Miners' Journal.

POTTSVILLE, PA.

SATURDAY, SEPTEMBER 6, 1856.

☞ The circulation of the MINERS' JOURNAL is equal to the aggregate circulation of any THREE other English newspapers published in the County—and each circulates among the best portion of the population, an advertisement inserted in its columns is, of course, worth as much to the advertiser as if published in any three other papers. In addition to this the rates of advertising are always graded in price according to the circulation of the paper.

OUR PRINCIPLES.

FREEDOM OF SPEECH.

FREEDOM TO KANSAS.

NOT ANOTHER INCH OF SLAVE TERRITORY.

The Union. Now and Forever, and the men who will carry out these Principles.

The flag upon which those principles are inscribed, we hung to the breeze recently. The ticket to support them in the coming Presidential contest, have been found. They are JOHN C. FREMONT, of California, and WM. L. DAYTON, of New Jersey. We therefore, add to the folds of our flag,

FREMONT, FREEDOM, THE CONSTITUTION AND THE UNION.

FRIENDS OF FREEDOM!

Circulate the Documents.

	Per Hundd
Life of Fremont in English,	$2 50
" " " German,	2 50
" " " Welsh,	2 50
Colfax's Speech on the wrongs of Kansas in German and English,	1 25
Sumner's Speech in German, English and Welsh,	3 00
Buchanan's Low Wages Doctrine,	62½
Our Whites of the South,	62½
Northern Democracy the Ally of Slavery,	1 25

HERALD OF FREEDOM.

Rally! Rally!! for Fremont and Dayton, Free Speech, Free Territory, and the Principles of Washington and Jefferson.

CAMPAIGN PAPER FOR THE TIMES.

In order to keep up with the spirit which is now sweeping the country for FREEDOM AND FREMONT, we propose to issue on the 10th of September a Campaign Paper, entitled the "Herald of Freedom." Ten numbers will be published between this and the Presidential Election. To single subscribers we will furnish it for 25 cents.—Clubs will receive 50 copies for $11 00, or 100 copies for $20 00. Be prompt in forming Clubs friends of Liberty. Let the good work be pushed energetically. Every voter in the State, should have the priceless principles of the present hour placed prominently before him. We have contributed $20 00 to circulate documents here, feeling that the triumph of right will repay us as the investment. Friends of the Cause, emulate our example. Form Clubs immediately and send in the names of subscribers from this and adjoining Counties—let the "Herald" convey the tidings "of Freedom" to every dwelling and place of business in the Region. In this second number, of the paper we will issue the first number. The friends of Mr. Clymer can also have a portion of the paper devoted to them. Furnish us with matter, and we will publish it. We are in favor of Free Discussion, and opposed to the spirit and principles of the so-called Democracy. In that spirit we propose to hail on the "Herald of Freedom." The *Miners' Journal* cannot accommodate half the matter we desire to publish during this campaign, and for which it is imperatively demanded. We hope the response from the friends of Fremont and Fillmore in this section will be prompt. Form Clubs. The terms are reasonable, and the principles at stake of immense importance.

BENJ. BANNAN.

Pottsville, Aug. 25, 1856.

☞ OUR ADVERTISING COLUMNS.—The attention of our readers is respectfully solicited to the new features to be found in our advertising columns.

☞ "HARRISBURG TELEGRAPH."—Messrs. McClure and Sellers have disposed of their interest in this Capital paper, to Messrs. George Bergner & Co. The Herald of Truth, the *Telegraph* has no superior in Pennsylvania. It has our best wishes for increased prosperity under the new proprietors.

☞ FREMONT CLUBS.—All persons, without regard to party distinctions, who are opposed to the extension of Slavery, and in favor of the great Free principles of the present contest, are requested to meet at Hill's Hotel, in this Borough, on Monday evening next, for the purpose of fully organizing a Fremont Club. Come one—come all!

☞ THE PHILADELPHIA SUN AND TIMES.—These papers can be had of the carrier here. They are a penny paper. As the *News* has been bought, and the Louisiana are worth but little. We would suggest to those of our citizens who desire honest, independent papers, to take the *Sun* and *Times*.

☞ A NOBLE CLUB.—The attention of our readers is referred to the Card of Messrs. Hallowell & Co., of Philadelphia, which are attached some receipts of the North American. They will be found in the First Page. We congratulate Philadelphia in the possession of merchants whose religious and political principles cannot be purchased.

☞ THE CANNON BE CLEAN.—While in some sections of the South the shrieking Lower is checking the circulation of this paper, in another part a Club ordered 20 copies. We are not at liberty to state which section it is received, for fear the Slave Fiend might pounce upon his victims, and they suffer for daring to take a paper devoted to freedom.

☞ THE HERALD OF FREEDOM.—Our campaign paper—will be out next week. It will contain Greeley's celebrated Speech at the New York Tabernacle, and a portion of Buchanan's Ten Cent Speech, which forms a fine production of sense to the European and Cuban standard. Form clubs and send in orders. Subscription price, 25 cents between this and the election.

☞ FREEDOM IN THE SLAVE STATES.—The secret act in regard to the Strickland & Co. affair at Lexington. The firm had the life of Frederick Douglass for sale—written by himself, entitled "My Bondage and my Freedom"—of course only to such as would buy. According to this, the people there with have no right to select their own reading. Beautiful, Republic! Magnificent institutions, Slavery! Are you not in raptures, Freemen, at the privileges accorded your brethren by Democracy? Hurrah for the "progress of freedom" in 1856.

☞ THE ALLENTOWN AND ALLENTOWN RAILROAD.—In a couple of weeks, our business men will be called upon to subscribe to the remaining stock of this projected Road, necessary to put it under contract. The amount wanted for the purpose $100,000. We hope every man of business in the growth and prosperity of the Region will prepare to assist in pushing through the Road. Any information needed in regard to the matter, will be cheerfully afforded at the office previous to the time fixed for making up the books for subscription.

☞ CALL FOR DOCUMENTS.—The friends of Freedom in various sections of the county, will call at their respective post-offices, and inquire for documents. The postmasters have a peculiar habit of giving them out unless they are particularly inquired for. As many of the documents are of importance, we trust that our friends will not neglect to call for them. Were the present Jesuitical system, not in full blast, it would be necessary to call attention to this matter. As until the system is changed, it will do all it can to prevent the circulation among the people of Republican documents.

☞ SIGNIFICANT.—The Erie American State Council met at Lancaster on Tuesday. Forty-one Counties were represented by 112 delegates. Pending a resolution endorsing Fillmore and Donelson, a motion to postpone was put. This is the old, true blue, 12th section Americans of the Philadelphia Convention. That they will fraternize with the friends of Fremont is now placed beyond the possibility of a doubt. The opposition to the Pro-Slavery Sham Democracy in this State will be completely united, not only on the State and County tickets, but at the Presidential election in November. James Buchanan will be defeated in this State. Every man opposed to the platform upon which he stands, will assist in the consummation of the great work.

☞ A "SHRIEK" FOR FREMONT.—In Vermont on Tuesday last, an election for State officers and members of Congress took place. Slade and Fletcher, the Republican candidate for Governor, was elected over Henry Keyes, Dem., by over 20,000 majority. Three Republican members of Congress are elected, and nearly all the Republican candidates for the State Legislature. This is the second decided "shriek" for freedom this season. Pennsylvania was favored de-with the first. When Pennsylvania "tunes her pipes," the effect will pale every aristocratic, arrogant, slave-holding cheek between our Southern boundary and the Gulf of Mexico. Iowa and Vermont have done nobly in spurning the shackles of the slave power. Let Pennsylvania follow in their example. Let the "Old Keystone State" emulate their example.

THE SUNBURY GAZETTE.—Until our facetious contemporary informs us of a single mental qualification fitting William L. Dewart for the Congressional position to which he aspires, it is useless for us to contrast him with our present able representative, the Hon. James H. Campbell. The immeasurable superiority of the latter gentleman over the dexterity Major, is so palpable, that even the recipients of W. L. D.'s pecuniary bounties, smile whenever a comparison is instituted. When you present a candidate, give us one we can criticise. The Major possesses not a point we can get a hitch upon. We believe he has money and is a "good feeder." We will continue a list of his qualifications as they are furnished.

CONGRESSIONAL CONFEREES.—We learn that the Congressional Conferees from Schuylkill and Northumberland counties will meet at Mount Carmel on Thursday next, for the purpose of placing a Candidate in nomination. As both Counties recommend the renomination of our present able representative in Congress—the Hon. James H. Campbell—he will of course, be placed in nomination, provided he will accept.

Since the above has been placed in type, we are gratified to learn that the Hon. James H. Campbell has consented, after considerable importunity, on the part of the Opposition, in this District, to accept a re-nomination for Congress. He will run as the Union candidate, and as the advocate of those great Free Principles, which are embodied in the present contest.

EUROPEAN INTELLIGENCE.—Per steamship *Persia* at New York, we are in possession of Liverpool dates to the 23d ult. The British Parliament had been further prorogued until November 12th. The *London Times* endorses the views of Mr. Marcy, in relation to privateering. The Queen of Oude, the mother of the deposed monarch, was in England. Louis Napoleon was at Biarritz, urging the claim of Prince Pierre Bonaparte to the throne of the Danubian Kingdom, and considering what title to bestow on the American descendant of Prince Jerome. The harvest in France is regarded as an average. A report is mentioned, that France and England have addressed an ultimatum to the King of Naples, and that some satisfactory reforms have been promised. Count deMorny, the French representative, was well received at St. Petersburg. The assassination at Castrania, by Austrian troops, of the Roman Tribune and his two sons, is spoken of in England in the strongest terms of indignation: the *London Times* is particularly severe. The jury have returned a verdict in the case of the 114 persons who lost their lives by the colliery explosion in South Wales. Seventeen of the jury agreed to a verdict of manslaughter, against J. Thomas, the manager, W. Rowlands, the overman, and M. Rowlands, D. Jones, and W. Thomas, the firemen, for having by their negligence caused the catastrophe. Cotton has declined, and breadstuffs have advanced. The bullion in the Bank of England had increased £39,000. American Stocks are unchanged.

THE COAL TRADE.

Pottsville, September 6, 1856.

The quantity sent by Railroad this week is 59,329 16—by Canal 34,660 18 tons—for the week 87,490 14 tons. Total by Railroad 1,484,878 06 against 1,611,330 04 tons—DEC. by Canal 711,392 18 tons against 714,090 05 tons to same period last year.

The shipments this week show a falling off of 1870 tons since last week. The demand for Coal is on the increase, but is not as brisk as it should be, considering the state of the trade. We are not authorized to state that there will be another advance in the rates of toll and transportation on the Railroad and Canal on the first of October, but we believe that the actual state of the trade will be realized by that time, and that the rush for Coal will be so great, that they would be warranted in advancing the tolls 25 cents more to make up for the diminished revenue received in the earlier part of the season, in consequence of consumers holding back under the expectation of getting Coal cheaper, based on the *delusive representations* of speculators in Coal Stocks, directly in opposition to the *facts* set forth by those engaged in the trade.

INCORRECT.—The *Public Ledger* of last week, in giving a summary, of the Coal Trade for the week stated that the tonnage showed an increase on the corresponding week of last year. This is an error, and a serious one too, as it is calculated to create a false impression with Eastern consumers. The facts are simply, that the shipments last week from the three principal Regions, the Schuylkill, the Lehigh and the Lackawanna, were 9,279 tons behind the tonnage of the same Regions, the corresponding week last year; and that this week, the deficiency again sums up some 3000 tons. The press of the cities, who attempt to furnish Coal statistics to their readers, should be particular in their figures. For several weeks the deficiency has been on the increase, and with the Trade in its present peculiar condition, it is impossible to make it up. Our cotemporaries should be particular in their statements, as the interests of consumers are often affected by blunders such as that committed by the *Ledger*, last week.

The State of the Coal Trade as far as consumers are concerned is assuming quite a serious aspect,—instead of the great deficiency being made up, it is absolutely increasing every week, as the following will show, which gives the state of the trade at the same periods in 1855 and 1856:

	In. in 1856	*Dr. in* 1856	*In last year over* 1855
Schuylkill,	160,656		272,869
Lehigh,	29,830		72,272
Lackawanna,	66,875		75,000
Penna. Coal Co.	11,708		3,000
Wilkesbarre,	16,000		
	32,538	226,831	425,631
		732,538	
Decrease in 1856,		204,393	204,393
			630,024

Which added to the 425,631 tons ahead of the trade in 1854 last year, makes a difference in the trade of 630,024 tons!!! compared with the same period last year, with only about two and a half months of the shipping season remaining—it is utterly impossible to make up the supply of last year for the balance of the season, and where is the increase of about 600,000 tons to come from?

The condition of the Trade will be fully realized by consumers during this and the coming months of the remainder of the active shipping season of 1856. The probability that the tolls will go up still further on the 1st proximo, and that coast wise freights are steadily advancing, with a scarcity of vessels, caused by many being tied up at Quarantine at New York, will cause a rush for Coal, calculated to send the prices up.

There are plenty of Eastern orders now at Port Richmond; but no means of transport as rapidly as is desirable. The situation of the Trade, notwithstanding that other business, manufacturing, transporting, importing, etc., is prosperous, prices of provisions lower, and with every reason to suppose that the annual increase will be needed this year is certainly pulsating. In this Region prices of Coal are ruinously low. The average increase of the Trade for the last five years, has been 640,000 tons per annum. Last year it was 685,000 tons, and the amount being over at the end of the season was small. One cause of the holding back of consumers is undoubtedly, the impression which has prevailed that large Supplies would be sent to market Coal—new Coal being given. This idea will be dissipated, when consumers find the prices of Coal going up under the effect of a bare market, and the promises of speculation merely made to influence the sales of stock in which they have an interest, without sending a ton of Coal to market. To obviate in a measure, the distress which would be occasioned the coming Winter by a scarcity of, and consequent high prices of Coal, we urge upon consumers to lay in forthwith their supplies. If they neglect this judicious policy, they will find themselves shortly, in a rapidly rising market, and the advantages of low prices which they have now, beyon[illegible] their reach. Be wise, and purchase while the prices are as low as they will become this season.

THE LEHIGH VALLEY RAILROAD.—We understand that the quantity of Coal shipped over this Road will not be materially lessened by the recent bridge accident at Easton. The Road expects to keep up its regular weekly shipments without any falling off whatever. We made the statement last week, in regard to the interruption of the trade of the Road on the strength of a telegraphic dispatch received in relation to the accident, in which it was stated that the shipments of Coal would be cut off for about six weeks.

The Coal trade over the Beaver Meadow Railroad for the season was:

	Tons.
To August 30th, 1856,	333,059
To same time in 1855,	270,277
Increase in 1856,	62,779
Cash receipts to Aug. 30, 1856,	$195,482 43
Aug. 30, 1855,	159,046 33
Increase, 1856,	$36,406 10

In the New York correspondence of the Philadelphia *Ledger*, the failure of Brown & Co., is reported. This alludes, we presume, to the Coal firm of D. P. Brown & Co., of this place. Some time since, partnership difficulties occurred in the firm, and it took occasion, owing to the low price of Coal, to suspend, in preference to continuing, submitting to ruinous "shaves," etc., to settle these difficulties. We learn that the assets of the firm far exceeded their liabilities when it suspended, and that it has again resumed business.

The Bostonians are wincing at the high price of Coal in that city at this early period in the season. A ton of Coal, which costs $4 25 in Philadelphia, by the time it reaches Boston costs $6 84. The selling price is $7 00.—*Philadelphia Ledger.*

If they are complaining already, what will be the cry next winter when it goes up to $10 00 per ton. It will be a severe lesson; but one necessary to teach Eastern consumers to order their supplies at an earlier day of the season, when they can purchase on favorable terms.

COLD SPRING, LEBANON Co., PA., Aug. 29, '56.

B. BANNAN, Esq.—*Dear Sir:*—The Railroad distance from Schuylkill Haven, *via.* Orwigsburg, &c., to the Lehigh Valley Railroad at the mouth of Lizard Creek, as given in your paper of the 23d ult. 30 *miles, appears evidently to be incorrect.*

It is 30 miles by measurement on the State Map, in an *air line*, from Schuylkill Haven to the mouth of Lizard Creek, on the Lehigh. Allowing for the local curvature, (which is unavoidable,) the railroad distance will be about 35 miles, and the comparison of distance *from Schuylkill Haven to Allentown*, a common point, will stand thus, *viz. Schuylkill Haven and Lehigh River Railroad:*

	Miles.
Schuylkill Haven to mouth Lizard Creek, on Lehigh,	35
Mouth of Lizard Creek to Allentown,	21
Total Schuyl. Haven *via.* Orwigsburg, &c.,	56
Now *by the Auburn & Allentown*, we have:	
Schuylkill Haven to Auburn,	6
Auburn to Allentown,	40
Difference,	10

And the grades on the Schuylkill Haven and Lizard Creek route, will be at least twice as high per mile as on the Auburn and Allentown, and therefore far less favorable for Coal.

Very truly yours,

ELLWOOD MORRIS.

For the Miners' Journal.

EUROPEAN CORRESPONDENCE.

Letters from South Wales.—(Continued.)

No. 20.

DEAR JOURNAL:—The production of the Collieries, worked in connection with the gigantic Iron works of South Wales, is so great, as to excite the astonishment of one not fully aware of the enormous demands for fuel, made at every stage of the process of manufacturing rails, by one of these mammoth establishments.

When the Pennsylvanian operator is informed that most of these celebrated works are in the regular practice of turning out from 500 to 2000 tons of Coal daily, to meet their varied requirements in the making of Iron, he will perceive that here is a scale, in comparison with which, the largest operations on that side of the Atlantic sink into mediocrity.

To be assured of this, it is only necessary to inspect the following table, which is a correct statement derived by the writer from actual visit of the different works mentioned, and information obtained through authentic sources on the spot.—This table, the reader will please to observe, is only a comparative index to the magnitude of the mining operations carried on at the several works, since it confines itself to stating the quantity of *Coal* only that is mined for the *Iron Ore*, raised usually from the same pits, or brought out from the same levels, is not mentioned.

STATEMENT OF THE DAILY OUTPUT OF COLLIERIES IN SOUTH WALES—IN TONS OF 2240 POUNDS:

	Tons per day.
Pontypool Works,	800
Aberaychan "	600
Vortex "	450
Blen Avon "	500
Nantyglo "	800
Ebbw Vale "	1100
Rumney "	900
Cyfarfha "	1600
Dowlais "	2000

The last of these, *Dowlais*, one of the great Merthyr Tydvil establishments, with the enormous output of 2000 tons of Coal daily, is the largest Ironwork in Wales, or in the world. It possesses no less than 18 *blast furnaces*, and the capital invested is nearly eight millions of dollars. That extensive as this is, it does not much surpass many of its neighbors, which thickly stud the vicinity of Merthyr with their stacks and machinery. The Cyfarfha works include 17 blast furnaces and turn out weekly 2000 tons of pig iron.

Coal! Coal!—how innumerable are its uses. Burning to ashes on the grate of this steam boiler, it raises itself from the bowels of the earth, to the surface; charged into that high furnace, it produces the strong ore which, awhile ago lay imbedded with it in the subterranean strata; the fiery blast, which assists in this reduction, has been heated by *Coal*; the power that works those ponderous bellows, to produce the blast, is derived from *Coal*; for are not those unsurpassable engines driven by the steam which it evaporates from water—that water itself pumped up from the earthly recesses by means of *Coal*?

And after this universal agent has calcined and smelted the Ore, and the molten iron runs in a stream from the furnace, through all the successive operations, the refining—the squeezing—the balling—the reheating—the puddling—the infinity of rollings—and, the absolutely innumerable minor processes through which a lump of pig iron must pass ere it is transposed into a finished rail or merchantable bar, what could be done without *Coal*? Nothing! for, the part it bears is vital. Coal, burning in the furnaces of a locomotive, transports this finished bar over an iron railway, to the seaboard—loads it into the hold of vessels—and is even supplanting the winds of Heaven, in wafting it across the ocean to a market.

And yet, while fulfilling these grand purposes, it does not disdain the apparently less exalted duties of *warming* the swarthy laborer—who directs those varied agencies—of *cooking* his food, and that of his household—and of furnishing him with *light*. Can order that the never-ceasing work may be carried on, in the night as well as in the day.

Surely this is some fabulous substance, which we have described—some "philosopher's stone," existing only in the imagination of the visionary—can it be true that it really exists, and is dug out from between stony strata, which we call "mineral?" No! less true than wonderful! and that 30,000,000 persons in Great Britain are engaged beneath the surface of the ground in its actual extraction.

Let us analyse the weekly consumption of Coal, of one of the large Iron works of South Wales, and discover what proportions of the whole quantity mined, are due to the various departments of the manufacture. For this purpose, we will select the Rumney works near Merthyr, an averaging, first class establishment, engaged in the production, weekly, of about 1000 tons of rails—there being 8 blast furnaces, that run from 80 to 160 tons of iron each, in the week.

STATEMENT OF COAL CONSUMED WEEKLY AT THE RUMNEY IRON WORKS, SOUTH WALES.

	Tons per week.
By 8 Blast furnaces,	
Refining furnaces,	25
" 58 Puddling furnaces,	1000
" 27 Balling furnaces,	400
" 9 Reheating furnaces,	100
" 8 Forge and colliery engines (400 horse power),	400
(The boilers of the blast engines, 4 in number, of 400 horse power, are fed with the waste gases from the furnaces).	
9 Locomotive engines,	250
For heating the blast,	150
Total in the manufacture of iron,	4325
Allowance to 1800 hands, representing a population of 10,000—at $1 00 to $1 50 per ton, delivered,	400
Sold to engineers, &c.,	75
Steam Coals (mined per contract, for sale to the steam navy),	2000
Total amt. of Coal mined at Rhymney,	6800

In these works are invested 3½ millions of dollars!

In the Rumney Valley are a number of operators for market entirely. The Coal they extract, is a semi-bituminous variety, containing about 80 per cent. of Carbon, and peculiarly adapted to steam purposes; from not *binding* in the fire.—Hence, it is known as "free-burning," or more frequently as "steam Coal." It will not coke, except to a slight degree in large fragments, but never entirely coheres together and loses its form, as with the more bituminous varieties on the East.

In the furnaces of the fire-box of a locomotive, a layer of Coals, four inches thick, when ignited, swells and expands to a loose heap of eight inches, yielding from the greatest flame little or no smoke, and so facilitating the access of the air, that the heat is intense. In the blast furnaces, it is of course used "raw"—saving a considerable expense which would otherwise accrue from *coking*. The evaporative power of this Coal is stated by the Admiralty Report, to be over nine pounds of water from a pound of the fuel.

One of the largest operators of this species of Coal in the country, is Thomas Powell, whose daily output is 2000 tons. In two of his collieries situated in the Rumney Valley, he is said to have invested $185,000. There are numerous other proprietors of almost equal size, as Russell, Marshall, the Aberdare Coal Company, Wayne & Co., who, with Powell, ship vast quantities of Coal from the seaport towns of Cardiff, Newport and Swansea. In the Taff Vale, Jones and Joseph send 700 tons of steam Coal to market daily.

In many of these numerous valleys which intersect, at every few miles, the Coal field of South Wales, and in which, to their infinite advantage, all the great Iron and Coal works of the country have been located, there exists to this day the old tram roads, built (before the knowledge of steam) to convey by the power of horses, the Coal and manufactured iron to the seaboard—and to bring back the imported ore, and groceries needful for the settlement.

In former times, the locomotive has taken the place of the long file of horses—or of the still more primitive conveyance on the backs of mules. In the Ebbw Vale, such a tram-road existed, from the head of the Valley to Newport, 20 miles, that was built 60 years ago. Sometimes these roads belong to the Iron works, whose absolute existence depended upon their construction, but often to joint-stock companies, to whom they have proved the most profitable of investments. The Ebbw Vale tram road paid a dividend of 20 per cent. for years. A few years ago it was altered into a passenger road—a convenience demanded by the increasing density of the population, in the large towns—or small cities, as they might properly be called—that has grown up around the furnaces depending upon them for a livelihood.

The train-road of the Rumney Iron Company, in an adjoining valley, is 24 miles long to New port. Owing to the imperfection of inclinatory, it has been costing them 4 cents per ton per mile, to convey their rails to the seaboard—2 cents for locomotive power and 2 cents for hands. To supplant it, there is now constructing the Rumney railway, by a company which will be able to carry the iron, for at least half of that rate. On the London & North Western railway, 2 cents per ton per mile is charged for iron, and from 1½ to to 1½ cents per ton for Coal, according as the distance is over or under 50 miles.

What a change has taken place, since first these old tram-roads were built. Since their day, the railroad system has grown up to its present maturity—carrying with it, a complete *bouleversement* in the operations of the great Iron works—and at this time, we find their exclusive powers devoted to the manufacture of an article, which in the early days of these tram-roads, had not even its existence in the imagination.

W. J. P.

On Ventilation.

No. IV.

(Continued.)

The furnace I would recommend to be used as a ventilating furnace, differs from the New Castle ventilating furnace by combining the parallel walls on which the arch is abated, a sufficient height above the level of the fire grates, in order to allow a very slightly curved arch to be formed, thus forming a space above the fire, which would be oblong and of an equal area to the chimney or air shaft. This oblong shape could be applied to form the flue leading from the furnace to the air shaft. The bridge and bearing bars with the fire grates, would be reseated into a similar position as they are in the New Castle ventilating furnace. Nothing remains but to add doors to the front of the furnace to complete it. But the heat of such a furnace would be more intense than the New Castle furnace, and the inner surfaces of the flues, and the path exposed to the heat would necessarily have to be built of some material of a highly fire proof character, and the parallel walls which compose the abuts for the arch would also be required of a strength and stability sufficient to resist the action of the elevated temperature. The air after it passed through the fire in this furnace would be converted against the roof of the furnace and then carried to the bottom of the air shaft along the flue leading thither, where it would receive an additional amount of heat from both the roof of the furnace and the flue. The roof of the flue and furnace becoming heated by the reflective heat of the furnace.

The effect of a furnace similar to the one just described, might be expected to throw out at the top of an air shaft fifty feet in area, and one hundred feet in height—a quantity of air equal to one hundred thousand cubic feet per minute. The area of fire grate, in this case would be sixty two square feet. This effect would be equal to the best two of the New Castle furnaces. In this instance, the current of heated air is supposed to be at 300° above the temperature of the external air. This elevation of temperature is nothing uncommon in air in a chimney shaft, for in the case of air going through the fire of a furnace and afterwards passing along flues under ste m boilers, the temperature of the air in the chimney is at times found to exceed 600°, and the boilers exert a cooling influence on the heated air or gases. This has given rise to many schemes in order to "rob" the gases of part of this heat, before it escaped to the chimney, and in this manner economize fuel in case of working steam engines.

In managing the furnace the feeds of fuel ought to be thrown on the fire at regular intervals of time; spread evenly and in thin layers on the fire grates, and the fire kept free from dead ashes and clinkers, to allow the air free access to all parts of the fire.

The least part of the air ways leading to the furnace ought to possess an area of one third less than that of the air shaft. This is the sum of the areas of two or more air ways, because the airs sometimes divided into parts, and each part is apportioned to ventilate a district of the same mine; the currents are often brought in various directions to the furnace.

In the New Castle Collieries, the dividing of the principal current or each body of air is much practised.—This causes the current to meet their varied requirements in the making of Iron, he will perceive that here is a scale, in comparison with which, the largest operations on that side of the Atlantic sink into mediocrity.

To be assured of this, it is only necessary to inspect the following table, which is a correct statement derived by the writer from actual visit of the different works mentioned, and information obtained through authentic sources on the spot.—This table, the reader will please to observe, is only a comparative index to the magnitude of the mining operations carried on at the several works, since it confines itself to stating the quantity of *Coal* only that is mined for the *Iron Ore*, raised usually from the same pits, or brought out from the same levels, is not mentioned.

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Nantyglo "	800
Ebbw Vale "	1100
Rumney "	900
Cyfarfha "	1600
Dowlais "	2000

The last of these, *Dowlais*, one of the great Merthyr Tydvil establishments, with the enormous output of 2000 tons of Coal daily, is the largest Ironwork in Wales, or in the world. It possesses no less than 18 *blast furnaces*, and the capital invested is nearly eight millions of dollars. That extensive as this is, it does not much surpass many of its neighbors, which thickly stud the vicinity of Merthyr with their stacks and machinery. The Cyfarfha works include 17 blast furnaces and turn out weekly 2000 tons of pig iron.

Coal! Coal!—how innumerable are its uses. Burning to ashes on the grate of this steam boiler, it raises itself from the bowels of the earth, to the surface; charged into that high furnace, it produces the strong ore which, awhile ago lay imbedded with it in the subterranean strata; the fiery blast, which assists in this reduction, has been heated by *Coal*; the power that works those ponderous bellows, to produce the blast, is derived from *Coal*; for are not those unsurpassable engines driven by the steam which it evaporates from water—that water itself pumped up from the earthly recesses by means of *Coal*?

And after this universal agent has calcined and smelted the Ore, and the molten iron runs in a stream from the furnace, through all the successive operations, the refining—the squeezing—the balling—the reheating—the puddling—the infinity of rollings—and, the absolutely innumerable minor processes through which a lump of pig iron must pass ere it is transposed into a finished rail or merchantable bar, what could be done without *Coal*? Nothing! for, the part it bears is vital. Coal, burning in the furnaces of a locomotive, transports this finished bar over an iron railway, to the seaboard—loads it into the hold of vessels—and is even supplanting the winds of Heaven, in wafting it across the ocean to a market.

And yet, while fulfilling these grand purposes, it does not disdain the apparently less exalted duties of *warming* the swarthy laborer—who directs those varied agencies—of *cooking* his food, and that of his household—and of furnishing him with *light*. Can order that the never-ceasing work may be carried on, in the night as well as in the day.

Surely this is some fabulous substance, which we have described—some "philosopher's stone," existing only in the imagination of the visionary—can it be true that it really exists, and is dug out from between stony strata, which we call "mineral?" No! less true than wonderful! and that 30,000,000 persons in Great Britain are engaged beneath the surface of the ground in its actual extraction.

Let us analyse the weekly consumption of Coal, of one of the large Iron works of South Wales, and discover what proportions of the whole quantity mined, are due to the various departments of the manufacture. For this purpose, we will select the Rumney works near Merthyr, an averaging, first class establishment, engaged in the production, weekly, of about 1000 tons of rails—there being 8 blast furnaces, that run from 80 to 160 tons of iron each, in the week.

STATEMENT OF COAL CONSUMED WEEKLY AT THE RUMNEY IRON WORKS, SOUTH WALES.

	Tons per week.
By 8 Blast furnaces,	
Refining furnaces,	25
" 58 Puddling furnaces,	1000
" 27 Balling furnaces,	400
" 9 Reheating furnaces,	100
" 8 Forge and colliery engines (400 horse power),	400
(The boilers of the blast engines, 4 in number, of 400 horse power, are fed with the waste gases from the furnaces).	
9 Locomotive engines,	250
For heating the blast,	150
Total in the manufacture of iron,	4325
Allowance to 1800 hands, representing a population of 10,000—at $1 00 to $1 50 per ton, delivered,	400
Sold to engineers, &c.,	75
Steam Coals (mined per contract, for sale to the steam navy),	2000
Total amt. of Coal mined at Rhymney,	6800

In these works are invested 3½ millions of dollars!

In the Rumney Valley are a number of operators for market entirely. The Coal they extract, is a semi-bituminous variety, containing about 80 per cent. of Carbon, and peculiarly adapted to steam purposes; from not *binding* in the fire.—Hence, it is known as "free-burning," or more frequently as "steam Coal." It will not coke, except to a slight degree in large fragments, but never entirely coheres together and loses its form, as with the more bituminous varieties on the East.

In the furnaces of the fire-box of a locomotive, a layer of Coals, four inches thick, when ignited, swells and expands to a loose heap of eight inches, yielding from the greatest flame little or no smoke, and so facilitating the access of the air, that the heat is intense. In the blast furnaces, it is of course used "raw"—saving a considerable expense which would otherwise accrue from *coking*. The evaporative power of this Coal is stated by the Admiralty Report, to be over nine pounds of water from a pound of the fuel.

One of the largest operators of this species of Coal in the country, is Thomas Powell, whose daily output is 2000 tons. In two of his collieries situated in the Rumney Valley, he is said to have invested $185,000. There are numerous other proprietors of almost equal size, as Russell, Marshall, the Aberdare Coal Company, Wayne & Co., who, with Powell, ship vast quantities of Coal from the seaport towns of Cardiff, Newport and Swansea. In the Taff Vale, Jones and Joseph send 700 tons of steam Coal to market daily.

In many of these numerous valleys which intersect, at every few miles, the Coal field of South Wales, and in which, to their infinite advantage, all the great Iron and Coal works of the country have been located, there exists to this day the old tram roads, built (before the knowledge of steam) to convey by the power of horses, the Coal and manufactured iron to the seaboard—and to bring back the imported ore, and groceries needful for the settlement.

In former times, the locomotive has taken the place of the long file of horses—or of the still more primitive conveyance on the backs of mules. In the Ebbw Vale, such a tram-road existed, from the head of the Valley to Newport, 20 miles, that was built 60 years ago. Sometimes these roads belong to the Iron works, whose absolute existence depended upon their construction, but often to joint-stock companies, to whom they have proved the most profitable of investments. The Ebbw Vale tram road paid a dividend of 20 per cent. for years. A few years ago it was altered into a passenger road—a convenience demanded by the increasing density of the population, in the large towns—or small cities, as they might properly be called—that has grown up around the furnaces depending upon them for a livelihood.

The train-road of the Rumney Iron Company, in an adjoining valley, is 24 miles long to New port. Owing to the imperfection of inclinatory, it has been costing them 4 cents per ton per mile, to convey their rails to the seaboard—2 cents for locomotive power and 2 cents for hands. To supplant it, there is now constructing the Rumney railway, by a company which will be able to carry the iron, for at least half of that rate. On the London & North Western railway, 2 cents per ton per mile is charged for iron, and from 1½ to to 1½ cents per ton for Coal, according as the distance is over or under 50 miles.

What a change has taken place, since first these old tram-roads were built. Since their day, the railroad system has grown up to its present maturity—carrying with it, a complete *bouleversement* in the operations of the great Iron works—and at this time, we find their exclusive powers devoted to the manufacture of an article, which in the early days of these tram-roads, had not even its existence in the imagination.

W. J. P.

On Ventilation.

No. IV.

(Continued.)

The furnace I would recommend to be used as a ventilating furnace, differs from the New Castle ventilating furnace by combining the parallel walls on which the arch is abated, a sufficient height above the level of the fire grates, in order to allow a very slightly curved arch to be formed, thus forming a space above the fire, which would be oblong and of an equal area to the chimney or air shaft. This oblong shape could be applied to form the flue leading from the furnace to the air shaft. The bridge and bearing bars with the fire grates, would be reseated into a similar position as they are in the New Castle ventilating furnace. Nothing remains but to add doors to the front of the furnace to complete it. But the heat of such a furnace would be more intense than the New Castle furnace, and the inner surfaces of the flues, and the path exposed to the heat would necessarily have to be built of some material of a highly fire proof character, and the parallel walls which compose the abuts for the arch would also be required of a strength and stability sufficient to resist the action of the elevated temperature. The air after it passed through the fire in this furnace would be converted against the roof of the furnace and then carried to the bottom of the air shaft along the flue leading thither, where it would receive an additional amount of heat from both the roof of the furnace and the flue. The roof of the flue and furnace becoming heated by the reflective heat of the furnace.

The effect of a furnace similar to the one just described, might be expected to throw out at the top of an air shaft fifty feet in area, and one hundred feet in height—a quantity of air equal to one hundred thousand cubic feet per minute. The area of fire grate, in this case would be sixty two square feet. This effect would be equal to the best two of the New Castle furnaces. In this instance, the current of heated air is supposed to be at 300° above the temperature of the external air. This elevation of temperature is nothing uncommon in air in a chimney shaft, for in the case of air going through the fire of a furnace and afterwards passing along flues under ste m boilers, the temperature of the air in the chimney is at times found to exceed 600°, and the boilers exert a cooling influence on the heated air or gases. This has given rise to many schemes in order to "rob" the gases of part of this heat, before it escaped to the chimney, and in this manner economize fuel in case of working steam engines.

In managing the furnace the feeds of fuel ought to be thrown on the fire at regular intervals of time; spread evenly and in thin layers on the fire grates, and the fire kept free from dead ashes and clinkers, to allow the air free access to all parts of the fire.

The least part of the air ways leading to the furnace ought to possess an area of one third less than that of the air shaft. This is the sum of the areas of two or more air ways, because the airs sometimes divided into parts, and each part is apportioned to ventilate a district of the same mine; the currents are often brought in various directions to the furnace.

In the New Castle Collieries, the dividing of the principal current or each body of air is much practised.—This causes the current to meet their varied requirements in the making of Iron, he will perceive that here is a scale, in comparison with which, the largest operations on that side of the Atlantic sink into mediocrity.

To be assured of this, it is only necessary to inspect the following table, which is a correct statement derived by the writer from actual visit of the different works mentioned, and information obtained through authentic sources on the spot.—This table, the reader will please to observe, is only a comparative index to the magnitude of the mining operations carried on at the several works, since it confines itself to stating the quantity of *Coal* only that is mined for the *Iron Ore*, raised usually from the same pits, or brought out from the same levels, is not mentioned.

STATEMENT OF THE