared in the daily papers with respect to a threatened strike of miners in South Yorkshire and North Derbyshire, which was likely to result in throwing out of work from 80,000 to 100,000 men and boys. From the most reliable sources we are able to state that the reports that have appeared in many of the papers have been greatly exaggerated as to the number of persons that would be rendered idle in the event of a strike against a reduction of wages taking place. We, therefore, give the facts as they really are. The proposed reduction of 12.5 per cent. on the wages of the miners was initiated by the Coalowners' Association, established about six years ago, with a nominal capital of £200,000, in 20,000 shares of £10 each. The object was to give compensation to members in case of a strike or dispute by which their collieries would be set down. Each firm assured its profits at a certain rate, not being less than 1-0d. per ton nor exceeding 2-6d. In case of strike, restriction, or other cause which should subject any firm to loss either in expenses on strike or in loss of assured profits, certain sums are granted according to the amount of assurance entered into in the first instance. The claim has to be based on the assurance of the profits, as well as of all expenses actually incurred in maintaining a colliery during a strike in a current going condition. The members of the association at the present time number less than 30 persons, and at a meeting recently convened by the executive colliery owners not connected with it, were invited to be present to discuss the possibility of enforcing a general reduction of wages in South Yorkshire and North Derbyshire. Of course nearly all were agreed as to the necessity of reducing the miners wages, seeing that heavy losses were incurred during last year in working many collieries. But there was this difference, that whilst the members of the Masters' Association would receive compensation in the event of their workmen striking, those that did not belong to it would have nothing to fall back upon. However, notices were given at about 26 collieries that a reduction of 12.5 per cent would be enforced. Of the 26 collieries, we believe less than a dozen belonged to the Coalowners' Association. The other gave notice for the purpose of securing any advantage that members of the Association might obtain from their workpeople, so as to have uniformity of wages, but, of course, with no intention of closing their collieries. On the contrary, many of them would be greatly advantaged by the setting down of some ten or a dozen collieries, for it would secure for them an increased trade, with higher prices for coal. It was anticipated that had not Mr. Mundella, M.P., got the Masters' Association to accept arbitration not more than 8000 men and boys would have been on strike on the 15th inst., when the notices expired. As it is, an extension of time has been granted to the 29th inst., for the men to decide whether they will accept arbitration or not.

So far as can be ascertained, there is not more than one lodge connected with the Miners' Association that has shown the least willingness to discuss the question of arbitration, whilst some of them are strongly in favour of demanding an increase of wages. The miners of West Yorkshire, believing that if the wages of their fellows in the southern part of the Riding are reduced that theirs will also be pulled down, have taken the matter up very warmly. They have offered to make a levy of 2-0d. a man per week in support of the men who strike against the reduction, and this of course would amount to a considerable sum. The action taken by Mr. Mundella, M.P., is loudly condemned by the men, who consider that but for his officiousness the notices given by their employers would be withdrawn. So far, therefore, from information obtained on the spot, we believe the men will refuse arbitration, and, should the masters not withdraw the notices, will go out on strike. Many of the colliery owners, we may say, are opposed to the enforcing of any reduction whatever, considering the time inopportune, seeing that this is the busiest period of the year, and prices considerably higher than they were last summer and

autumn. On the other hand, it is known that last year was a disastrous one for colliery owners, one large firm in South Yorkshire, whose pits were worked with more than usual regularity, having lost some £6,000 or £7,000, whilst most others suffered, but, perhaps, not to such a serious extent.

The colliery owners we believe have tried hard not to come into collision with their workpeople on the wages question, but owing to their losses they have been forced to take the action they have done, for they cannot be expected to keep their collieries going for the benefit only of those they employ. Not so long since they endeavoured to obtain from the directors of the Great Northern Railway Company a reduction of the rate to London of 1-0d. per ton. This would have given some relief, seeing that in South Yorkshire alone there are some 60 colliery owners who do business with London. It does not all go by the Great Northern, but it was believed that a reduction of the rate by that line would be followed by a reduction of the others. In December last there was sent to the Metropolis by the Great Northern, 30,100 tons of coal; by the Midland 13,300 tons; London and North-Western, 9,800 tons; and by the Great Eastern, 10,200 tons. Now a reduction in the rate of 1-0d. per ton upon the above quantities would have given relief to the colliery owners to the extent of £37,000 for the year, and would in all probably have staved off the reduction, for a time at least. But as the Great Northern would not agree to reduce the rates, although by so doing the company would have had placed to its credit a much heavier tonnage of coal than has been sent over it for a long time from South Yorkshire, the colliery owners felt they had no other alternative but to ask their men to accept a reduction, so that the whole of the burden of loss should not fall on the one side only, but be borne by both. As this was refused nothing then was left but to endeavour to enforce the reduction or set their collieries down. The latter to several will be far more profitable than keeping them going. Unfortunately, in disputes of this kind women and children are greater sufferers than even the men are, and on their behalf hopes were entertained that some course would be found so as to prevent a strike. But the efforts made have evidently been fruitless, and there appears every probability that before another week elapses we shall see another of those struggles between labour and capital that have proved so disastrous to the working miners of the kingdom. But the past experience of strikes has taught no lesson to the sufferers, who look only to the present, believing that their employers will have to give way, and that, supported by the men in other districts, they will be able to make a successful fight. But it must be allowed that on this occasion they have received assurances of sympathy to a greater extent than in previous strikes, so that it is probable that the strike at a few of the collieries will be a long one.

The Mining Journal.

Page 86 Col. 3, 25th. Jan. 1879.

EXPLOSION OF CARDIFF COAL ON A NEWCASTLE STEAMER.

The official enquiry at Liverpool into an explosion of coal gas on board a Newcastle steamer was concluded on Wednesday. The Commissioner said there could be no doubt the vessel was not provided with proper means of ventilation, and no doubt, also, the master was responsible in proceeding to sea with her in that condition; but if any blame attached to him still greater blame lay with the owners, who duty it was to have informed themselves of the best means of ventilating coal-carrying vessels, and of applying those means to their own ships. The engineer had certainly been guilty of negligence in leaving the lamp in the tunnel after he had discovered the presence of gas, but the Court did not think this amounted to more than an error of judgement. The certificates of the captain and chief engineer were then returned. The vessel was on a voyage from Cardiff to Malta when the explosion occurred.

The Mining Journal.

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THE BLAENAVON WORKS.

It is with very great regret that we observe that political economy has broken down at Blaenavon. In fact, with all our boasted progress in education, civilisation, and what not, political economy appears to us to have broken down almost everywhere during this last five years. Another illustration has been afforded at Blaenavon of the sad fact that there is scarcely any community of feeling and interest between employer and employed in South Wales, that the South Wales working man is almost entirely regardless of any remuneration being secured to the capital which provides him with the necessaries of life, and that he is almost equally regardless of the circumstances which are daily passing around him. It will be remembered that the fate of Blaenavon was to be decided yesterday week (Jan. 17). An interval of three weeks was allowed, in which an effort was to be made to induce the men employed at the works to show whether or no they were willing to support a scheme to enable the concern to be carried on by taking such wages as would admit of its being conducted without loss. The effort was made, but it met with an unsatisfactory response; the men declined to concur in a reduction of wages, and yesterday week Vice-Chancellor Malins had only the painful alternative before him of ordering the Blaenavon Iron and Steel Company (Limited) to be wound-up compulsorily, and appointing Mr. Marten and Mr. Wallace official liquidators.

There is something terribly wrong about our modern industrial system. We say there is something terribly wrong about it because so far as the manufacture of iron is concerned, no one seems to thrive under it. Even in the days of the Romans iron making appears to have been carried on at Blaenavon, and the business which the company now about to be wound up took over was established so long since as 1798. The transfer was made to the company in May, 1870, and after the lapse of scarcely 8½ years the Blaenavon Iron and Steel Company has drifted into Chancery, after sustaining enormous losses, and is to be quietly interred under the auspices of that by no means inexperienced judicial undertaker - Vice-Chancellor Malins. We say Vice-Chancellor Malins is by no means inexperienced in the winding up business, and we may add that on the very same day on which he decided the fate of the Blaenavon Company he also ordered the tin-plate making concern known as T.W. Booker and Co. (Limited) to be wound up. If Blaenavon employs 5000 workpeople, T.W. Booker and Co. have also 1000 persons dependent upon them. T.W. Booker and Co. have had even a briefer career than the Blaenavon Company. The latter started upon its course in May, 1870, but T.W. Booker and Co. only date from 1873. In both cases heavy losses appear to have been sustained for a long time past, and absolute suspension seems to have been averted by temporary accommodation. Thus in 1878 Messrs Kennard and Waring advanced £59,400 to keep the ball rolling at Blaenavon, whilst T.W. Booker and Co. borrowed no less than £600,000 from the West of England and South Wales District Bank, and finally involved that important concern in the ruin which has overtaken so many firms and companies during the last twelve disastrous months.

When we see such facts as these passing before us we are forced to the conclusion that the limited liability Company system is a mistake when applied to the manufacture of iron, especially in South Wales. It has failed just as signally as political economy has failed. Another conclusion which we are compelled perforce to adopt is that terrible mischief has been wrought among the South Wales working classes during the last ten years by the Trades Unions and the delegates. If iron is to be again manufactured at a profit in South Wales capitalists must resort to the personal trading system, and their workpeople must labour with docility for moderate wages.

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COAL MINING AND COLLIERY MANAGEMENT.

Sir, - When some of our best seams of coal are approaching the point of exhaustion, and the depth from which coal is raised is gradually increasing, it may be well to consider the processes by which coal is got from the mines, and how it is treated on the surface preparatory to being made a marketable commodity. It should be borne in mind that we have to compete in the markets of the world with rivals (more so now than ever) both in Europe and America. Though our coal production is still increasing yet other coal producing countries, as Germany and America, are making rapid strides in raising and exporting coal, as well as in the manufacture of iron and steel, and machinery of all kinds.

The colliery interest is now no doubt suffering from the abnormal state of trade in 1872 and 1873, and the inflated prices of those years. This period of prosperity was the inciting cause of so much capital being expended in new collieries, and the extension of old ones - the result is over production, or rather large powers of over production, of coal; low prices for coal; and the closing of many mines. Added to these are the legislative restrictions imposed on the working of mines, and the higher royalty rents paid under new leases; it will thus be seen that colliery proprietors are placed under great disadvantages at the present time. Coal miners have also suffered, many having lost their employment, while the employed have to submit to prices as low, or even lower, than those paid in the year 1871. The season of high prosperity, together with strikes, has had another pernicious effect in bringing unskilled labourers into the mines; the system of getting coal now may be described as that of smashing the coal, and working and filling it in the shortest possible time without regard to making a marketable commodity. This complaint is now generally made over the North of England, the Midlands, and other coal fields of the want of skill in miners compared to that shown 40 or more years ago.

This charge brought against coal miners will have the effect of bringing into use labour-saving appliances for getting and conveying coal underground. Coal cutting machines, though being but tardily introduced, must inevitably become general, because in them we see the elements of a coal-getter which will produce the greatest quantity of large marketable coal, minimise the production of small coal, and in connection with air compressed hauling-engines reduce the cost of coal delivered into wagons on the surface to its lowest limit. These hauling-engines, it is expected, will supersede horses and putters in mines; we have no reason to doubt this if working can be laid out on the long-wall face system, and the works are concentrated into the smallest area - not scattered over all quarters of the mine, as is often seen.

The present depression of trade will not be without some good result if it stimulates to the adoption of labour-saving appliances, the lessening of the cost of getting coal, and to making a better and more marketable article, enabling us to compete successfully in the markets of all parts of the world.

It is highly important that mining engineers should avail themselves of the experience of those in other districts, both at home and abroad. As foreign engineers have availed themselves largely of the experience of our northern engineers, and in many case have improved upon them, so ought we to know what improvements have been made in foreign countries, and what is going on generally in all colliery districts. In my letter of last week I referred to the much-needed utilising of small coal, especially in the North of England coal field, by manufacturing brickets of artificial fuel from it. This would furnish a cheap fuel for house consumption, as well as lighten the general cost of working coal. In the same issue of the Mining Journal will be seen a drawing

and description of a machine which appears to be admirably adapted for making such brickets. It is much used in Belgium and France, and made by Messrs. Yeadon and Co., Engineers, Leeds.

Coal of a very impure quality worked in Saxony, containing 25 per cent. of ash, is prepared for the market by a jigging process. Six different sizes of coal are made, exclusive of dirt, and when sent away the coal contains not more than 7 or 8 per cent. of ash, a proportion which will be found in many of our steam coals. Those having impure coal of this kind to deal with may avoid much expense and loss of time in experimenting if they become acquainted with such like modes of dealing with a large quantity of impure coal in the particular mine and in other mines.

Much attention is given now to the prevention of waste in screening coal, not only on the screen, but in its fall from the screen to the bottom of the wagon. Instead of falling several feet it is at a few collieries in the North received on iron trays, on which it is lowered into the wagon without breakage.

It is well if our engineers are making themselves acquainted with all improvements to mining, the application of machines to cutting coal, hauling underground, the utilisation of small coal, the coking of coal, using waste heat from ovens to heat boilers, brickworks, etc., and the screening of coal properly. This would enable them to advise in the selection of sites and the construction of works, and in daily management producing an article in the most perfect marketable condition at the lowest cost consistent with the conditions existing in the mine.

The demand for coal is still increasing all over the world, wood as fuel is becoming scarce; steam-power and gas making are also on the increase, which account in part for the larger consumption of coal. Steel is now extensively used, and seems destined to supersede iron for railway, ship-building, and other purposes. The production of Bessemer steel in the year 1878 in Great Britain was about 850,000 tons, and of Siemens steel about 150,000 tons. In the year 1870 the production of all steelworks was about 230,000 tons. Several new steelworks commenced operation in 1878, others are being commenced, and new works are in contemplation. The capabilities of steelworks seem destined to be on a very extensive scale of production. At some works, as at Eston, Barrow, &c., in England, and other works in France, the pig-iron is run from the blast-furnaces direct to the Bessemer converters, thus dispensing almost with the use of fuel. In all cases the saving of fuel and of labour in making steel as compared with iron is so great that steel rails are now manufactured at a cost very little more than that for ordinary iron rails. Doubtless if the capital were at hand many iron-works would now be in a process of transition from iron to steel making. One effect, however, of this change will be to lessen the demand for coal, and to throw out of employment a large number of ironworkers, whose only hope of subsistence, we fear, would be in the field of emigration. Of late years the burdens and perplexities of colliery owners have been hard to bear; we trust, however that better times are dawning upon us. Though the great prosperity of six years ago may never again be experienced, and it is better that this should not come to pass, we do hope that this period of adversity may incite us to increased exertion in putting our works in order, enabling us to hold our own by the means indicated in this letter, and will stimulate capitalists to exercise continued economy, and adopt mechanical appliances for coal cutting, hauling and other processes; and will serve to remind coal workers of the necessity of being industrious and careful in times of prosperity as well as in times of adversity.