ENGINEERING and MINING JOURNAL.

Vol. XXIV. No. 14.

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Note.—Communications relative to the editorial management should be addressed to Mr. Rothwell. Articles written by Mr. Raymond will be signed thus *

Business communications for the Western Department should be addressed to the Western Office at Denver, Colo.

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TABLE FOR THE CONVERSION OF ENGLISH AND METRIC UNITS.

This table will be published every week in the Engineering and Mining Journal. It is based on the authority of Rankine, and is correct to the fourth decimal place.

1 Meter = 3·2807 feet.
1 Foot = 0·3048 m
1 Liter (vol. of 1 kilog. water) = 0·2202 gal.
1 Gallon (vol. of 10 lb. water) = 4·541 liters.
1 Kilog. per sq. meter = 0·2048 lb. per sq. ft.
1 Kilog. per sq. mm. = 1422·28 lb. per sq. in.
1 Lb. per sq. in. = 703·0958 kilog. per sq. m.
1 Gramme = 15·4323 gr.
1 Grain = 0·0648 gram.
1 Kilogrammeter = 7·2331 ft.-lb.
1 Foot-pound = 0·1383 kgm.
1 Atmosphere = 14·7 lb. per sq. in. = 10·333 kilog. per sq. meter = 29·922 in. or 760 mm. of mercury = 33·9 ft. or 10⅓ meters water.
1 Kilogramme = 2·2046 lb. av.
1 Pound av. = 0·4536 kilog.
1 Deg. centigrade = 5·9 (deg. F. —32°).
1 Deg Fahrenheit = 9·5 deg. C. +32°
1 Calorie (kilog. water raised 1° C.) = 424 kilogrammeters = 3·9683 heat-units.
1 Heat-unit (lb. water raised 1°F.) = 772 ft.-lb. = 0·252 cal.

WANTED—BACK NUMBERS OF THE ENGINEERING AND MINING JOURNAL.

A liberal price will be paid, in cash or subscriptions, for the following numbers of the Engineering and Mining Journal:

Year.	Vol.	Numbers Wanted.	Year.	Vol.	Numbers Wanted.
1872	XIV.	1 to 18 inclusive.	1875	XIX.	14, 15.
1874	XVIII.	4, 11.	1875	XX.	7, 12, 22, 23.

Address this office.

AMERICAN INSTITUTE OF MINING ENGINEERS.

[official bulletin.]

The October meeting of the Institute will be held in Amenia, Dutchess County, N. Y., beginning Tuesday evening, October 23, at 8 o'clock.

Amenia is on the Harlem Railroad, and is reached by trains from New York, leaving at 10.30 A. M. and 3.50 P. M., arriving at 1.40 and 7.20 P. M. Members coming from the North, East, and West connect with the Harlem road at Chatham Four Corners on the Boston & Albany Railroad, where trains leave at 5.45 A. M. and 4. P. M., arriving at Amenia at 7.30 A. M. and 5.30 P. M. There are ample hotel accommodations in Amenia.

In addition to the regular sessions for reading and discussion of papers, arrangements will be made to visit the ore beds in the vicinity of Amenia, the Salisbury Mines in Connecticut, and Richmond Mines in Massachusetts, also the car-wheel works of Messrs. Barnum, Richardson & Co. at Lime Rock, and the Copake Iron Works. It is also expected that an opportunity will be afforded to visit the Twin Lakes near Salisbury, and Bashbish Falls near Copake, and to ascend Mount Washington and Mount Everett.

It has been thought best to make Amenia the headquarters for the meeting instead of Poughkeepsie, as was intimated in the last issue of the Journal, owing to its more central position in the hematite ore district.

Local Committee.—James F. Lewis, Amenia, N. Y.

Easton, Pa., Oct. 5, 1877. T. M. Drown, Secretary.

THE INDEX TO CURRENT TECHNICAL LITERATURE.

OUR NEW DEPARTMENT.

It has long been our intention to furnish every week in the Engineering and Mining Journal a brief epitome of the principal technical and scientific periodicals which contain matters of interest to those engaged in mining, metallurgy, engineering, or gas making. We have great pleasure in announcing that our arrangements are now so far complete as to enable us to open this interesting and valuable department of the Journal in our next issue.

The reviews will give each week a list of all original articles contained in each of the papers reviewed, and of such reprints as are of interest to the profession. The general tenor of the more important articles will be briefly stated, and those of special interest will be reprinted in abstract, as our space may allow. As the papers reviewed are kept on file in this office, they can be consulted by those of our readers who may desire to consult and are unable to procure them.

The amount of work involved in the reviews of so many periodicals will necessarily be enormous, but we have been kindly tendered the assistance of many of our most accomplished engineers and scientists in the work. A list of those co-operating will be placed at the head of the column, and each review will be signed with the initials of the reviewer. We will be pleased to hear from those, in any part of the country not too distant from New York, who are willing to assist in this important work, and will be obliged if each will indicate the periodicals which he desires to review. For some time to come our arrangements will not be fully completed, but we shall at once inaugurate the department, and perfect it from time to time, as occasion offers.

Our object is to give every reader of the Engineering and Mining Journal a full index to current professional literature, so that each can, by referring to a file of this Journal, ascertain what has been published on any subject connected with mining, metallurgy, or engineering in the chief professional periodicals in the English, French, German, Spanish, Portuguese, Swedish, and Russian languages. We will publish next week a list of these periodicals, and the names of the gentlemen who have consented to assist us in the work.

SILVER DOLLARS.—IV.

We shall soon see whether Congress will undertake at the extra session to legislate on the subject of the currency. There are some signs that the discussion which the subject has received since the Presidential election has calmed the fury of the silver party, and perhaps diminished its numbers. One consideration at least begins to make itself felt, which always tends to check the headlong haste of enthusiasts, namely, the necessity of defining exactly what they demand. It is not enough to say "the remonetization of silver" or "the silver dollar." That may do for a campaign watchword; but people are now inquiring what dollar is meant, and how it is to be introduced and maintained in circulation.

Even the happy thought of calling for "the dollar of our fathers," and thus stopping the mouth of financial inquisitiveness with a sop of filial piety, no longer serves its purpose. Folks will ask questions still, and they want to know *which* "dollar of our fathers." If patriotism, rather than political economy, is to dictate the choice, why not the great, the glorious dollar of the Revolution, the dollar of Bunker Hill, Saratoga and Yorktown, the dollar of Washington and of the Continental Congress? This dollar contained 375·64 grains of pure silver. It was the equivalent of the dollar of Queen Anne, and it remained the dollar of account in England and her dependencies from 1704 to the end of 1873, or one hundred and sixty-nine years. It was the dollar of our great-grandfathers and great-grand-cousins—the genuine, original, Anglo-Saxon, Family Dollar.

But Alexander Hamilton procured in 1793 a change in this time-honored, glory-crowned standard. In his report on the subject, he calls it "the ancient dollar," thus admitting the sacrilegious nature of his proposal to modernize it. There must have been a strange lack of proper reverence in "our fathers;" for they did not at all insist upon the dollar of *their* fathers. On the contrary, they meekly allowed Mr. Hamilton to fix a new standard altogether, to wit, the weight of 371.25 grains pure silver. And this new standard was arrived at by the ingenious process of estimating the average weight of the true but clipped, sweated, or worn paternal dollars then in circulation! Having thus arrived at what he called the "actual dollar," Mr. Hamilton proposed to make it the standard, on conditions as to gold which represented the market relation of gold and silver. "There can hardly be a better rule in any country," says he, "for the legal than the market proportion, if this can be supposed to have been produced by the free and steady course of commercial principles."

But our fathers, when in 1795 they began to coin gold, soon found that the legal ratio of 1 to 15 which they had established between gold and silver was an over-rating of silver. The true market ratio was nearer that of the English mint, 1 to 15·2 Hence the gold coins would not circulate. So, forty years later, those vague persons, our fathers, passed a new law, changing the weight of pure gold in the gold dollar from 24·75 to 23·20 grains, and thus establishing the ratio between the metals in coinage at 1 to 16. A slight further change was made in 1837, when the fineness of 0·9 was adopted for both dollars. But this new ratio of about 16 was as much too high as 15 had been too low; and now the silver coin would not circulate. So our fathers, who were growing older and wiser all the time, introduced in 1853 the silver subsidiary coinage, and practically abandoned the silver dollar. They had gone through both experiments with it—the experiment of undervaluation and the experiment of overvaluation; and they were satisfied of the uselessness of attempting to maintain two metals in circulation together as unlimited legal-tenders at a fixed legal ratio of value.

The final dollar of our fathers, therefore, was not a silver dollar at all, but a gold one. Perhaps we may state the case more clearly by substituting more precise terms for the vague ancestral one usually employed by the politicians. In this closer analysis, it will appear that the dollar of our great-grandfathers was the silver dollar of 375·64 grains fine silver; that the dollar of our grandfathers was the dollar of Hamilton, 371·25 grains pure silver; while our fathers, sensible men, dropped the silver dollar altogether a quarter of a century ago.

Now, if we are to imitate our fathers, we have only to keep silver where they left it, as the material of a subsidiary coinage. If we are to imitate our grandfathers, we must try, as they did, to make the legal relation of gold and silver in coinage correspond with the market relation. If we are to imitate our great-grandfathers, we must abolish the gold dollar, and supply ourselves with silver dollars containing 375·64 grains of pure silver.

The first alternative is easy enough. It will maintain more silver in circulation than any other measure that could be devised, except that of an exclusive silver standard. The second alternative would give us the same experience as it gave our grandfathers. If they could not maintain the double circulation when the fluctuations in market value were insignificant compared to those of to-day, how shall we hope to do it?

But we do not even need the experience of our grandfathers. We have (by accident) a legal-tender silver dollar, the trade dollar of 420 grains standard, or 378 grains pure, silver. What becomes of it? When it is worth more than a gold dollar by market value, it goes to China in the course of commerce, and is never heard of here. When it falls below the value of a gold dollar, it stays at home and plagues us. Shopkeepers allow a premium on gold as compared with silver money; in other words, the depreciated dollar drives out of circulation the gold dollar. This phenomenon is so simple and so constant that on the Pacific Coast, where coin is exclusively used as currency, nobody can fail to understand it. In this part of the country, it is but slightly experienced, because our greenbacks have already done for the gold dollar here what the trade dollar is doing for it (in certain states of the market) in California and Nevada.

Well, then, shall we go back to our great-grandfathers, and take an exclusive silver standard? Nobody seems to demand this now, though Prof. WHITNEY, in 1853, advocated silver as a better standard than gold. Things have changed since then. There is now no doubt that, if one sole standard is to be maintained, gold is the only suitable material. In spite of all bonanzas, the supply of silver would be ridiculously inadequate, unless an entire revolution in prices were effected. No; we will all agree in this at least, that, in our reverence of the dollars of the past, we will draw the line at our great-grandfathers. He who would cry for the dollar of his great-grandfathers, blindly ignoring experience and science, is a demagogue or a fanatic. How pleasant to find a proposition in which all parties can unite! *

THE DELAWARE & HUDSON CANAL COMPANY'S REPORT.—IV.

(*Concluded from page 235.*)

BALANCING MORTGAGES WITH IMAGINARY ASSETS.—Before closing our consideration of the balance sheet, we may point out, without discussion, an item that is worthy of attention. The committee does not include in its balance sheet $1,000,000 Union Coal Company's bonds, but deducts $1,000,000 of its own fanciful valuation of the coal lands as balancing it. We have shown that this valuation is in the vicinity of three times a fair one, as compared with similar coal property, and if the lands had to be sold to pay this debt, it would probably cancel a good many millions of the committee's assets. It would scarcely have been thought necessary to remind such eminent financiers as constitute this committee that a mortgage is a most substantial item of liability, which cannot be "balanced" by any such simple process as this.

PROFITS ON COAL.—On page 64 of the committee's report, we are told that "the fixed charges, which include interest on bonds and rentals of leased lines, are less than $2,900,000 annually. Applicable to these are incomes from railroads and all other sources, *except coal*, amounting to $2,000,000. . . . Upon present production, average receipts of $3 per ton would cover fixed charges, and all in excess of that sum would be applicable to dividends. Upon a production of 2,500,000 tons, average receipts of $4 per ton would pay all charges, and restore to the corporation its former prosperity."

We have failed to discover, though we have made diligent search, any such amount of income as $2,000,000, "from railroads and all other sources, *except coal*," with which to meet these fixed charges; but perhaps the committee is balancing them by imaginary receipts—as it has balanced the Union Coal Company's bonds with imaginary assets. When the statement is made that with average receipts of $3 a ton for coal the company can pay all its fixed charges, it would have been well to have stated what it costs to mine and market coal. Even the data from which this cost can be calculated is not given as fully as could be desired; but by referring to the Statement below of the business of the company for the year 1876, and to the committee's report, we learn that mining and preparing coal and general repairs* (assuming the cost of contractors' coal and coal purchased as the same as that of mining the company's own coal) cost $1.38 per ton. Coal transportation by gravity and locomotive roads, about 29 cents per ton. (Some of the items going to make up this are less than, and inconsistent with statements elsewhere in the report.) Freight and expenses on canal on 1,008,147 tons amount to $1.01 per ton. Rondout expenses, 14 cents per ton. And charging the coal sent by Rondout with but one-third of the "taxes, harbor and yard expenses, salaries, rent, etc.," this item amounts to 15 cents per ton. Royalties paid by the company on about one-fourth of its product average, according to this report, 26 cents a ton; but if we assume 10 or 12 cents as a fair sinking fund for its own coal (a point this committee and the officers seem to have wholly ignored), we can fairly estimate royalties as averaging at least 15 cents per ton. Allowing for commissions, bad debts, etc., say 15 cents, we get a total of $3.27 per ton. If we accept the committee's unsupported statement that only $1,000,000 of the fixed charges have to be earned by *coal*, this would add 50 cents per ton; and the coal should net, at Rondout, at least $3.77.

But we are told, page 98, that reductions in cost have been made amounting to about 75 cents per ton delivered at Rondout. This statement, however, can easily be shown to be erroneous. The whole charges by canal were last year $1.01 per ton. The committee tells us the company now pays 70c. per ton freight to boatmen, and operating expenses, repairs, and taxes are valued at 20c. per ton, where the interest of the committee was to make them a minimum. (In 1876 this item was 22 cents), so that a reduction is made here of at most 11 cents per ton. Of the items of mining and transportation from the mines amounting to $1.67, the transportation over an average haul of some 40 miles (26 miles of which is a gravity road, no less expensive than that of the Pennsylvania Coal Company, on which a sworn statement declares "cost" is 1 cent a ton a mile) is given at but 29 cents, which certainly cannot be reduced.

We have, therefore, if we accept this statement, to suppose the company is reducing the cost of mining from $1.38 to 74 cents per ton, which every clerk in its office knows to be absurd.

Now let us see what the prospects are for the company realizing the sanguine expectations of this ardent committee. The average quotations of all sizes of

STATEMENT OF THE BUSINESS OF THE DELAWARE AND HUDSON CANAL COMPANY.

For the year ending December 31, 1876.

DR.			CR.		
To Coal on hand Dec. 31, 1875	265,453.15 tons,	$737,627 55	By Sales of coal to December 31, 1876		$6,495,427 60
" " Purchased		120,599 47	" Canal tolls		43,444 59
" Mining coal, viz.:			" Net earnings company's railroads in Pennsylvania		350,615 21
Mining and preparing	$1,737,790 81		" Interest on investments, viz.:		
Contractors' coal	771,450 54		On bonds owned by company	$183,584 37	
General repairs (machinery and plant)	99,832 09		On stocks and other investments	155,348 06	
Mine rents and royalties	145,704 76			$338,932 43	
		2,754,778 20	Less sinking fund Boston, Hartford & Erie:		
" Coal transportation and repairs, viz.:			Bonds	$46,749 73	
Repairs of track, machinery, buildings, and cars—Gravity Road	$179,127 11		Expenses Brooklyn property	2,945 56	
Operating expenses, including handling coal—Gravity Road	176,905 84		Cash deficiency	8 50	
Freight credited Locomotive Road moving coal from mines to Gravity Road	186,122 59			49,703 79	289,228 64
		542,155 54	" Miscellaneous profits:		
" Freight of coal and canal expenses:			Insurance	427 08	
Freight on canal	$810,754 36		Rents Courtlandt Street property	8,826 64	
Canal repairs and expenses	221,676 43		" Weehawken yard	1,600 00	
		1,032,430 79	* Premium on bonds	80,194 09	
" Rondout expenses		142,755 38	* Installments on canal boats	290,000 00	
" Freight paid other lines		428,839 53			381,047 81
" Harbor and yard expenses, viz.:			" Coal on hand Dec. 31, 1876—240,322 tons		698,758 15
Unloading, wharfage, harbor towing, etc		59,861 74			
" Taxes		221,177 69			
" Salaries, rent, miscellaneous, and law expenses		172,984 94			
" Interest on funded debt, viz.:					
$15,116,000 seven per cent	$1,058,120 00				
Premium on $7,140 gold interest	691 69				
$1,000,000 Union Coal Co. seven per cent	70,000 00				
$100,000 Plymouth & Wilkes-Barre Bridge Co. to maturity	6,971 23				
	$1,135,782 92				
General interest account	52,103 15				
		1,187,886 07			
" Loss on leased lines		555,405 90			
Balance profit		308,020 19			
		$8,264,522 09			$8,264,522 09

* These items would, perhaps, have been more properly stated as miscellaneous *receipts*. The premium on bonds was derived from Albany & Susquehanna bonds sold during the year with the indorsement of the D. & H. C. Co.

Installments on canal boats were credited to Profit and Loss, because that account stood upon the books at less than was due upon only a portion of the boats already sold.

* General repairs are placed at the totally insufficient annual sum of $99,832 for a plant valued at $3,300,000.

coal in New York were, for the entire year of 1876, about $4.50 per ton. This company realized on all its sales an average of $3.19. The price in New York this year has not averaged over $3, and it would not require any great strain on the imagination to suppose that the company's sales at all points have not averaged $2.75. These gentlemen should not presume too much upon the ignorance or credulity of their stockholders. In view of the difficulties which seem to attend the realization of the committee's statement, that at $3 a ton for coal the company can make its fixed charges, it is needless to occupy time and space in discussing the further assertion that "upon a production of $2,500,000 tons, average receipts of $4 per ton will pay all charges, and restore to the corporation its former prosperity." It is cruel of these gentlemen to laugh out in the faces of their confiding stockholders.

THE RELATIONS BETWEEN DIVIDENDS AND LOANS.—In order the more easily to appreciate the enormous growth of the company's capital stock and funded debt, and to compare these with the amount of dividends paid and the changes in the chief items of assets we have been at some pains to compile the following tables. In doing this we have had occasion to compare the statements of funded debt and of several items of assets as given in the sworn reports made to the Auditor General of Pennsylvania with those given to the stockholders in the annual reports of the company, and we find frequent and important discrepancies between them. We do not pretend to determine which of these official reports is correct, but we note the fact of these differences for the benefit of those whom it may concern:

COMPARISON OF THE PRINCIPAL ITEMS OF DELAWARE & HUDSON CANAL COMPANY'S ASSETS FROM 1868 TO 1876 INCLUSIVE.

Year.	Cost of Canal.	Real Estate	Mine Improvements and Equip.	Railroads and Equipments.	Misc. assets—Stock and Bonds of other Co.'s
1867*	$6,820,198	.....	.....	$2,154,474	.....
1868	6,302,525	$1,029,314	$698,473	2,908,881	$3,000,000
1869	6,309,954	2,650,727	1,289,171	3,221,712	3,209,127
1870	6,317,653	2,877,474	1,447,459	3,318,901	4,881,965
1871	6,339,210	5,918,831	1,532,016	5,309,490	3,310,086
1872	"	6,279,447	1,496,933	5,626,579	6,065,822
1873	"	6,993,964	1,971,301	5,726,635	7,029,103
1874	"	7,587,056	2,199,078	5,890,437	9,292,081
1875	"	8,253,261	2,559,619	7,122,281	9,390,529
1876	"	8,552,873	2,666,849	7,216,665	8,088,715

COMPARISON OF THE GROWTH OF DELAWARE & HUDSON CANAL COMPANY'S INDEBTEDNESS, DIVIDENDS, AND BUSINESS FROM 1868 TO 1876 INCLUSIVE.

Year.	Capital Stock.	Funded Debt.	Increase.	Dividends.	Coal Produced. Tons.	Amount of Business.
1867*	$10,000,000	$531,000	....	$1,600,000	$1,507,487	....
1868	15,000,000	2,628,000	$7,197,000	3,400,000	1,091,870	$8,646,572
1869	15,000,000	3,227,860	599,860	1,500,000	1,626,391	8,963,367
1870	15,000,000	5,106,500	1,878,640	1,500,000	2,318,073	10,067,734
1871	15,000,000	8,491,000	3,384,500	1,500,000	2,011,333	9,028,441
1872	15,000,000	13,988,385	5,497,385	1,500,000	2,930,767	10,607,291
1873	19,539,485	13,930,385	4,597,485	1,500,000	2,752,536	12,228,707
1874	20,000,000	12,764,079	— 705,791	2,000,000	2,399,417	12,533 011
1875	20,000,000	15,116,000	2,351,921	2,000,000	3,053,817	13,008,495
1876	20,000,000	15,116,000	Unchanged	1,800,000	1,997,545	8,254,522

Though there are some points quite worthy of mention in the reports previous to 1868, we have drawn the line at that point, for it may be considered as the commencement of the *indefinite expansion era*. A reference to these tables shows that in the last nine years commencing with January 1, 1868, the capital stock has increased $10,000,000; funded debt increased $15,585,000; amount of stocks and bonds on which the company guarantees dividends or interest has increased some $25,000,000. The fixed charges have grown from about $37,000 per annum at commencement of 1868 to about $3,000,000 in 1876.

The mine improvements have grown (on the books) nearly fourfold. Railroads have increased four millions, or more than doubled. "Miscellaneous assets—stocks and bonds of other companies" have grown from nothing to over eight millions. *And yet the coal production was within six thousand tons as great in 1868 as in 1876. And the whole volume of the company's business was greater then than now.*" Surely here is food for reflection for those interested in its securities.

The committee lays great stress upon the "wonderful success" of the company in declaring dividends, but to rightly appreciate the merit of this success it is necessary to know where these dividends came from. If it be found that the capital paid in, the funded debt, and other forms of indebtedness have increased more rapidly than the *actual value* of the company's assets, the difference would account for the dividends in a manner that would make the "wonderful success" anything but meritorious.

In 1868 the Delaware & Hudson purchased, by the issue of additional stock, the property of the Union Railroad and Baltimore Coal Company, near Wilkes-Barre, and some collieries near Plymouth, at prices which, for *actual* coal area obtained, were up to that time quite unheard of in the Wyoming region. It, however, pleased this "conservative but nevertheless progressive" management to consider it had made a good bargain in the purchase, and it consequently "donated" to the stockholders $2,000,000 more of stock. This is one instance of the "wonderful success" of the company in declaring dividends, but it does more than illustrate this point—it illustrates a policy which has, since the war, controlled a great many railroad and coal companies. Property has been purchased and expenditures of all kinds made at rates reflected from the vivid imaginations of over-sanguine managers. Ambitious schemes for controlling markets and monopolizing trade, proposed and advocated by men of great ability and possessed of personal magnetism, were readily adopted by the average stockholder, and the process of indefinite expansion of capital and debt thus inaugurated. Stocks and bonds were issued to an extent limited only by the estimates of values based upon expectations of these hopeful gentlemen.

But by and by comes the inevitable reaction from this condition of financial intoxication, and it is ascertained that the world does not revolve quite as fast as these gentlemen thought it did. The property they purchased at extravagant prices, while in a condition of over-excitement, is not worth what they thought it was, and their "donations" of stock were consequently not justified. They find the ordinary, normal condition of business will not afford such profits on their limited production as are necessary to meet the enormous accumulation of "fixed charges" and provide for dividends. The public generally coming to appreciate these facts, the market value of the company's securities declines, and it becomes more and more difficult to negotiate further loans or issue more stock.

Does it occur to any of these eminent financiers that, having more stock and bonds afloat than their property is worth or than their business can earn the interest on, the only way to keep their "paper" at par is to retire so much of it as exceeds the value of their property, or increase the volume of their business till it bears such a proportion to their capital invested as will enable them to compete with those who have no unproductive capital to carry? It would seem not. On the contrary, the course followed is to form cunningly devised "combinations" and monopolies, with the object of compelling the public to reimburse them the money they squandered, and enable them to continue their "wonderful success" in paying large dividends on "donated" stock. When these plans fail, the difficulties of the situation become more apparent and attract comment. Then it is the fashion to denounce as "bears," "wreckers," or "unscrupulous persons" any who point out the facts in the case and urge the need of a radical change in policy. The balance sheets are "padded up" by the exaggerated or fictitious valuations of non-expert committees, and the company is stated to be "solvent and strong beyond question" as a preliminary to negotiating a further loan.

We have no doubt but that "according to the books" the company has apparently earned the dividends it has paid; but we have shown pretty clearly that the property has been greatly overvalued, and, apparently, it has had charged up to it expenditures which properly should have been credited to depreciation or current expenses. If a careful inventory of all the company's property were now taken and a fair valuation placed upon it by experts, it may very well be doubted if the excess of that valuation over the amount of the company's assets on the 1st of January, 1868, would greatly exceed the difference between the dividends paid ($16,900,000), and the increase in capital and funded debt since that time ($24,585,000).

We do not pretend to determine the total value of the company's assets. We merely give such information with regard to a few of the principal items as show the grossly exaggerated valuation put upon them by this committee, and, indeed, by the company. Neither are we called upon to give space or time to a full discussion of the value of the security offered to the different classes of bondholders; but it might be interesting to know what would be the value of the odds and ends of the company's property in the State of New York, supposing the Pennsylvania estate were sold out under the mortgage covering it, or *vice versa;* or what would be realized by either class of bondholders were a part of the property sold; or how can either class of bondholders secure itself, or enforce the payment of its interest or principal, if by forcing a sale it simply destroys the value of the property which it now considers its security, for such contingencies are possible, the committee's statement that the company is "solvent and strong beyond question" to the contrary, notwithstanding. These are questions of special application, with which we have nothing to do. Indeed, we have taken the Delaware & Hudson Canal Company as the subject of these remarks not because it is the only or even the worst example of this pernicious system, but because its report offers the ground for a special analysis of a system and policy which has done and is still doing an immense injury to commercial enterprise in general, and to investments in mining in particular. This company has been managed with more conservatism (less recklessness) than some others, but it is very evident that the popular panacea of "padding" assets has reached the limit of popular credulity, and it is time to adopt a radically new policy.

RESEARCHES ON THE CONSUMPTION OF OXYGEN AND THE EXCRETION OF CARBONIC ACID IN MAN.—Dr. Speck—The author has examined the changes produced in the respiratory process by the use of fatty food, of coffee, quinine, alcohol, and water, and by the inspiration of air respectively rich in carbonic acid, poor in oxygen, and rich in oxygen. His chief conclusions are: (1) With an increased proportion of hydrogen in diet the amount of the air inspired and expired decreases. Nutriments, such as sugar, which contain little hydrogen in comparison with their oxygen, involve more exertion of the respiratory organs than such as are rich in hydrogen, like the fats. (2) The more carbon predominates in the food in proportion to hydrogen the more air is exhaled in proportion to that inhaled. (3) The more carbon increases in the diet in proportion to hydrogen, the more carbonic acid is evolved and the more oxygen taken up; the richer the diet in hydrogen the less oxygen is required. An atmosphere containing 5 or 6 per cent. of carbonic acid could be breathed for some minutes without oppression. At 11·51 per cent. great exertion was needed to breathe for one minute. At 7·2 per cent. all the carbonic acid produced in the body is retained in the blood, and at 11·2 per cent. a great part of that also which is inhaled.—*Chemical News.*

* The figures for the year 1867 are from the Report of the Auditor General of Pennsylvania.

THE VALLEY OF THE COLORADO RIVER, AND ITS GEOLOGY.—X.*

WORK OF THE EXPLORERS.

As a specimen of the work done by these adventurous explorers, and as giving a good idea of the peculiarity of the country, we copy from the journal of the expedition the following record for July 26, 1869 :

"We run a short distance this morning and go into camp, to make oars and repair boats and barometers. The walls of the cañon have been steadily increasing in altitude to this point, and now they are more than two thousand feet high. In many places they are vertical from the water's edge ; in others, there is a talus between the river and the foot of the cliffs, and they are often broken down by side cañons. It is probable that the river is nearly as low now as it is ever found. High water-mark can be observed forty, fifty, sixty, or a hundred feet above its present stage. Sometimes logs and driftwood are seen wedged into the crevice overhead, where floods have carried them.

"About ten o'clock, Powell, Bradley, Howland, Hall, and myself start up a side cañon to the east. We soon come to pools of water, then to a brook, which is lost in the sands below ; and, passing up the brook, we find the cañon narrows, the walls close in, are often overhanging, and at last we find ourselves in a vast amphitheater, with a pool of deep, clear, cold water on the bottom. At first our way seems cut off, but we soon discover a little shelf, along which we climb, and, passing beyond the pool, walk a hundred yards or more, turn to the right, and find ourselves in another dome-shaped amphitheater. There is a winding cleft at the top, reaching out to the country above, nearly two thousand feet overhead. The rounded, basin-shaped bottom is filled with water to the foot of the walls. There is no shelf by which we can pass around the foot. If we swim across, we meet with a face of rock hundreds of feet high, over which a little rill glides, and it will be impossible to climb. So we can go no further up this cañon. Then we turn back, and examine the walls on each side carefully, to discover, if possible, some way of climbing out. In this search every man takes his own course, and we are scattered. I almost abandon the idea of getting out, and am engaged in searching for fossils, when I discover, on the north, a broken place, up which it may be possible for me to climb. The way, for a distance, is up a slide of rocks, then up an irregular amphitheater, on points that form steps and give hand hold, and then I reach a little shelf, along which I walk, and discover a vertical fissure, parallel to the face of the wall, and reaching to a higher shelf. This fissure is narrow, and I try to climb up to the bench, which is about forty feet overhead. I have a barometer on my back, which rather impedes my climbing. The walls of the fissure are of smooth limestone, offering neither foot nor hand hold. So I support myself by pressing my back against one wall, and my knees against the other, and, in this way, lift my body in a shuffling manner, a few inches at a time, until I have, perhaps, made twenty-five feet of the distance, when the crevice widens a little, and I cannot press my knees against the rocks in front with sufficient power to give me support in lifting my body, and I try to go back. This I cannot do without falling, so I struggle along sidewise further into the crevice, when it narrows. But by this time my muscles are exhausted, and I cannot climb longer ; so I move still a little further into the crevice, where it is so narrow and wedging that I can lie in it, and there I rest. Five or ten minutes of this relief, and up once more I go, and reach the bench above. On this I can walk for a quarter of a mile, till I come to a place where the wall is again broken down, so that I can climb up still further, and in an hour I reach the summit. I hang up my barometer to give it a few minutes to settle, and occupy myself in collecting resin from the piñon pines, which are found in great abundance. One of the principal objects in making this climb was to get this resin, for the purpose of smearing our boats ; but I have with me no means of carrying it down. The day is very hot, and my coat was left in camp, so I have no linings to tear out. Then it occurs to me to cut off the sleeve of my shirt, tie it up at one end, and in this sack I collect about a gallon of pitch. After taking observations for altitude, I wander back on the rock for an hour or two, when suddenly I notice that a storm is coming from the south. I seek a shelter in the rocks ; but when the storm bursts, it comes down as a flood from the heavens, not with gentle drops at first, slowly increasing in quantity, but as if suddenly poured out. I am thoroughly drenched and almost washed away. It lasts not more than half an hour, when the clouds sweep by to the north, and I have sunshine again. In the meantime I have discovered a better way of getting down, and I start for camp, making the greatest haste possible. On reaching the bottom of the side cañon, I find a thousand streams rolling down the cliffs on every side, carrying with them red sand, and these all unite in the cañon below, in one great stream of red mud.

"Traveling as fast as I can run, I soon reach the foot of the stream, for the rain did not reach the lower end of the cañon, and the water is running down a dry bed of sand, and, although it comes in waves several feet high and fifteen or twenty feet in width, the sands soak it up, and it is lost. But wave follows wave, and rolls along, and is swallowed up, and still the floods come on from above. I find that I can travel faster than the stream, so I hasten to camp, and tell the men there is a river coming down the cañon. We carry our camp equipage hastily from the bank to where we think it will be above the water. Then we stand by, and see the river roll on to join the Colorado. Great quantities of gypsum are found at the bottom of the gorge ; so we name it Gypsum Cañon."

FIG. 25.—VIEW FROM CAMP, AT THE MOUTH OF THE LITTLE COLORADO, LOOKING EAST.

* Extracts from Report of Major J. W. Powell on *The Exploration of the Colorado River of the West*. Washington, 1875.

LECTURES ON MINING.—No. L.*

By Prof. W. W. Smyth, M. A., F. R. S., Royal School of Mines, London.

ENGINES.

It was the object of the last lecture to look at some of the various methods of attaching the main sets to the engines, and then at the class of engines which the experience of the last century and a half has proved to be most efficacious. A few of these have made their way into the colliery districts, but in most cases the presence of unlimited quantities of small coal has militated very much against the efficiency of the pumping engines we find in the coal fields. So far behindhand are the colliery engines in most cases compared with the engines used in Cornwall, and those referred to at the London Water-works, that from two to ten times the quantity of coal has to be used in the former to do the same work as the latter. The following details respecting the pumping apparatus put up at a large mine—Wheal Vor—some time ago, a deep mine, but not at all remarkable for great quantities of water, will give an idea of the vast importance of this part of our subject. Cylinder, 100 inches diameter, with stroke of 11 feet ; weight of beam or bob, 40 tons ; aggregate weight of cast iron about the machine, 174 tons ; average duty, about 70,000,000 lb. raised one foot. The engine put in work at every stroke 72 tons 12 cwt. of water, average number of strokes per minute 5·75 (leaving, therefore, a wide margin for increase in case of a greater influx of water or greater depth). Total weight of material to be set in motion at every stroke not less than 834 tons. The rods were double down to depth of 780 feet, both 16 inches square at surface, tapering downward to 12 ; below 780 and down to 864 feet, a single rod 16 inches ; from that to 964 feet it tapered to 14 inches, and down to 1,044 feet to 13 inches ; below that it tapered to 12 inches and less. Number of balance bobs was five ; two of cast iron at surface, a third at the adit level, a fourth at 180 feet, and a fifth at still lower depth. In all, this engine had to lift nearly one mile length of rods (it worked two different shafts) and about three-quarters of a mile of pumps in 26 different lifts. It has sometimes been objected that the calculation of the quantity of water lifted for the length of the stroke and area of pump is artificial, and it certainly does not give the exact amount, but the excess is very trifling, say from 3 to 8 per cent., and for purposes of comparison this is of no consequence. The caliber of the pumps in the case quoted was of the ordinary size ; in a few exceptional cases it has been increased to as much as 30 inches, and in one case to 40 inches.

VENTILATION.

We turn now to a very important part of our subject, which deserves a very great interest for its being closely connected with a series of accidents which have attracted the attention for a great number of years, that is, the accidents which arise in the collieries from explosion. It is only some twenty-five years that we have known very exactly the number of accidents which occur ; and in spite of all the great improvements which were to be expected from a system of inspection, and of the great attention which has been drawn to the subject, the loss of life is still so great that, in all the mines under the Colliery Inspectors, there were in 1873 no less than 1,069 deaths, and 1,056 in 1874 ; and this applies to a number of people employed—upwards of 538,000. The South Durham district was that which was most notable for the security with which the operations were conducted, there being 242,000 tons raised for one life lost in 1874, while in the same year the Staffordshire, Cheshire, and Shropshire districts showed very badly, there being only 63,000 tons raised for every life lost. We have to recollect that the numbers in different years may vary very much, owing to the occurrence of one single large accident. Besides the deaths thus recorded, we must remember that there are a number of accidents which do not lead to immediate death, but which are, nevertheless, fatal after a time ; these are not all due to explosion, some of them being shaft accidents, etc.

The subject of ventilation, however, demands attention not only from this fact, but also from the impossibility of setting forth to any considerable distance the shafts or levels without taking special means to get rid of the stagnan air and introducing fresh. Different arrangements and different amount of attention are required in different districts, according to the vario

circumstances. Thus, in the case of a cold field where the surface is covered by a tenacious clay, by the time you get a few yards down it will be difficult to get fresh air down, and the workings may very probably be troubled with fire-damp; in other cases, a very much greater distance may be driven before any special arrangements are necessary. Nothing shows this, perhaps, more clearly than a number of reports by Mr. Jessop, in some of the old volumes of the *Philosophical Transactions*, describing the difficulties experienced in sinking some of the shallow shafts in the Derbyshire coal field. There are cases, again, where a large number of small shafts are put down, on lead ore, for example, and where no suiable arrangements are made for ventilation. One of the most striking of such cases is to be seen in modern times in the workings for "earth wax" in Galicia, where no less than 12,000 small shafts have been put down in a small area. These shafts or pits are very commonly less than 3 feet in diameter, and may have had to be sunk without light, in consequence of the presence of fire-damp. Ventilation is not looked to, and, as might be expected, a very large number of accidents occur, accompanied by many deaths.

The necessity for providing some kind of ventilation may be shown by two or three different circumstances which may be observed at once very readily in mining districts. In the first place, the distance to which a level can be driven without special ventilation varies very much, according to the character of the ground. But sooner or later it will be found that the men begin to breathe with difficulty, get fatigued in a short time, and do less work than they could do under more favorable circumstances; that candles burn very badly or not at all; and the smoke of the powder, if it is used, hangs about for a long time, and the men lose much time in consequence. As a rule, the levels cannot be carried further than 30 or 40 fathoms without the coal ventilation, but the lecturer had seen one case where an adit level was carried 150 fathoms. Similarly, in sinking a shaft, after having gone down a distance of 20 or 100 yards, some plan of ventilation will be needed. Besides the mere stagnation of the air, it must be remembered that it is vitiated by the burning of the lamps and candles, by the breathing of the men and horses (if present), and by the gases and smoke from the powder. Further than this, if we examine the sides of the working excavations, we shall very commonly find (what has been very little attended to) chemical changes going on in the rock, whatever it may be, attended in many cases by evolution of heat, and in nearly all by the absorption of oxygen; you may see this most distinctly in the formation of sulphates of lime, iron, etc. Then, again, there are the emanations from the rocks of certain gases—carbonic acid not unfrequently—though comparatively rare compared with the evolution of fire-damp in the colliery district. The variations of all these circumstances may render the needful arrangements very different in different cases.

There is a strong contrast as regards ventilation in mines worked on lodes and the coal and ironstone mines worked in stratified deposits. While in the former case you may have several shafts communicating with the surface, and a large number of subsidiary shafts or winzes communicating between the different levels, and thus affording facilities for a natural circulation of air; in the mines in bedded deposits there are only one or two shafts, and the workings are all in one plane as a rule, and the air has to be conducted over a complete labyrinth of workings, through a large area, and therefore very special arrangements are needed. Although in some of the ends of metalliferous mines the ventilation may be very feeble, the work is pushed on as fast as possible, and a communication with a level above or below is formed as soon as a convenient situation is reached.

Fig. 26.—Water-Basin in Gypsum Canon.—*See page 256.*

A great amount of ingenuity and labor has been spent on this matter of ventilation, as will be seen when it is stated that in some of the large collieries in the north of England 250,000 cubic feet of air are passed through per minute, and 100,000 is a very common number. In proceeding to consider the means by which ventilation is to be introduced into the mine, it is of very high importance that we first become acquainted with the enemies that have to be met with and fought with. These are chiefly carbonic acid, sulphureted hydrogen (although there has been some doubt about the presence of this gas in mines, the lecturer himself had no doubt, having met with it distinctly many times), carbonic oxide, and marsh gas or fire-damp. Of these, carbonic acid and sulphureted hydrogen are heavier than air, and, therefore, must be looked for in the lowest parts of the workings, in excavations below the ordinary level, etc.; carbonic oxide and fire-damp are lighter than the air, and, therefore, will occur in the higher parts, close to the roofs, and in any small chambers opened above the ordinary level. It must be remembered the air is vitiated to a very considerable extent by the mere absorption of oxygen without the evolution of carbonic acid, etc., from the rock.

A German chemist—Marchant—made an examination of the air in a brown coal mine; at the mouth of an adit level he found oxygen 20·52 per cent., but this proportion steadily decreased as he went into the level, till at the place where the lights went out it was only 15·23 per cent. Dr. Angus Smith examined the air from a great number of localities, and he showed that as soon as the proportion of oxygen falls to 20·6, it is a little less than there should be for ordinary respiration, and that, when it gets down to 16 or 17 per cent., lights, especially candles, generally go out. In certain cases some exceptional matters may get into the air; for example, in certain mines of tin where sulphides may be present in the veins, there is occasionally a most perceptible smell of arsenic, produced probably from the blows of the miners upon the arsenical pyrites. The men do not seem to complain of it at all, but where this is the case with quicksilver the effects are extremely powerful.

Carbonic Acid, CO_2, specific gravity 1·52. When there is a proportion of this present amounting to 8 or 10 per cent., candles go out, and it becomes very dangerous. In some instances it may be entirely the result of combustion and respiration, in others it is decidedly given off from the workings in considerable quantity, where a slow process of combustion may be said to be going on, and this especially from the slow combustion of small coal. This is especially the case in the coal mines; in some few instances it is given off in metallic mines, as, for instance, in Auvergne, where the veins are worked for silver-lead in a kind of granite. The evolution of this gas is very dangerous under some circumstances when the weather is of the kind which enables it to come out more readily. Where carbonic acid gas is at all strong, it must be recollected that the men will not only suffer from partial poisoning, but also that one gulp of tolerably pure carbonic acid will at once kill a man on the spot. Dr. Smith found that in the ends of some of the Cornish mines the air gave as much as 1 per cent., but that the worst cases occurred in mountain limestone districts, where in some cases it reached 2·73.

Sulphureted Hydrogen, SH_2, specific gravity 1·19, takes fire when mingled with air, said to be extremely poisonous, but further observations are needed. The peculiar smell of this gas ought to be sufficient to warn us of its presence.

Air.—It is very frequently only the absorption of oxygen and the addition of carbonic acid which causes men to say the air is poor, and poor air may vary in degree from that which only just affects the burning of a candle to that in which candles will scarcely burn at all. At every part of its course through the mines the air is liable to be deprived of a part of its oxygen, for instance, where shales with disseminated pyrites are present, or clays in which the protoxide of iron tends to become converted into peroxide.

Carbonic Oxide, CO, specific gravity 0·97. The presence of this gas has been open to a great deal of doubt; it is an extremely poisonous gas, and in one or two cases there is very little doubt that a great many lives have been lost principally owing to this carbonic oxide. It does not appear to be given off as such from any rock we have in England, and it is only from a sort of process of slow distillation of the coal in underground furnaces that we can expect it to occur.

Fire-Damp or Marsh Gas, CH_4, specific gravity 0·55. It is sometimes said to come off in a state of very great purity, but in most cases it is, more or less, mixed with air. One-third of it mingled with ordinary air will cause suffocation, with a proportion of one-seventh by volume of the air it is scarcely explosive, but will burn, while in proportion of 1 to from 7 to 15 of air it is violently explosive. In fiery mines it is apt to be disseminated over a very large area of the working faces, and when these are wet it may be seen to exude in multitudes of little bubbles. Under these circumstances it ought always to be kept under, and can always be so kept by leading a sufficiently strong ventilating current along the face. The case is different, however, where the issue is confined to a more limited space, and where it partakes, more or less, of the nature of blowers; where the gas escapes in enormous volumes, and often with great violence, from fissures, etc., in the rocks in which it has accumulated under great pressure. In some such cases no amount of ventilation possible can render the gas harmless, and unless the people are found prepared with safety-lamps and due precautions the most serious results may occur.—*London Mining Journal.*

Sun Spots.—Prof. Wolf finds, by applying his formula for the relation between sun spots and magnetism, a calculated value of 6·40 minutes for the mean variation of declination at Prague. The observed value was 6·47 minutes, an agreement which he justly regards as marvelous. He believes the mean sun spot period to be 11 1-9 years, but thinks there are strong indications of a grand period of 178 years, embracing 16 solar periods of 11 1-9 years, and 15 revolutions of Jupiter.

Increase of Weight by Combustion.—In a lecture-room experiment suggested by M. V. Meyer for showing increase of weight by combustion, a candle is attached to each pan of a balance, and above one a glass tube open at both ends is hung at nearly the height of the wick. In this tube is a piece of wire gauze holding fragments of caustic soda; after balancing the candles, one of them is lit, when the products of combustion are retained by the soda, and this beam end descends,

GOLD MINING IN GEORGIA.

By P. H. Mell, Jr., C. E. and M. E.

THE BURNT HICKORY DISTRICT.

Georgia has always been considered an agricultural country. Her people have devoted their time, talent, and money to the cultivation of her soil. Before the war, labor was plentiful and easily controlled, and the lands yielded abundantly. If a man owned a tract of land and sufficient labor with which to work it, he would soon become independent. The whole attention of the people, th refore, was turned to agricultural pursuits. Since the war, however, labor becoming demoralized, and the lands being worn out by a suicidal system of cultivation, the people have been reduced to a comparative state of poverty. The question then naturally arises, Are there other means by which the Empire State of the South may attain her former condition of supremacy and independence?

The object of this paper is to prove that there are undeveloped resources within the borders of the State, which would make her independently rich if she could only obtain the proper application of capital to open and place them before the world. It has been my pleasure to examine minutely into these resources—their extent and value—and I am, therefore, able to prove what this article contains.

As I have said, the people of Georgia are poor and without means for utilizing this undeveloped wealth. It is to other quarters that they look for aid, and they send an urgent appeal to the friends in the North, Northwest, and Northeast for assistance. We want money, and need enterprise If capital near at hand will invest among us, so much the better; if not, we must look to a foreign country.

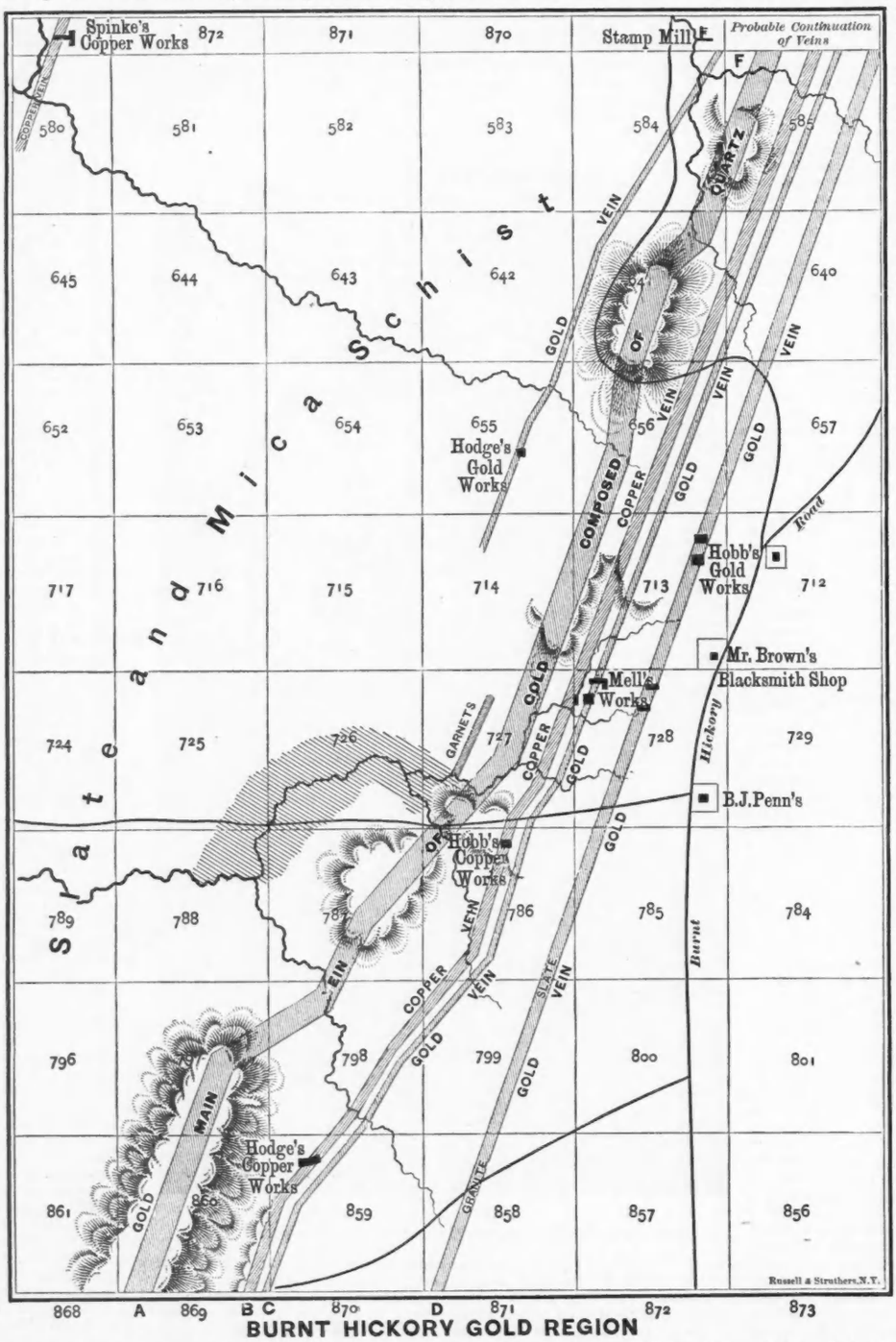
Georgia is divided into three grand natural divisions: "Upper, Middle, and Lower Georgia." This classification is the result of geological formations ribbing the State. Geologically and physically considered, Upper Georgia is quite varied; Middle Georgia not so diversified; while Lower Georgia is of a comparatively uniform character. For the present, we will take into consideration the first of these divisions, because in this portion of the State are to be found most of the minerals that I propose to discuss in this series of articles.

Upper Georgia has an area of 10,000 square miles, and embraces nearly all the mountains and ridges of the State. Included within this scope are the following geological formations, as determined by the State Geological Survey: Acadian, Potsdam, or Chilhowee sandstone, Calciferous, Quebec, Chazy. Trenton, Cincinnati, Medina, Clinton, Niagara, Genesee, Subcarboniferous, and Carboniferous periods, all of which are prominent and well defined. Dr. George Little, the State Geologist, says: "The mountains of Georgia are of different geological ages, and composed of different rocks on their summits. The most ancient and least known are of Potsdam age, and consist of heavy sandstone masses. The second in age is the Quebec, and consists largely of quartzite, itacolumite, and sandstone. Third in age is the Cincinnati, consisting of hard hornblendic gneiss. The fourth in age is the Carboniferous." The Cohutta Mountains are representatives of the first age. Bell, Sawnee, Jack's, etc., mountains, of the second. The main prong of the Blue Ridge, and also the Chattahoochee Ridge, of the third. Sand, Lookout, and Pigeon ridges, of the fourth age. Hence we have running through Georgia ten ridges or ranges of mountains—Cohutta, Blue, Chattahoochee, Sand, Lookout, Pigeon, Missionary, Taylor's, John's, and Chattoogata ridges. The Blue Ridge is the most extensive and prominent one in the State. It enters at the extreme northeast corner, and passes through into Alabama, gradually losing its elevation, until within the neighborhood of Talladega, Alabama, it consists of mere hills. The highest point in Georgia is on this ridge, viz., Mount Enotah, situated in Towns County. The top of this mountain is 4,802 feet above the level of the sea. On the southeast slope of this ridge runs what is known as the "Gold Belt," the width of which is from 25 to 50 miles, and it is located mainly within the Cincinnati formation. This belt consists of a stratification of slates metamorphosed, striking northeast and southwest, parallel with the direction of the Blue Ridge, and dipping toward the southeast from a perpendicular to a horizontal position, the most usual angle of dip being between 35° and 65°. Striking with these slates, and dipping between and with the stratification, are innumerable quartz veins, of various widths and lengths, in which most of the gold is found. Besides these quartz veins, there are also "slate veins," containing gold. These, however, are of very limited extent, and seldom pay for working, unless there is a strong quartz vein in the neighborhood, and the slate vein then worked simply as an addendum. The metamorphic slates thus intersected are chloritic talcose, argillaceous schist of various colors, mica, and hornblendic schist and gneiss. Itacolumite is sometimes found associated with these gold-bearing veins, and in this elastic sandstone three diamonds have been found in Georgia—one with 24 faces, another with 48 faces, and the third has been cut, polished, and set in a ring by the jeweler.

There are three points of special interest in the State at which gold has been obtained in large quantities, mostly by means of rough and primitive machinery and appliances, viz., Dahlonega, Allatoona Hills, and Burnt Hickory. From these localities and intermediate points, during the fiscal year of 1875–76, there was produced $7,379,000, while the product of this last year is supposed to be much greater.

Up to this time, Dahlonega has attracted the most attention. Here is where the greatest amount of work has been performed, both in placer and quartz mining. Eleven stamp mills are now running near Dahlonega, and considerable Boston capital has been invested. It must not be inferred from the above that Dahlonega is the richest gold region in the State, because Allatoona and Burnt Hickory, though not quite so extensive, are equally as rich. There has been but little work done at these last two points, simply because the attention of capitalists and miners has not been attracted thither; and most of this work has been performed by inexperienced parties, and their efforts, therefore, have generally been unsuccessful.

The chief cause of failure among the companies who have attempted to work



BURNT HICKORY GOLD REGION

mines in the South is the want of proper management and sound judgment in the outlay of capital.

A small quantity of gold is found in a stream, excitement becomes rampant, and, before carrying investigations further, machinery must be purchased and erected on the grounds, ready to crush out the prospective quartz. A large number of hands are employed at high wages, and under this heavy and unnecessary expense the company breaks down overwhelmingly in debt before even a few pennyweights of gold are obtained. Some years ago there was gold found in the Allatoona Hills, about two miles east of Allatoona, on the Western & Atlantic Railroad. A company was at once organized, a large amount of land was purchased, expensive machinery put up, houses built, and a great many laborers employed to work the mine. All this was done before the vein was scarcely opened. Before the shaft was sunk fifty feet $50,000 were spent. But little gold being obtained, the company was bankrupt, and was compelled to suspend operations with an "elephant" on its hands. This property lay quiet then until a year or two ago, when an enterprising gentleman of Boston, Mass., thinking he could accomplish something here, placed a competent mining engineer on the property to prospect and investigate. The vein was then diligently searched for, and, when found, thoroughly tested. But few men being employed, and but few tools being necessary, the expense was very light and easily defrayed. After a large amount of quartz had been placed on the dumps and the richness of the vein had become a surety, a battery, engine, and such other machinery as was absolutely necessary were purchased. To-day that mine is in operation, and, I understand, is paying a handsome dividend. If this Boston gentleman will conduct his mine in the future under the same wise management as in the past, he may rest satisfied that he will reap a rich harvest from this investment.

There are three things of which parties who desire to work gold mines must have a superabundance: First, plenty of money; secondly, care in not spending too much of that money before the vein or gravel-bed is well and thoroughly tested; and, thirdly, a considerable amount of coolness and self-control. With these possessions, parties need never fear to work gold mines in the South with profit.

Not long since it was my pleasure to visit Burnt Hickory, and spend a month in prospecting and explorations; and the accompanying map is the result of this work. I was induced to "write up" this section of country, with the hope that what I state may influence capitalists to invest their money here and open the mines.

Burnt Hickory is situated in the extreme northern portion of Paulding County, a short distance from the Alabama line, and embraces the greater portion of Third District, in Third Section. It is fifteen miles west of the Western & Atlantic Railroad, and fifty miles northwest of Atlanta, Georgia. The roads connecting this point with the railroad are in good condition, suitable for transportation purposes.

The climate is equal to the best to be found in the length and breadth of the land, the people inhabiting the region being healthy, and seldom becoming acquainted with severe diseases. Thirty or forty years ago while the Indians were inhabiting this country, the prominent road passing through Paulding County was considerably traveled by Indian traders, huntsmen, and trappers.

At a certain point on this road, about the middle of the above district, there stood at this time a large hickory tree. The foot of this tree was a favorite spot for the wagoners and travelers to camp. The fires burnt quite a hole in the body, and the place then became known throughout the country as the "Burnt Hickory Camp Ground." A few years after this some enterprising person located a store on these grounds that assumed the name of "Burnt Hickory Store." Now the country in a radius of five miles is known as the "Burnt Hickory District," although the hickory tree years ago was consumed by the camp fires.

TO BE CONTINUED.

HEATING AIR FROM STEAM PIPES.

By Theodore Skeel, C.E.

TO THE EDITOR: SIR—The object of the following paper is to call attention to the wonderful rapidity with which large volumes of air may be heated by a comparatively small surface of steam pipe, when the air is forced over the pipe in a rapid current by means of a fan.

The apparatus on which these experiments were tried was a dry closet, erected for purposes of exhibition at the Centennial Exhibition at Philadelphia in 1876. It consisted of a temporary house, occupying an area on the ground of about 25 square feet, and 8 feet high. This house was closed on all sides, and had a door 6 feet high by 3 feet wide. On one side of the house, and about 4 feet from it, there was erected a small exhaust fan, that is to say, a fan having the opening for the entrance of air at the center on *one side only*, and fitted with a nozzle that might be connected by a pipe with any chamber from which it was desired to exhaust the air. The fan was located so that the opening was toward the side of the house. The nozzle on the side of the fan was 10 inches internal, and 10½ inches external diameter. A conical pipe of galvanized iron 12 inches long, and tapering from 10¼ inches to 15 inches diameter, led from the fan to the outlet of the heater. The heater consisted of a cylinder of galvanized iron 15¼ inches external diameter, and 22⅛ inches outside length. There were two heads in this cylinder set back about 1 inch each from the end, and each drilled for and fitted with 122 brass tubes, each tube being ⅞ inch external, and 13-16ths inch internal diameter, and 20½ inches long. The distance between the insides of the heads (having the space filled with steam, and, therefore, the exposed length of the tube) was 20 inches. The other head of the heater was connected with the side of the house by a pipe 16¾ inches internal diameter, and 14 inches long.

The outlet from the fan was (during the Exhibition) connected by a 9¼ inch galvanized curved pipe with the house, and through which the air was returned again to the closet, after having been warmed by the heater.

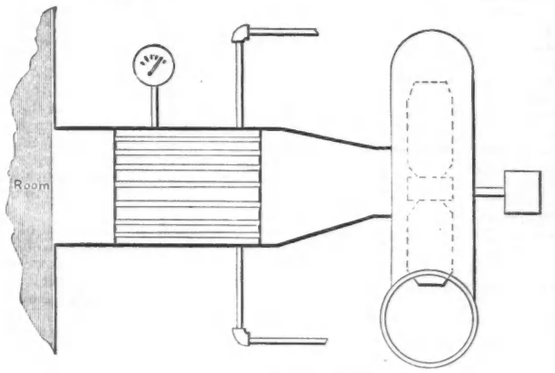
For the purposes of this experiment, this return pipe was disconnected from the house, and arranged so that the current was directed vertically upward toward the roof of the Exhibition building. Also, one of the tubes of the heater was closed with a cork, and fitted with a glass water siphon to indicate the vacuum within the fan or the pressure required to force the air through the tubes of the heater. Steam was supplied to the heater through a small pipe from the boiler, and regulated by a valve near the heater to the pressure shown by the steam gauge on the heater. This gauge was not tested, but was supposed to have been correct.

The temperature of the atmosphere was taken from a thermometer hung on a post about six feet from the door of the house. It will be observed that this temperature rises towards the end of the experiment. This, I believe, is due to the fact that the heater was gradually warming up the whole air of that portion of the building, notwithstanding all the doors and windows were open and there was free outlet for the heated air through openings in the roof.

Nevertheless, when it is considered that the fan delivered nearly 1,000 cubic feet of air per minute, warmed to 142½°, or through 64°, being equivalent of ⅝ million cubic feet of air raised 1° during the half hour the fan was running, or to all the air contained in a room 100 feet long by 100 feet wide by 64 feet high, warmed 1°, it will be seen that such a rise of temperature was very probable.

The volume of the air drawn in by the fan was shown by the reading of an anemometer in the 16¾ inch pipe between the heater and the house. This anemometer was placed on the end of a slender rod about three feet long (the observer standing back this distance from the inlet of air in order that his body might not interfere with the current), and moved uniformly over the whole area of the pipe during one minute. The figures given in the log are the readings after this exposure of one minute at an interval of five minutes. This anemometer was afterwards tested by moving it through a known distance in still air, and its rate of 50 feet determined.

The arrangement of the apparatus, and the details of the experiment, are given in the sketch and log annexed:



LOG OF EXPERIMENTS ON AIR HEATER.

Time.	Pressure.		Temperature.			Velocities.				Volume
Hour and Minutes.	Steam per Square Inch in Pounds above the Atmosphere.	Vacuum inside Tubes of Heater, Inches of Water	Atmosphere, Wet Bulb.	Atmosphere, Dry Bulb.	Hot Blast.	Revolutions of Fan per Minute.	Reading of Anemometer exposed one minute.	Difference.	Rate of Anemometer.	Velocity of Influx of Air in Feet per Minute.	Cubic Feet of Air per Minute.
2	15·2	0·400	74	89·5	142	790	2000	6	.....	.....	.....
2 5	15·2	0·375	74	89·5	142	788	2600	600	+50	650	.....
2 10	15·0	0·400	78·5	89·5	143	782	3170	570	+70	620	.....
2 15	15·2	0·400	79	90	143	785	3780	610	+50	660	.....
2 20	15·2	0·375	79	90·5	143	785	4400	620	+50	670	.....
2 25	15·2	0·360	78·5	90	142	785	4990	590	+50	640	.....
2 30	15·0	0·375	79	90·5	142	790	5570	580	+50	630	.....
Mean.	15·11	0·380	78·9	88·7	142·4	786·4	....	595	50	645	987

Dimensions.—HEATER.—Number of tubes, 121; diameter internal, ⅞; external, 13-16; length, 20 inches; area of openings through tubes, 62 inches = 0·433 square foot; surface, 4¼ square feet.

FAN.—Diameter of tips of blades, 18 inches; width at tips, 6½ inches; least diameter of outside of iron case, 2 feet 2 inches; greatest do., 2 feet 5 inches; greatest width of blades, 8 inches; number of blades, 4; area of inlet nozzle, 70 inches; diameter outlet nozzle, 9 inches; area, 63½ inches; average internal width of case, 8⅜ inches.

DISCUSSION OF THE RESULTS.

The volume of air delivered by the fan each minute was 987 cubic feet, and, therefore, its mean velocity through the tubes was:

$$\frac{987}{0{\cdot}433} \times \frac{461{\cdot}2 + \frac{88{\cdot}7 + 142{\cdot}4}{2}}{461{\cdot}2 + 88{\cdot}7} \times \frac{1}{60} = 39{\cdot}5 \text{ feet per second.}$$

The heat transferred from the steam to the air was during each minute,

$$986 \times 53{\cdot}7^{\circ} \times 0{\cdot}238 \times 0{\cdot}08 = 1{,}000{\cdot}9 \text{ units,}$$

and during each hour,

$$1000{\cdot}9 \times 60 = 60{,}054{\cdot}0 \text{ units,}$$

and per square foot of surface each hour,

$$\frac{60054}{4{\cdot}25} = 14{,}130 \text{ units;}$$

and the units of heat transferred per hour for each degree difference between the immerging air and the steam in the heater per square foot,

$$\frac{14{,}130}{250{\cdot}3^{\circ} - 88{\cdot}7^{\circ}} = 87{\cdot}5.$$

This last result shows the remarkable efficiency of this surface. It is known from former experiments that, when steam pipe is exposed in *still air* (that is to say, in air which only moves around in the room in the gentle currents formed by the less specific gravity of the heated air immediately surrounding the steam pipes), the heat is only transferred at the rate of 0·003 of a unit of heat for each degree difference of the steam inside and of the air outside, and that the surface of this heater is, therefore,

$$\frac{87{\cdot}5}{0{\cdot}003} = 2{,}920,$$

or nearly 3,000 *times as efficient as* the same surface exposed to still air. Accurate experiment would also probably show that the velocity of the air through these tubes was probably 3,000 times as great as the velocity of the air over the surface of steam pipes in still air, for subsequent experiments indicated that, when this fan was run *slower*, and the vacuum shown by the water gauge reduced from 0·38 to 0·10, the temperature of the emerging air was exactly the same,

143·4°, and, therefore, that the amount of heat taken up by the air was just in proportion to its velocity through the tubes. Results of experiments on steam boilers seem to indicate the same result.

In case these experiments should be verified, and unless there are some objections which do not now appear, it would seem that the method of heating large buildings by means of steam pipe would soon be changed from an immense area of pipe exposed in rooms to still air to a small area, over which the air will be forced at a high velocity. In such a case, it must be borne in mind that the steam exhausted from the fan should be turned into the heated pipes and utilized in warming the air, and in such case that, until the steam required to drive the fan exceeds that necessary to warm the air, the power to drive the fan will be obtained *absolutely for nothing*, and that nothing will be saved by putting in a more economical fan or engine or by lessening the resistance to the passage of air through the heater, so long as the power required is kept below what may be developed by the steam used to heat the building.

It should be the problem of the skillful engineer to design the fan and heater so that all the steam necessary to drive the fan should be used in warming the air. If he puts in a larger heater than is necessary, he wastes money for the heater; and, if he puts in too small a heater, he wastes money for the steam necessary to run the fan over what is used to heat the building.

As an example, I will cite the case of a large building recently erected in this city—the New York Hospital. This building is provided with a fan in the cellar, capable of delivering 20,000 cubic feet of air per minute, issuing from the outlet of the fan with a velocity of 2,450 feet, driven by an engine indicating 8 horse power, and using 1,500 pounds of steam per hour. The resistance of the flues in the building to the passage of air (being measured by the velocity with which the air flows back from the pressure side to the vacuum side of the fan through a small orifice in the wall—3,000 feet) being equivalent to a column of air 39 feet high, or to 0·58 inch of water.

The area of the outlet to the fan is nearly 8 square feet. If a nest of tubes having a little more than this area offered an opening to the air, it would pass through without perceptible resistance, and the power to run the fan would be the same as at present. If tubes of the same size as in experimental heater, 13-16ths internal diameter, were used, it would be necessary to have (allowing 25 per cent. for coefficient of efflux)

$$\frac{8{\cdot}0 \times 144 \times 1{\cdot}25}{0{\cdot}518} = 2{,}800 \text{ tubes.}$$

The mean velocity of the air through these tubes will be 2,000 feet per minute, or 33 1-3 feet per second, being nearly the same as in experimental heater, and therefore the elevation of the temperature of the blast (for the same temperature of steam inside the heater) the same, 54°, if the tubes have the same length; and if they are made 2 feet long will elevate the temperature of air from 0° to 100° when the steam within has a temperature of 220°. The steam exhausted from the engine would be sufficient to warm the air from 20° to 90°, and therefore to keep the building warm until the mercury fell below 20 per cent., after which time some live steam from the boiler would have to be used. The cost of this heater would be

One cylinder of ¼ inch wrought iron, 54 inches diameter, 24 inches long, with two heads, 850 lb. at 6 per cent	$51 00
Drilling 5,600 holes and expanding 2,800 13-16ths tubes at both ends	176 00
2,800 ⅞ to 13-16ths brass tubes	1,200 00
Erecting and constructing pipes, valves, etc	150 00
Total cost	$1,577 00

This building is now supplied with 12,000 square feet of steam pipes in box coils, which could not be erected for a less cost than $8,000. The coal bill would be just the same in each case.

CLASSIFICATION OF COALS.*

By Prof. Persifor Frazer, Jr., Philadelphia.

(*Continued from page 241.*)

The following is a list of the semi-bituminous coals from the same source and place:

TABLE III.—SEMI-BITUMINOUS COALS.

	Printed Analyses.			Total.	Percentage of Constituents of Fuel.		
	Fixed Carbon.	Volatile Matter.	Ash, Water, and Impurities		Fixed Carbon.	Volatile Combustible Matter.	C / V. H-C.
1 Big Flats *a*	76·94	15·06	8·00	100	83·63	16·37	5·10
2 Broad Top, Hopewell Mine *a*	88·80	11·20	0·00 *c*	100	88·80	11·20	7·93
3 Blossburg *a*	73·11	15·27	11·62	100	82·61	17·39	4·75
4 Lycoming Creek *a*	71·53	14·48	13·99	100	83·16	16·34	5·09
5 N.Y. & Maryland Mining Co. *b*	73·50	14·10	12·40	100	84·13	15·87	5·30
6 Neffs *b*	74·53	15·13	10·34	100	83·12	16·88	4·92
7 Easby's Coal in Store *b*	76·27	15·65	8·08	100	82·97	17·03	4·87
8 Atkinson & Templeman's *b*	76·69	15·98	7·33	100	82·75	7·25	11·41
9 Easby & Smith's *b*	74·29	16·42	9·29	100	81·89	18·11	4·52
10 Cumberland, Navy Yard *b*	68·44	17·28	13·98 *d*	100	79·84	20·16	3·96

a Analyzed by Penn. Geol. Survey. *b* Analyzed by Prof. W. R. Johnson.
c An unaccountable blunder in the tables makes this 4 per cent. of impurities, after the 100 per cent. has been accounted for. In many places these analyses of coals of Rogers's Survey show signs of carelessness. This impurity has been stricken out, but this is not probably the right correction.
d An error here of 0·41 per cent. in excess.

The table of bituminous coals, numbering 19, which follows in Rogers's Report, is composed entirely of analyses by Prof. W. R. Johnson, and in these the calculation is made on the principle advocated in this paper, viz. by making the fixed carbon and volatile matter together = 100. The ash is ascertained directly from the analyses, while these other ratios must have been the subject of after-computation; yet there is nothing to indicate that, in the columns giving volatile matter and fixed carbon in 100 parts, a different system from the foregoing has been introduced.

* A paper read before the American Institute of Mining Engineers, at the Wilkes-Barre meeting, May, 1877.

TABLE IV.—BITUMINOUS COALS.

	Johnson's Analyses.			C / V. H-C.	Earthy Matter in 100 parts of the Coal.
	Fixed Carbon.	Volatile Matter.	Sum.		
1 Lick Run, Lycoming County	79·28	20·72	100	3·82	13·07
2 Queen's Run, below Farrandsville	78·28	21·50	100	3·64	4·60
3 Snow-Shoe Mine	78·80	21·20	100	3·71	2·07
4 Moshannon Creek, near Philipsburg	70·50	29·50	100	2·39	6·10
5 Speed's Mine, 16 miles from Philipsburg	79·60	20·40	100	3·90	12·00 *a*
6 Leech's Mine, 17½ miles from Philipsburg	79·68	20·32	100	3·92	11·75
7 Upper part of large bed, Ralston	79·50	20·50	100	3·88	5·00
8 Karthaus, Lower Seam	75·20	24·80	100	3·03	4·70
9 Reed's 6-foot vein, Curwinsville	73·00	27·00	100	2·70	5·30
10 Bear Creek, Blossburg	68·00	32·00	100	2·12	5·20
11 Warner's 5-foot vein, Caledonia	63·00	37·00	100	1·70	8·50
12 Warner's 3-foot vein, Caledonia	61·80	38·20	100	1·61	7·30
13 Blairsville Large Bed	69·00	31·00	100	2·22	4·00
14 Sandy Ridge, 4 miles from Shippensville	56·80	43·20	100	1·31	7·00
15 Cannel Coal, 6 miles east of Franklin	47·22	52·78	100	0·89	17·68
16 Cannel Coal from Greensburg	64·00	36·00	100	1·77	33·88
17 Conneaut Lake	61·25	38·75	100	1·58	1·80
18 Near Greenville	40·50	59·50	100	0·68	1·70
19 Near Orangeville	56·25	43·75	100	1·28	2·80

a In Rogers's Report this is printed 120, probably intended for 12·0.

I have been permitted by Prof. Lesley, Chief Geologist of the Second Geological Survey of Pennsylvania, to employ the following analyses for the purpose of further testing the method of classification advocated here. They were all made in the laboratory of the Geological Survey in Harrisburg by Mr. A. S. McCreath, the Chemist of the Survey, and fellow member of the Institute. They are inserted as grouped by Prof. Lesley, and with his numbers appended to them.*

BITUMINOUS COALS.

(New Analyses by Mr. A. S. McCreath.)

TABLE V.—WAYNESBURG COAL BED, UPPER BENCH.

	2	3	4	5	6
Water at 225° F	1·230	1·036	0·740	1·385	0·770
Volatile Hydrocarbons	33·135	38·304	36·040	37·210	36·115
Fixed Carbon	49·115	48·966	46·890	42·335	48·554
Sulphur	1·705	2·726	2·375	3·710	2·146
Ash	14·815	8·969	13·955	15·360	12·415
Color	Gray.	Gray.	Gray.	Red.	Reddish Gray.
Sum	100·00	100·00	100·00	100·00	100·00
Coke, per cent	65·635	60·660	63·220	61·405	63·115
Fixed Carbon	59·72	56·11	56·53	53·22	57·34
Volatile Hydrocarbons †	40·28	43·89	43·47	46·78	42·66
Sum	100·00	100·00	100·00	100·00	100·00
C / V. H-C.	1·48	1·27	1·30	1·13	1·34

No. 2.—Near Jefferson, Jefferson Township, Greene County, Pa. Coal of dull, dirty appearance, coated with iron oxide. It contains a good deal of mineral charcoal and numerous thin partings of pyrites.
No. 3.—Two miles from Carmichael's, in Cumberland Township, Greene County, Pa. The coal is hard, with a somewhat columnar structure and resinous luster. It carries some mineral charcoal and pyrites. (Analyst, S. A. Ford.)
No. 4.—Half a mile north of Bealsville, in West Pike Run Township, Washington County, Pa. Coal hard and compact; seamed with mineral charcoal and pyrites. Some pieces distinctly laminated. (D. McCreath.)
No. 5.—Two and a half miles south from West Middletown, in Hopewell Township, Washington County, Pa. Coal compact, with bright, shining luster. Contains numerous thin partings of slate and pyrites.
No. 6.—Two miles northeast from Hillsboro, in Somerset Township, Washington County, Pa. Coal exceedingly tender; generally coated with an efflorescence of copperas. Seamed with charcoal and pyrites.

From the above consideration, it would appear that the true analogues among the above coals are Nos. 3 and 5 and Nos. 4 and 6. No. 2 is evidently the only representative of its own class among the specimens.

The Lower Bench of the same Waynesburg basin is represented as follows:

TABLE VI.—WAYNESBURG COAL BED, LOWER BENCH.

	7	8	9	10	11
Water at 225° F	1·265	1·175	1·180	1·235	0·920
Volatile Hydrocarbons	34·685	35·615	32·344	36·185	33·710
Fixed Carbon	49·590	49·725	51·582	46·723	52·064
Sulphur	1·270	2·280	1·306	2·972	1·121
Ash	13·190	11·205	13·588	12·885	12·185
Color	Gray.	Pink.	Cream.	Reddish Gray.	Gray.
Sum	100·00	100·00	100·00	100·00	100·00
Coke, per cent	64·050	63·210	66·476	62·580	65·370
Fixed Carbon ‡	58·84	58·26	61·46	56·35	60·69
Volatile Hydrocarbons	41·16	41·74	38·54	43·65	39·31
C / V. H-C.	1·43	1·39	1·59	1·29	1·54

No. 7.—One and a half miles from Waynesburg, in Franklin Township, Greene County, Pa. Coal very hard and compact, resinous luster; somewhat slaty. (David McCreath.
No. 8.—Near Jefferson, Jefferson Township, Greene County, Pa. Coal shining, iridescent, brittle, with numerous thin partings of pyrites.
No. 9.—One mile from Carmichael's, in Cumberland Township, Greene County, Pa. Coal hard, with resinous luster; carries a good deal of pyrites in thin partings, also some mineral charcoal and slate. (S. A. Ford.)
No. 10.—On Ruff's Creek, in Morgan Township, one-half mile from Martinsville, in Greene County, Pa.
No. 11.—Near Center School-House, in Morgan Township, four miles from Jefferson, Greene County, Pa. Coal hard, brittle; seamed with mineral charcoal and pyrites; shows a slight efflorescence of copperas. (D. McCreath.)

TO BE CONTINUED.

* These analyses will be shortly issued in the report of Mr. McCreath (MM.) for 1875. P. F., Jr., March, 1877.
† Neglecting the impurities, and counting the fixed carbon and volatile hydrocarbons together = 100.
‡ Calculated as = 100, neglecting all other constituents of the analysis.

THE EUREKA-RICHMOND DECISION.

THE OPINION OF THE CIRCUIT COURT OF THE UNITED STATES, FOR THE DISTRICT OF NEVADA, IN THE CASE OF THE EUREKA CONSOLIDATED MINING COMPANY *vs.* THE RICHMOND MINING COMPANY, OF NEVADA, DELIVERED AT SAN FRANCISCO, AUGUST 22, 1877, BY MR. JUSTICE FIELD.

(*Continued from page 240.*)

If the scientific definition of a lode, as given by geologists, could be accepted as the only proper one in this case, the theory of distinct veins existing in distinct fissures of the limestone, would be not only plausible, but reasonable; for that definition is not met by the conditions in which the Eureka mineralized zone appears. But as that definition cannot be accepted, and the zone presents the case of a lode as that term is understood by miners, the theory of separate veins, as distinct and disconnected bodies of ore, falls to the ground. It is, therefore, of little consequence what name is given to the bodies of ore in the limestone, whether they be called pipe veins, rake veins, or pipes of ore, or receive the new designation suggested by one of the witnesses, they are but parts of one greater deposit, which permeates, in a greater or less degree, with occasional intervening spaces of barren rock, the whole mass of limestone, from the Jackson Mine to the Richmond, inclusive.

The Acts of Congress of 1866 and 1872 dealt with a practical necessity of miners; they were passed to protect locations on veins or lodes, as miners understood those terms. Instances without number exist where the meaning of words in a statute has been enlarged or restricted and qualified to carry out the intention of the Legislature. The inquiry, where any uncertainty exists, always is as to what the Legislature intended, and when that is ascertained it controls. In a recent case before the Supreme Court of the United States, singing birds were held not to be live animals, within the meaning of a Revenue Act of Congress. (*Reiche vs. Smythe*, 13 Wall., 162.) And in a previous case, arising upon the construction of the Oregon Donation Act of Congress, the term, a single man, was held to include in its meaning an unmarried woman. (*Silver vs. Ladd*, 7 Wall., 219.) If any one will examine the two decisions, reported as they are in *Wallace's Reports*, he will find good reasons for both of them.

Our judgment being that the limestone zone in Ruby Hill, in Eureka District, lying between the quartzite and the shale, constitutes, within the meaning of the Acts of Congress, one lode of rock-bearing metal, we proceed to consider the rights conveyed to the parties by their respective patents from the United States. All these patents are founded upon previous locations, taken up and improved according to the customs and rules of miners in the district. Each patent is evidence of a perfected right in the patentee to the claim conveyed, the initiatory step for the acquisition of which was the original location. If the date of such location be stated in the instrument, or appear from the record of its entry in the local land office, the patent will take effect by relation as of that date, so far as may be necessary to cut off all intervening claimants, unless the prior right of the patentee, by virtue of his earlier location, has been lost by a failure to contest the claim of the intervening claimant, as provided in the Act of 1872. As in the system established for the alienation of the public lands, the patent is the consummation of a series of acts, having for their object the acquisition of the title, the general rule is to give to it an operation by relation at the date of the initiatory step, so far as may be necessary to protect the patentee against subsequent claimants to the same property. As was said by the Supreme Court in the case of *Shepley vs. Cowan* (1st Otto, 338), where two parties are contending for the same property, the first in time, in the commencement of proceedings for the acquisition of the title, when the same are regularly followed up, is deemed to be the first in right.

But this principle has been qualified in its application to patents of mining ground, by provisions in the Act of 1872, for the settlement of adverse claims before the issue of the patent. Under that act, when one is seeking a patent for his mining location, and gives proper notice of the fact as there prescribed, any other claimant of an unpatented location objecting to the patent of the claim, either on account of its extent or form, or because of asserted prior location, must come forward with his objections and present them, or he will afterwards be precluded from objecting to the issue of the patent. While, therefore, the general doctrine of relation applies to mining patents so as to cut off intervening claimants, if any there can be, deriving title from other sources, such, perhaps, as might arise from a subsequent location of school warrants, or a subsequent purchase from the State, as in the case of *Heydenfeldt vs. Daney Gold Mining Company*, reported in the third of Otto, the doctrine cannot be applied so as to cut off the rights of the earlier patentee, under a later location where no opposition to that location was made under the statute. The silence of the first locator is, under the statute, a waiver of his priority.

But from the view we take of the rights of the parties under their respective patents, and the locations upon which those patents were issued, the question of priority of location is of no practical consequence in the case.

The plaintiff is the patentee of several locations on the Ruby Hill lode, but for the purpose of this action it is only necessary to refer to three of them—the patents for the Champion, the At Last, and the Lupita or Margaret claims. The first of these patents was issued in 1872, the second in 1876, and the third in 1877. Within the end lines of the locations, as patented in all these cases, when drawn down vertically through the lode, the property in controversy falls. Objection is taken to the validity of the last two patents, because the end lines of the surface locations patented are not parallel, as required by the Act of 1872. But to this objection there are several obvious answers. In the first place it does not appear upon what locations the patents were issued. They may have been, and probably were, issued upon locations made under the Act of 1866, where such parallelism in the end lines of the surface locations was not required. The presumption of the law is, that the officers of the Executive Department specially charged with the supervision of applications for mining patents, and the issue of such patents, did their duty; and in an action of ejectment, mere surmises to the contrary will not be listened to. If, under any possible circumstances, a patent for a location without such parallelism may be valid, the law will presume that such circumstances existed. A patent of the United States for land, whether agricultural or mineral, is something upon which its holder can rely for peace and security in his possessions. In its potency it is ironclad against all mere speculative inferences. In the second place, the provision of the statute of 1872, requiring the lines of each claim to be parallel to each other, is merely directory, and no consequence is attached to a deviation from its direction. Its object is to secure parallel end lines drawn vertically down, and that was effected in these cases by taking the extreme points of the respective locations on the length of the lode. In the third place, the defect alleged does not concern the defendant, and no one but the Government has the right to complain.

The defendant, the Richmond Mining Company, also holds several patents issued to it upon different locations; but in this case it specially relies upon the patents of the Richmond and Tip Top claims. It is alleged that these patents were issued upon locations made earlier than any upon which the patents to the plaintiff were issued. Assuming this to be the fact, and claiming from it that the patents ante-date in their operation, by relation back to such locations, the patents of the plaintiff; and the further fact that the locations were made under the Act of 1866, the defendant relies to defeat the pretensions of the plaintiff. It contends that inasmuch as the croppings of the vein it works are within the surface of its patented locations, it can follow the vein wherever it leads, though it be outside of the end lines of the locations when vertically drawn down through the lode. Its position is that whenever under the law of 1866, a location was made on a lode or vein, a right was acquired to follow the vein wherever it might lead, without regard to the end lines of the location. This position is urged with great persistence by one of the counsel of the defendant, and with the ability which characterizes all his discussions.

The second section of the Act of 1866, upon the provisions of which this position is based, provides, "That whenever any person, or association of persons, claims a vein or lode of quartz, or other rock in place, bearing gold, silver, cinnabar, or copper, having previously occupied and improved the same according to local customs or rules of miners in the district where the same is situated, and having expended, in actual labor and improvements thereon, an amount of not less than one thousand dollars, and in regard to whose possession there is no controversy, or opposing claim, it shall and may be lawful for said claimant, or association of claimants, to file in the local land office a diagram of the same, so extended, laterally or otherwise, as to conform to the local laws, customs, and rules of miners, and to enter such tract and receive a patent therefor, granting such mine, together with the right to follow such vein or lode, with its dips, angles, and variations, to any depth, although it may enter the land adjoining, which land adjoining shall be sold subject to this condition."

It will be seen by this section that to entitle a party to a patent, his claim must have been occupied and improved according to the local customs or rules of miners of the district, and that his diagram of the same, filed in the land office, in its extension laterally or otherwise, must be in conformity with them.

The rules of the miners in the Eureka Mining District, adopted in 1865—laws of the District, as they are termed by the miners—provided that claims of mining ground should be made by posting a written notice on the claimant's ledge, defining its boundaries if possible; that each claim should consist of two hundred feet on the ledge, but claimants might consolidate their claims by locating in a common name, if in the aggregate no more ground was claimed than two hundred feet for each name, and that each locator should be entitled to all dips, spurs, and angles connecting with his ledge; and that a record of all claims should be made within ten days from the date of location. The rules also allowed claimants to hold one hundred feet each side of their ledge for mining and building purposes, but declared that they should not be entitled to any other ledge within this surface.

It will be perceived by these rules that they had reference entirely to locations of claims on ledges. It would seem that the miners of the district then supposed that the mineral in the district was only found in veins or ledges, and not in isolated deposits. In February, 1869, new rules were added to those previously passed, authorizing the location of such deposits. These new rules provided that each deposit claim should consist of one hundred feet square, and that the location should take all the mineral within the ground to any depth.

TO BE CONTINUED.

SHRINKING ON OF WHEEL TIRES BY MEANS OF HOT WATER.*

By O. Schubert, of the Moscow-Nijni Railway, Kouroff.

The expansion of tires by hot water, though not claimed to be new, is believed by the author to be much superior to the ordinary method of using fire. As applied on the Moscow-Nijni Railway, an iron tank, one-fourth filled with water, is fixed near a stationary boiler, a steam pipe from which is led through it, capable of heating the water to 212° Fahr. Into this the tire is plunged by means of a portable crane, and after an immersion of from ten to fifteen minutes, is taken out and immediately placed on the wheel. Three men only are employed, who will fix from twelve to fourteen tires in a day of eleven hours. The allowance for shrinking (the difference between the diameter of the skeleton and that of the tire) is 0·75 millimeter to a meter. This is ascertained by gauges of great accuracy, and, if deviated from, the tire will be either loose after cooling or too small to get on the wheel. When fire is used, the tire can never be heated equally or cooled equally in all parts, and in consequence is sure to be more or less oval in form, which is not the case in hot water. The above railway made a comparison between the two, the results of which are given. It appears that, during a six years' trial of fire-shrunken tires, 37 per cent. ran loose and 5 per cent. were broken; while during a three years' trial of water-shrunken tires less than 1 per cent. ran loose, and only a single tire was broken. The liability to breakage in the former (produced by the irregularity in form) is much insisted on by the author as being, of course, far more dangerous and costly than the mere loosening of the tire.

THE UTAH MINING DISTRICTS.—VII.

(Special Correspondence from our Western Office.)

MINES IN BINGHAM.

Old Telegraph.—This is at present the great mine of the camp. It is finely opened, and has masses of ore in sight that might excite a Comstocker—for a moment. The vein pitches out of the mountain, so to speak. The ore, presenting breasts in places 40 feet thick, is broken down easily with a pick, and dropped through chutes following the natural dip of the vein, and finally finds its way by the mere force of gravity into the tramcars that stand ready to receive it, and they in turn roll down by gravity to the steam railroad. No hoisting apparatus is used. The mine is not producing what it easily might by half. The working force consists of 70 men, while 140 is considered the normal number. The daily production is 50 tons, averaging 50 per cent. lead and 25 oz. silver. During last winter 100 to 160 tons daily were shipped. When the Jordan smelter is in full operation, as is expected shortly, at least 100 tons daily will be sent down. The mine contains large bodies of ore carrying 20 per cent. lead and 15 oz. silver, which will be sent to the company's concentrating works now erecting near the smelter, and will be treated there before being smelted.

The timbering of this mine is alone worth a trip to see. Every timber is squared and matched by machinery, and when put up, in places twenty sets one over the other, gives one the impression of traversing a large underground house. Five thousand feet daily are put into the mine, and there is no waste either, as the strips sawed off the logs are used as lagging.

A No. 5 Bowers air compressor is used to drive the Burleigh drills employed in breaking ground where some iron pyrites have been struck. The company has twelve houses to accommodate miners with families, two large boarding-houses, an assay office, a general office, a saw-mill, and carpenter shop. Mr. L. E. Holden is principal owner and general manager.

The greatest depth attained to date from discovery is some 400 feet. The mine is covered by United States patent.

Revere is over the hill, eastward from the *Old Telegraph* workings, and is undoubtedly on the same vein. This is also a very fine property. The incline shaft is down 800 feet from discovery, and at the lowest point is about 1,400 feet beneath the apex of the mountain, the dip being into the hill. Eight levels have been run 100 feet apart. Both east and west down to the fifth level, to which only I descended, large bodies of ore have been struck, and thousands of tons are in sight. Only a force of 28 men are being employed, more to fill a contract with the Pennsylvania Lead Company than because the owners care to

* Abstract of paper in the *Organ fur die Fortschritte des Eisenbahnwesens*, from the Minutes and Proceedings of the Institution of Civil Engineers, of London, edited by James Forrest, Secretary.

ship at the present prices. They are sending up some 70 tons daily, however, 20 of which is first-class, averaging 50 per cent. lead, and 20 to 35 oz. silver, the remaining 50 tons being second-class, averaging 18 per cent. lead and 15 to 25 oz. silver. This latter is sent down by teams to the company's mill on Butterfield Creek, one and a half miles below the shaft house, and there crushed in a 10-stamp battery, through 16-mesh screens, and buddled to run off the sand and waste, making a product that brings the company $50 a ton.

All the ore from this mine is sold to the Pennsylvania Lead Company.

Mr. G. D. Shell, the superintendent at the mine, is an old Comstocker, and takes pride in running his mine in good style. Some of the chambers whence the ore has been extracted are like huge caverns, and when standing in the center of a stope, often the eye seeks in vain to find the bottom or the top by the flickering light of the candle. The huge supporting timbers stand like giant pillars that mock the vision in its attempt to count them in their shadowy depths. The ore is sent to Sandy from the mill by wagons, at a cost of $4 50 a ton. On the 500-foot level the drift is being pushed west, following a small seam of pyritous shale, with every indication of striking another ore body soon. The breast of the drift is now 700 feet from the incline shaft. The mine is almost perfectly dry, and the ventilation is excellent. The ore is a carbonate, very soft and easily broken, with occasional pockets of galena, high and low grade more or less mixed.

Yosemite.—This mine is located further eastward again from the *Revere*, and is supposed to be on another vein. I was sorry not to be permitted to descend the shaft, as I had no pass from the manager in chief, not knowing that such a document was necessary. I have understood that it was a very handsome mine, not only by reason of the neat, trim way in which it is handled, but on account of the sparkling and brilliant effects of the ore, which is mostly galena, and which reflects the candle light in myriad brilliant rays. I saw enough in the shaft house and ore bin, however, to convince me that it *is* a mine, and that its superintendent was particular about having a place for everything and everything in its place. Neater, trimmer works about a mine no one would care to see. The *Yosemite* is shipping 300 to 400 tons a month, with a force of 35 to 40 men only, going "slow" on account of "hard times." The ore is of good quality, averaging 50 per cent. lead and 16 to 20 oz. silver, with occasional lots of 70 per cent. lead.

Coming down over the hill again, past the *Old Telegraph* and up over into Bingham Cañon proper, we come to the

Spanish.—This property is being worked by the Messrs. Gallagher Bros. under lease, and they are shipping considerable ore, some 350 tons monthly, averaging 50 per cent. lead and 16 oz. silver. As stated before, the ore in this mine, though occurring in large bodies, is mostly of such a low grade as to require concentrating before being of sufficient value to ship to market. For this purpose, the above-named gentlemen have erected four Cornish jigs of the Mitchell modified pattern, worked by steam power, and all the ore is washed in these. The facilities for delivering it to the jigs from the mine are such that the cost is merely nominal. About 30 tons of high grade comes out of the mine monthly. The force now employed is fifty men. The mine is opened by some three miles of tunnels, drifts, shafts, etc. The property is only worked during eight months in the year, on account of the scarcity of water for jigging—from March 1 to November 1.

Up the cañon half a mile are located the

Neptune and *Jordan.*—The former is being worked with a force of 25 men, producing some fifty tons of ore daily, which is crushed and concentrated at Jackson & Bennett's mill to make a marketable product. The plant of the mill is very simple, consisting of two five-stamp batteries and some hand buddles. The 50 tons are run through in 24 hours.

The *Jordan* is a fine old property, but it has caved so much on the surface that nothing is being done there except the driving of tunnels to open it again. Away up on the hill, however, a couple of shafts are being sunk on the claim, and some rich gold ore is being extracted, valued at about $180 a ton, 18 per cent. lead, 18 oz. silver, and the balance gold. They shipped from here some 20 tons during July. I will not undertake to mention the other mines in this vicinity in order, as they are too much mixed together to distinguish their locations without a plat.

Rough and Ready.—Working 7 men, and producing 4 to 5 tons daily of 60 per cent. lead, and 12 oz. silver. Developments consist of 2,500 feet of tunnels and drifts, and 300 feet of shafts, the deepest of which is 85 feet.

Fanny Bemas.—Under lease, working 2 men. Not doing much on account of depression in lead. Has shipped 50 tons monthly.

St. Johns.—Also under lease. Working 5 men, and shipping about 40 tons monthly of ore averaging 80 to 100 oz. silver, and 20 to 35 per cent. lead. Shaft down 180 feet, tapped by an adit 450 feet long.

Live Yankee.—Working 7 men, and producing some 7 tons weekly of 50 to 66 per cent. lead, and 35 to 40 oz. silver. Has 800 feet of levels, and 125 feet shafting. The ore is galena, mixed with pyrites. Has a granite foot-wall and porphyry hanging-wall, the vein averaging 3 feet in thickness.

Gray Eagle.—Working 2 men, and producing about enough ore to pay wages. Has about 1,800 feet tunnels and drifts, and 250 feet shafts, down 85 feet, principally prospecting at present.

Bully Boy.—Has lately struck a small seam of free gold ore in the breast of the tunnel 650 feet in. Not working very extensively.

Winnamuck.—This old and valuable claim is now closed down on account of the low price of lead. In its time it has produced large sums of money, but bad mining and bad management in the early times have damaged it not a little.

Last Chance.—Was not permitted to see the mine. Some 7 men are working there, on lease, and shipping some ore. Another monument to folly and bad management.

The mines at present working a small force and producing are the *Aladdin, Albino, Shakespeare, Bull-Dozer, Saginaw, St. Mark's, Owyhee,* the *California Tunnel, Lucky Boy, Black Jack, Lead Mine, Gilbert,* etc.

The *Southern Cross, Experiment, Eagle Bird, Finance, Tempest,* etc., are shut down.

I must not fail to mention the *Bear Fork* placer mine, owned by Messrs. J. S. Watson and T. B. Mulpie, located well up near the range, and in the season when water is plenty producing in places one-half an ounce per day to the man on bedrock. The banks will average 10 feet deep, with more or less pay throughout; the main difficulty in working late in the summer being scarcity of water. Nuggets of from $1 to $10 are found, but are not frequent.

The *Bingham Canon* placer mine, located near the mouth of the cañon, is being worked by Messrs. Maguire & Co., but is not producing much yet.

Messrs. Egan & Bates are erecting a ten-stamp concentrating mill about a mile above town, and will be at work in about two weeks. Will crush and buddle simply.

Mr. Oliver Durant is erecting a concentrator in Carr's Fork, intending to use the McKim belt. Capacity will be about 25 tons daily. Will be running in a couple of weeks. Proper concentrating works will be of much benefit to this camp, and will assist many mines that now cannot ship their product on account of its low grade.

The weather at present could not be finer. The snows become deep in winter around the mines, but the cold is seldom intense, not having exceeded 3° below zero for a number of years.

Rose.

SOME OF OUR IRON MINES AND THEIR PRODUCTS.

From the Marquette *Mining Journal* of the 29th ult. we take the following, showing the shipments from the mines of the Lake Superior iron region, for the season, up to and including the 26th of September:

Shipments from Marquette.—

IRON ORE.		IRON ORE.	
Name of Mine.	Gross Tons.	Name of Mine.	Gross Tons.
Republic	148,582	Champion	63,940
Cleveland	99,520	McComber	6,877
Lake Superior	92,811	Marquette	975
Edwards	7,190	Carp River Quartz	671
Rolling Mill	13,433	R. P. Traverse Quartz	1,281
Humboldt	14,696		
New York	7,438	Total	458,030
New York Hematite	616		

PIG IRON.		PIG IRON.	
Name of Furnace.	Gross Tons.	Name of Furnace.	Gross Tons.
Pioneer	1,817	Morgan	637
Carp River	1,891		
Rolling Mill	5,242	Total	9,587

Shipments from Escanaba.—

IRON ORE.		IRON ORE.	
Name of Mine.	Gross Tons.	Name of Mine.	Gross Tons.
Jackson	51,984	Rolling Mill	11,382
South Jackson	1,637	McComber	4,542
New York	39,903	Winthrop	8,607
Cleveland	7,507	Mitchell	3,805
Angeline (hard)	13,291	Cambria	10,080
Angeline (hematite)	1,421	Goodrich	503
Barnum	28,758	Shenango	90
Saginaw	41,969	New York Hematite	2,690
Salisbury	30,948	Bessemer	6,780
Palmer	12,032	Breen	1,918
Michigamme	4,880	Smith	6,130
Lake Superior (hard)	8,581		
Lake Superior (hematite)	404	Total	305,842

Shipments from L'Anse.—

IRON ORE.		IRON ORE.	
Name of Mine.	Gross Tons.	Name of Mine.	Gross Tons.
Michigamme	20,973	Stewart	417
Keystone	12,896		
Spurr	17,545	Total	51,831

Freights are scarce, but rates are firm, and higher rates are demanded. We quote Marquette to Cleveland and Ashtabula, Ohio, $1.40 to $1.50; L'Anse to Cleveland and Ashtabula, $1.40 to $1.50; Escanaba to Cleveland and Ashtabula, rates are nominal, say $1 to 1.25.

The probability is that the shipments will suffer a material decrease for the remainder of the season. Vessels that have been in the ore trade find that there is more money in the grain trade on the lower lakes, and are fast entering that branch of commerce.

Winthrop Mine.—Work has been resumed at this mine by a party of Swede miners, who have taken a contract to mine the ore at a certain price per ton for a term of one year. The contract includes the sinking of a shaft on the Mitchell line to a depth of 100 feet.

Champion Mine.—At the west end this mine continues to improve, and ore is being broken in two stopes—one to the east and the other to the west of No. 7 shaft. The ore is a bright red specular, of a slaty structure, so nearly similar to that of the Republic that it cannot easily be distinguished from it. No. 7 shaft is down 100 feet, and the vein, which only carries a width of four feet on the surface, at the bottom widens out to 16 feet, and is giving promise of a most extensive deposit. This is 1,200 feet west of No. 5, and would seem to indicate an unbroken run of ore extending over a length of nearly 3,000 feet. The mine, as a whole, is in splendid condition, and when the new machinery is in place and at work it will enter upon a new era of prosperity. These improvements are nearly completed, and will, when finished, cost about $25,000.

The Diamond Drill is to be employed in testing a number of the mines in the region. The Lake Superior Company is sinking a shaft which is intended to strike the ledge, when the diamond drill will be put to work. It is the intention to have the latter go down about 300 feet, and determine the width and depth of the vein, which is thought to be a continuation of the Depot Mine. The shaft is being sunk at an angle of about 60 degrees, bearing west.

The Bay and Munising Iron Companies—"It is stated that the bondholders of these companies propose, in case the two properties are given up to them, to consolidate and rebuild the Bay furnace."

The Menominee Range Mines.—We condense the following from a recent issue of the Ishpeming *Iron Home:* "The Breen Mine is the only mine in the range from which ore in any quantity has been shipped. Up to date nearly 5,000 gross tons, making two cargoes, has left the mine for Cleveland. A very severe and practical test was made of the ore before sending it away. Some forty shovelfuls were taken from different places in the mass and analyzed. The result gave over 64 per cent. of metallic iron. From the nature of the ground at the Breen the face above the water level is less than at the other mines, averaging about 16 feet, while the vein is 65 feet wide at least. The mine is being worked by an open cut from the top, the dirt and a capping rock aggregating but a few feet in thickness, and arrangements have been made by which the ore is to be taken up by an immense derrick, 80 feet high, swinging around and dumping into a large pocket, which is made very substantially, and from which four cars can be loaded at the same time if necessary. This arrangement will answer for a long time, and may be used for a considerable depth after the mine commences to work under the water level."

The Breitung Mine.—A tunnel has been run into the side of the hill on this mine, striking the vein at a depth of about 50 feet. Stripping is also being vigorously carried on, and the vein has been uncovered, showing 90 feet of almost

solid ore. Some 5,000 tons have been mined and are ready for shipment so soon as the railroad switch is completed. The ore is softer and more easily mined than that at the other locations. The company has erected pockets from which all the ore above the level of the present tunnel will be shipped, after which another will be driven 25 feet lower and on a level with the railroad side track, and into which the regular cars will be taken and loaded from the inside of the mine. The prospects for economical and extended work at the Breitung are excellent. About 40 men are now on the pay rolls of this company.

The *Marquette Journal* of the 29th ult. says: "Major T. B. Brooks and Prof. Pumpelly have returned from their examination of the Menominee Range, and speak highly of its prospects. They say the Commonwealth mine, on the Wisconsin side of the river, gives promise of ultimately becoming one of the best mines in the country, the deposit being apparently very large and the ore of the best quality."

The Penoka Iron Range is a new and valuable discovery recently made in the Lake Superior region. The Ashland *Press* of the 22d ult. says: "The ore found is of the red specular variety. The formation extends in width about seventy feet, and it is estimated that at least twenty feet of this formation carries rich merchantable ore. This location is situated about one mile west of the old Penoka Station on the Central Railroad, and can be reached by a side track on an easy grade."

NEW JERSEY IRON MINES.—From the *Iron Era* of the 29th ult. we condense the following:

Crane Iron Company.—This company recently opened the Randle Hill Mine near Mine Hill. About 20 men are employed here.

The Andover Iron Company is opening upon a new vein at Mine Hill, near the property of the New Jersey Iron Mining Company, the underlay of which, it is said, will come on the latter property.

Bethlehem Iron Company.—It is reported that this company is making preparations to resume work on an extended scale at Hibernia. The new tunnel completed at that place, and the trestle leading from the mouth of it to the Hibernia Railroad, will greatly facilitate the work and lessen the cost of bringing the ore from the properties of the Glendon and Bethlehem companies. It is said that the Glendon mine alone is in condition to produce 100,000 tons of ore per annum, did the demand warrant the production.

Dickerson Mine.—This mine, the oldest in the State, having been worked for about 140 years, is preparing for greater development and production. The Superintendent is taking out all the old pump rods, of which there are 800 feet, and is replacing them with three new steam pumps for lifting the water. He is also putting in a new slope to take the ore direct from the bottom of the mine, and obviate the necessity of handling it several times in bringing it to the surface. This slope will be 850 feet in length, and will be the longest in this section, with the exception of that at Hurdtown.

"It is truly gratifying to note from all sides that the iron industry is looking up. Although the price of iron is low, yet for the first time since the panic began it is quoted as firm. Besides, it is said that the great surplus of pig iron stored at the furnaces is about used up, and for the necessities of the future iron must be made, and furnaces must be kept in blast. And the need of iron is beginning to be manifested. The great railroads during the panic have been wearing out their iron without doing much in the way of repairing or refurnishing. The Thomas Iron Company alone, whose mining interests in this section are extensive, has contracted to fill orders for 40,000 tons of iron, and we notice by Pennsylvania papers that the Glendon and some other companies are shipping from their furnaces large quantities of pig. All in all, the outlook is very encouraging, and none seem to doubt that from this henceforth there will be a gradual but steady improvement in the iron business."

Roane, Georgia, Iron Company.—A correspondent of the Cartersville, Ga., *Express* says: "The operations at the Gray Ore Mine of this Company are progressing steadily. About thirty miners and laborers are employed there, the former getting out ore, and the others building a narrow railway track about a half mile in length, which will connect the mine with the Western & Atlantic Railroad. The mining work thus far has developed a considerable quantity of ore. At one point a drift has been run on the vein for about eighty feet, the vein averaging from three to four feet in thickness, and a shaft has been sunk on the vein to about forty feet from the surface, the vein going down nearly perpendicularly, and keeping its thickness well and improving in quality."

A New Railroad to the New Castle, Pa., Ore Bed.—The New Castle *Courant* states that the New Castle Ore Company has broken ground for a narrow gauge road from that city to the great ore beds in the south portion of the county. The road will be about 8 miles long, and the intention is to finish it, if possible, the present year. We are informed it is not an expensive route for building a railroad, and there is no doubt the investment will be a paying one from the start. The building of this road will insure the starting up of the idle furnaces, which will be a great advantage to the city and county, besides developing a vast quantity of mineral wealth.

NOTES.

AN IMMENSE BLOCK OF GRANITE.—There was recently quarried without the use of powder, at the Barre granite quarries, for the use of the Oliver Granite Works of Rutland, a block weighing about six hundred and eighteen tons, being forty feet long, seventeen feet high, and ten feet thick. This immense stone is said to be perfect in every respect, and is believed to be the largest block of granite ever quarried in the State.—*Rutland (Vt.) Herald.*

NEGROES CANNOT TAME ELEPHANTS.—It is noted as a curious fact by Sir Samuel Baker that a negro has never been known to tame an elephant or any wild animal. The elephants employed by the ancient Carthaginians and Romans were trained by Arabs or Carthaginians, never by negroes. A person might travel all over Africa, and never see a wild animal trained and petted. It had often struck Sir Samuel as very distressing that the little children never had a pet animal; and, though he had often offered rewards for young elephants, he had never succeeded in getting one alive.

DIORREXINE.—It appears that in Germany this explosive is becoming popular among coal miners. It was invented by Mr. G. Pancera, and large quantities are now manufactured at Sistiana, in Triest, and at Brunn, near Wiener-Neustadt. In the dry explosive there were found by the analysis by Mr. J. Fels, of Triest: Picric acid, 1·65; charcoal, 7·49; beech sawdust, 10·97; potassic nitrate, 42·78; sodic nitrate, 23·16; sulphur, 13·40; loss, 0·55; total, 100. Diorrexine is about 25 per cent. lighter than Austrian blasting powder, and of about equal strength, whilst it does not cost more than one-fifth.

EFFECT OF SALT WATER ON CANDLES.—Some candles which had been sunk in the wreck of a vessel off the Spanish coast for about 173 years have been examined by Prof. Gladstone. The wicks had all rotted away, and the fat had been converted into a heavy substance of a dull white color by the action of the salt water. After the fat had been removed by ether, there remained carbonate and chloride of calcium and sodium, with traces of potassium and magnesium. The calcium, though less abundant than sodium in the ocean, had apparently the greatest influence in effecting the change noted; but notwithstanding the length of time the fat had been exposed, the reaction had only been about one-half accomplished.

THE GOLD SHORE SANDS OF CALIFORNIA.—The auriferous black sands of the sea-shore of Northern California have been described, and lately we described a machine that was about going up on the beach to test the practicability of profitably extracting the exceedingly fine gold dust from the sand. Every effort heretofore has been a failure. There is gold enough in those miles of ocean sand to pay the national debt, if this new process proves successful; therefore, the report of this first practical test is of high national importance. The fine concentrators, after a month's run, gathered twenty tons of the sands, well cleansed of the lighter parts, which doesn't pay; so much that the concentrated tonnage realized $12,000, or $600 per ton. The cost of working was $1,300. Now machines are constructing which, at the same rate, will yield $50,000 a month at a cost of $4,000. Many attempts have for years past been made along one hundred miles of coast to work these shifting tidal sands without success. Now a rush of preemptors is expected to stake off claims on the shores of California and Oregon. The sands extend under the ocean far beyond low water. But every tide and every storm so shifts the paying points that a claim rich to-day may to-morrow be covered with barren sands. Nevertheless, auriferous ocean sands may now be considered a new and permanent source of gold production, rivaling and probably excelling the great auriferous gravel deposits worked by hydraulic washing. In both it is a question of cost in separating and gathering a small per centum of gold dust from an immense body of sand and gravel.—*New York Evening Post.*

JAPANESE COMPETITION IN MANUFACTURES.—The following extract from a letter received by a large manufacturing house in Birmingham, England, from its agent in Yokohama is significant as indicating not only that our Japanese trade is threatened by the ingenuity of Japanese workmen, but that we may possibly have to face their competition in our own markets: "The Japanese are now making a number of articles which I formerly purchased from you, and at prices beyond the possibility of European competition. In fact, quite a number of different classes of merchandise are being made in this country, and Europeans are obliged to discontinue importing in consequence. This may appear somewhat strange to you, nevertheless it is a fact. Bear in mind, Asiatics live as no other race can, and upon food which would not sustain a European house-dog. Frugal as badgers, industrious as bees, they undersell every labor-market which they enter, and outdo every civilized artisan at his own trade. Any one who sees a Japanese carpenter at work with his toes for a vice and his thighs and stomach for a bench, has seen tools well used, and goods equal to European goods turned out. They will, in fact, become formidable rivals of all kinds of Western manufactures. The Japanese are always ready to learn and to outvie everything that the West does, and this they do with less food, less air, less clothing and less comfort than any civilized workman. Since I last wrote you I have been offered an order for your goods, but at a price at which I should lose about ten per centum; yet a factory at Osaka has taken the order and is now making the goods."—*London and China Telegraph.*

SEPARATION OF IRON FROM CHROME AND URANIUM.—M. A. Ditte.—The separation of these metals presents certain difficulties. If we treat the substance under examination with oxidizing agents, so as to make the chrome pass into the state of an alkaline chromate, either in order to determine the chromic acid as mercurous chromate, or with a view to reduce the chromate with hydrochloric acid and alcohol, precipitating the sesquioxide of chrome afterwards by means of ammonia, we necessarily introduce alkalies which it is difficult to get rid of, and whose presence may be inconvenient in the course of the analysis. As for the method of separating chromic oxide, by means of its solubility in cold potassa, it must be regarded as giving results scarcely even approximate. In like manner the separation of uranium by carbonate of ammonia, which ought to dissolve it entirely as uranate of ammonia, is not easily completed. We succeed better if, after having precipitated the oxides by ammonia, and having calcined them in a current of hydrogen, we treat the residue with dilute hydrochloric acid. The iron may be thus removed, but the protoxide of uranium is not perfectly insoluble in this acid unless it has been very strongly ignited. It is then washed, dried, and reignited in a current of hydrogen before weighing. The separation of these oxides may be effected with great accuracy by operating in the manner proposed by M. Sainte-Claire Deville for the separation of iron and alumina. The metals are brought to the state of sesqui-salts; all metals whose sulphides are insoluble in dilute acids are removed by known methods, and the ferric, chromic, and uranic oxides are then precipitated together by an excess of ammonia. Care must be taken to drive off by ebullition any free ammonia which might dissolve a portion of the latter. The oxides are well washed, calcined, placed in a porcelain tube, and heated to redness in a current of pure hydrogen. The ferric oxide becomes metallic iron, the uranic oxide (a mixture of U_3O_4 and U_4O_5) is reduced to UO, while the chromic oxide remains unaltered. This mixture of iron, uranium protoxide, and chromium sesquioxide is weighed, returned to the tube, and submitted to the action of a current of gaseous hydrochloric acid at a red heat. The oxides of uranium and chrome remain entirely unattacked by the acid, and their weight suffers no variation. As for the iron, it is entirely volatilized as ferrous chloride, and deposited in white crystals in a cooler part of the tube. After an hour or an hour and a half the boat is allowed to cool in a current of hydrogen intended to drive out the hydrochloric acid from the tube, and the mixture of chromic oxide and uranous oxide is weighed, and treated with pure nitric acid. The protoxide of uranium, which remains in the form of a brown amorphous powder, is at once attacked, even in the cold, with evolution of nitrous fumes and formation of uranium nitrate. It is well, however, to heat for a few moments in order to be certain that the chromic oxide retains no traces of uranium; the solution is then filtered off, and the residue calcined and weighed.—*Chemical News.*

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STATISTICS OF COAL PRODUCTION.

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines.

Comparative Statement for the week ending Sept. 29, and years from Jan 1st.

Tons of 2,240 lb.	1877. Week.	1877. Year.	1876. Week.	1876. Year.
Wyoming Region.				
D. & H. Canal Co.	....	1,283,899	60,668	1,362,589
D. L. & W. RR. Co.	*7,270	1,318.622	61,805	1,180,430
Penn. Coal Co.	2,518	718,191	29,763	733,159
L. V. RR. Co.	4,759	611,684	21,982	693,529
P. & N. Y. RR. Co.	....	32,931	...	17,488
C. RR. of N. J.	3,456	874,164	50,446	922,318
Penn. Canal Co.	3,545	241,242	9,143	288,882
	21,548	5,080,733	233,807	5,198,195
Lehigh Region.				
L. V. RR. Co.	112,936	2,383,441	75,626	1,839,639
C. RR. of N. J.	54,797	1,074,571	49,221	967,543
D. H. & W. B. RR.	1,884	19,032	1,345	31,702
	169,617	3,477,044	126,192	2,838.886
Schuylkill Region.				
P. & R. RR. Co.	198,366	4,915,701	*158,904	3,168,698
Shamokin & Lykens Val.	†6,283	436,468	32,405	617,902
	204,649	5,352,169	191,309	3,786,600
Sullivan Region.				
Sul. & Erie RR. Co.	1,175	13,145	....	27,663
Totai	396,989	13,923,091	551,308	11 851,344
Increase	....	2,071,747	....	....
Decrease	154,319	....	....	....

† This report is not full.
* For one month ending September 29.

The above table does not include the amount of coal consumed and sold at the mines, which is about five per cent. of the whole production.

Receipts and shipments of coal at Chicago, Ill., for the week ending Sept. 29, and year from January 1 :

	Week. Tons.	Year. Tons.
Receipts	34,611	1,184,672
Shipments	6,517	273,392

The Exports of Coal from Baltimore for the week ending Sept. 29 were 917 tons, and since January 1st, 23,911 tons as against 22,589 tons for the corresponding time in 1876.

Shipments of coal at Pictou, N.S., for the week ending Sept. 29 and year from January 1 :

	Week.	Year
To Canada	3,451	41,960
" United States	958	20,243
" Other Provinces	2,980	55,210
Total tons	7,389	117,413

Coal Cleared on the Canals of the State of New York for the week ending Sept. 30, and years since the opening of navigation :

Tons of 2,000 lb.	1877. Week.	1877. Year.	1876. Week.	1876. Year.
Anthracite	43,451	693,095	27,210	533.791
Bituminous	9,363	194,364	9,337	211,814
Total amount cleared	52,814	887.459	36,547	745,605
Of the above, there was cleared at tidewater ports, viz., New York, Albany, West Troy, and Waterford.	40,051	620,653	19,777	324.300
Cleared at internal ports	12,763	276,806	16,770	421,215

Belvidere Delaware RR. report for week ending Sept. 29.	Week	Year. 1877.	Year. 1876.
Coal for shipment at Coal Port (Trenton)	111	12,748	194,505
" " " " South Amboy	14,080	415,360	321,621
Coal for distribution		5,079	135,321	116,855
Coal for Company's use		1,760	52,137	49,507

The shipments of coal at Cleveland, Ohio, for the week ending Oct. 1 were as follows : shipped coastwise, 8,143 tons ; total for year, 207,604 tons; foreign shipments, 3,824 tons ; total for year, 66,976. Total of coastwise and foreign shipments for week, 11,967 ; for year, 274,580.

The decrease of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Pennsylvania, Railroads amounts to 124,303 tons, as compared with the corresponding period in 1876.

Receipts of Coal at Boston, for the week ending Sept. 28 and years from Jan. 1.

Tons of 2,240 lb.	1877. Week.	1877. Year.	1876. Week.	1876. Year.
From				
Alexandria and Georgetown	1,390	44,582	....	46,116
Philadelphia	25,612	508,615	12,803	391,113
Baltimore	3,350	111,080	300	109,890
Other places	3,324	195,965	3,970	207,020
Great Britain	...	3,272	347	4,365
Nova Scotia	1,878	29,005	1,037	18,342
Total	35,554	892,519	18,457	776,846

Perth Amboy business :	Tons.
Received for the week	37,284
Shipped for the week	35,110
On hand Sept. 29	65,379

The Receipts of Coal at Rondout, N.Y., by the Delaware & Hudson Canal for week ending October 3 were 73 boats, carrying 9,186 tons.

The production of Bituminous Coal for the week ending Sept. 29 was as follows :

Tons of 2,000 lb., except where otherwise designated.

Cumberland Region, Md.. Tons of 2,240 lb.	Week, Tons. 43,228	Year, Tons. 1,105,691
Barclay Region, Pa. Barclay RR. tons of 2,240 lb.	7,828	244,070
Broad Top Region, Pa. Huntingdon and Broad Top RR.	2,126	102,375
*East Broad Top	949	38,326
Clearfield Region, Pa. *Snow Shoe	440	27,589
*Tyrone and Clearfield	26,708	984,530
Allegheny Region, Pa. *Pennsylvania RR.	3,320	136,916
Pittsburg Region, Pa. *West Penn. RR.	4,486	130,689
*Southwest Penn. RR.	711	29,229
*Penn & Westmoreland gas coal, Pa. RR.	18,892	469,049
*Pennsylvania RR.	10,279	263,243

*For the week ending Sept. 28.

The Production of Coke for the week ending Sept. 28.

Tons of 2,000 lb.	Week.	Year.
West Penn. RR.	1,293	44.213
Southwest Penn. RR.	15,599	450,351
Penn & Westmoreland Region, Penn. RR.	1,373	46,859
Pittsburg, Penn. RR.	787	82,419
Total	19,052	623,842

COAL TRADE REVIEW.

NEW YORK, Friday Evening, October 5, 1877.

Anthracite.

Business during the past week has been rather quiet and prices have had a drooping tendency. Quotations are based upon the circular of the Lehigh & Wilkes-Barre Coal Co , which we publish in another portion of this number, but actual business is being largely done at lower rates.

The Lehigh & Wilkes-Barre Company's mines are at last fully at work. and several of the smaller collieries at Wilkes-Barre are helping to swell the quantity of coal coming to market. The Susquehanna Coal Co. has not yet resumed, but it is anticipated that it will in a very short time, the difficulties between it and its men having narrowed down to some details outside of wages. The miners of the Pennsylvania Coal Co., Delaware, Lackawanna & Western Railroad Co., and Delaware & Hudson Canal Co., are still quite obstinate, although showing a greater inclination to discuss the situation. There is a general belief that work will be fully resumed in a short time, although there is nothing definite to indicate this.

Messrs. Dickson and Hoyt have gone to the mines to meet their miners. A telegram from there to-day expressed the belief that the Pennsylvania Company.s men would resume work. If so, the others will probably follow.

The rains of last night are reported to have so damaged the Delaware Division Canal that shipments cannot be resumed again over it this year.

Our enterprising contemporary of the *Herald* has discovered a new coal combination in process of formation. Those who should be interested in the matter are unaware of the meeting which that paper reported. However, this filled an aching void, for we had no rumors of a combination for several months—it also gave occasion to send stocks up a few points for at least half an hour.

The production of anthracite coal for the week ending September 29 was 396,989 tons, as against 348,091 tons during the previous week, and 551,308 tons the corresponding week of last year. The total output has been from January 1, 13,923,091 tons as compared with 11,851,344 tons for the corresponding period of 1876. showing an increase this year of 2,071,747 tons. The output now, including consumption at mines, is at the rate of over 20,000,000 per annum, and with the products of the individual collieries that have resumed work, and the full working of the Wilkes-Barre Co.'s miners, this will be increased.

Bituminous.

This article has continued in a very quiet course, with business confined to quite small new orders and deliveries on old contracts. The Cumberland output is steadily decreasing having been but 43,228 tons last week. It, however, still continues considerably in excess of the corresponding season of last year, so that the deficiency of 219,447 tons, as compared with last year, which existed at the end of the strikes, has been reduced to 124,303 tons. The Clearfield output is also reduced, but still, in comparison with 1876, it shows a gain of 124,945 tons up to Sept. 28. It is probable that this excess will be still further increased before the end of the year. Vessels are much more abundant at Georgetown and Baltimore and rates of freight may be quoted weaker, although no marked concessions have been made.

New York.

Wholesale Prices of Anthracite Coal f. o. b. at the Tide Water Shipping Ports per ton of 2240lb.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Cross Creek at Port Johnston	3 25	3 25	3 40	3 40	3 50	3 10
Hazleton at Perth Amboy	3 75	....	3 40	3 40	3 50	3 15
Mount Pleasant at Perth Amboy	3 75	....	3 40	3 40	3 50	3 15
Old Co.'s Summit at Pt. Johnson	3 75	....	3 40	3 40	3 50	3 00
Honey Brook Lehigh at Port Johnson	3 75	....	3 40	3 40	3 50	3 00
Wilkes-Barre at Port Johnson	3 25	3 25	3 25	3 25	3 50	3 00
Plymouth Red Ash at Pt. Johnson	....	....	3 25	3 25	3 65	3 15
Sugar Loaf at Hoboken & Amboy	3 75	....	3 40	3 40	3 50	3 10

Wholesale Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Penn. at Greenwich, Philadelphia	$4 70	$5 50
" " at S. Amboy.	5 00	5 50
Red Bank Cannel Pa. at Philadelphia	8 00	8 50
Youghiogheny, Waverly Co., at Balt.	4 50	5 65
Despard, West Va.	4 50	6 00
Murphy Run, West Va., at Baltimore	4 50	5 85
Fairmount, West Va., " "	4 40	5 70
Newburg Orrel, Md. " "	4 50	6 00
Cannelton Cannel, West Va.	....	10 00
" Splint " at Richmond.	6 00	7 00
" Gas Coal at Richmond	4 00	5 65
Peytona Cannel W. Va. at Richmond	....	10 00

Manufacturing and Steam Coals.

Cumberland at Georgetown and Alexandria, Va.	2 85@3 10	4 35@4 50
Cumberland, at Baltimore	3 10@3 25	4 35@4 50
Clearfield f. o. b. Canton, Baltimore	3 25@....	4 35@4 50

Clearfield "Eureka" and "Franklin" at mines per ton 2,000 lb. 75c.; f.o.b. Baltimore and Philadelphia per ton of 2,240 lb., $3.25 ; f.o.b. South Amboy, $4.25 ; alongside at New York, $4.50.

Foreign Gas Coals.

	Sterling.	Am. cur'cy
Newcastle, at Newcastle-on-Tyne	8/6@10/6	5 50@ 6 00
Liverpool House Orrel, at Liverpool	25/	13 00
Ince Hall Cannel "	35/6	18 00
" Gas Cannel "	25/6	10@10 50
Scotch Gas Cannel, at Glasgow, nominal,	25/	7 50
	Gold.	
Block House, at Cow Bay, N. S.	1 75	4 50
Caledonia, at Port Caledonia	1 50	4 25
Glace Bay, at Glace Bay	1 60	4 25
Lingan, at Lingan Bay	1 75	....
International mines at Sydney	1 75	4 50
Pictou, Vale mines, at Pictou	2 00	4 75

Retail Prices in New York.

Anthracite.

Per 2000 lbs.	Grate and Egg.	Stove.	Chestnut.
Pittston coal, delivered	$4 50	$4 50	$4 50
Lackawanna coal, delivered	4 25	4 25	4 25
Wilkes-Barre, delivered	4 25	4 50	4 25
Lehigh and Locust Mountain, del'd	4 25	4 50	4 25

Bituminous.

Liverpool House Orrel, delivered, per ton of 2000 lb	$18 00
Liverpool House Cannel " " "	.... 18 00
American " " "	.... 11 00
Cannelton Block, or splint, " " "	.... 10 00
American Orrel " " "	.... 11 00
Red Bank Cannel " " "	.... 7 00
Cumberland " " "	.... 9 00

Milwaukee, Wis. Oct. 2, 1877.

Specially reported by Messrs. R. P. ELMORE & Co.

Retail price per ton of 2,000 lb.

Trade is not much to boast of, still doing something. I hope that this year if not bringing immediate relief may put us in line for a good trade next year.

Anthracite, egg, chestnut, and stove			$6 50
Lehigh lump	$7 00	Connellsville coke on RR. track	$7 25
Briar Hill	$5 25	Straitsville	4 80

New Orleans, La. Oct. 1, 1877.

Specially reported by Messrs. C. A. MILTENBERGER & Co.

Coal on hand Oct. 1: Pittsburg coal, 86 boats and 5 barges; St. Bernard coal, 4 boats. Consumption during September: Pittsburg coal, 31 boats and 1 barge: St. Bernard coal, 3 boats. Arrivals: 1 boat and 2 barges 7 boats sunk during the storm of Sept. 18 are included in the above.

Coal is commanding better prices, with prospects for a further advance the present month. Stock very light. Demand good.

PITTSBURG COAL.

At wholesale (by boat load)	40c. to 42½c per bbl.
To steamboats	55c. "
" manufactories	60c. "
" families	75c. "
In hhds. (for shipment)	$7 00 per hhd.

ANTHRACITE COAL.

At wholesale	$7 00 to 8 00 per ton.
" retail	10 00 to 11 00 "

VIRGINIA CANNEL COAL.

At retail	$1 25 per bbl.

ST. BERNARD (KY.) COAL.

To steamboats	50c. "
" families	70c. "

Philadelphia. Oct. 4, 1877.

Specially Reported.

The Schuylkill operators have receded from the list of prices given last week, and are now selling at the same prices as they were during September. Even after that reduction they are unable to compete at several points with the Lehigh operators, whose tolls by railroad are 25 cents less, and by canal, 33 cents.

New orders for business are not coming, and the business done is mostly on old orders. The effect of the circular of the Lehigh & Wilkes-Barre Company has been bad on the general purchaser. Both producers and dealers understand very well that it was not a decline on what coal was selling at, but merely a decline on circular prices alongside in New York, which were not obtained. It is not believed that the Reading Coal & Iron Company sold a single cargo in New York at $4.40, alongside for W. A., although it was the printed price, and the decline is on such figures, and not on actual selling prices. There ought to be a more active trade when the weather becomes cool, but those who predict and expect a very active trade this fall, are doomed to be dissapointed.

Vessels have continued scarce, and freights are firmer; $1.30 is now paid to Boston.

Pittston, Pa. Oct. 1, 1877.

Pennsylvania Coal Company's Coal in yard, ton of 2000 lb.

Retail.

Lump, Egg and Stove	$2 25
Chestnut	2 00
Pea	1 00

Delivered, fifty cents per ton additional

Richmond, Va. Oct. 1, 1877.

Specially reported by S. H. HAWES, Dealer in Coal.

Per ton of 2,240 lb., f. o. b.

Kanawha Cannel	$9 00	New River Bituminous	$3 30
Coalburg Splint	5 70	Clover Hill Coal	3 00
Lewiston "	5 70	James River Bitum.	3 50
Kanawha Gas Coal	4 90	" " Carbonite	5 25

San Francisco, Cal.

From the *Commercial Herald* of Sept. 27, 1877.

COAL—Imports from January 1 to Sept. 1:

	Tons.		Tons.
Anthracite	10,045	Vancouver Island	66,389
Australian	46,644	Rocky Mountain	113
Coos Bay	21,699	Saghalien	40
Cumberland	7,960	Seattle	73,402
English	58,974	Bellingham Bay	8,100
Chili	6,513	Ione, Cal.	1,805
Mt. Diablo,	39,995		

The arrivals from home and abroad continue upon a large scale, filling our yards and every available spot within reasonable distance for storage, so much so that capitalists and dealers, who would otherwise be glad to purchase largely at the extremely low prices now ruling for spot cargoes, are absolutely debarred from buying for want of a suitable place to store the same for a market. Cargoes of Sydney are now offering upon the market at $7.50 without finding buyers. All other kinds are in proportion cheap. Most of the anthracite recently received from Philadelphia has been placed in a yard, not being able to sell the same for cost, freight and charges, and these remarks will apply to cargoes of West Hartley, etc., some of which are being jobbed out rather than accept the low offers made by the trade. The supply of Nanaimo, Wellington, etc., from British Columbia mines, is quite free, while the Seattle and other Washington Territory mines are flooding the market at extremely low prices, enabling consumers to stock up now cheaper than ever before, and now is the time for prudent housekeepers to lay in their winter supplies. The arrivals during the week embrace the following cargoes: From Nanaimo, *Henry Buck*, 1,100 tons; from Bellingham Bay, 500 tons per *Amethyst* Coos Bay, 300 tons per *Arcata*; from Newcastle, N. S. W., 1,733 tons per *Borrowdale*; from Philadelphia, per *Tam O'Shanter*, 842 tons Anthrocite, etc. Between the sailing of the previous steamer and that of the *City of Sydney* from Australia, thirteen vessels sailed for this port with 20,117 tons of coal. There remained loading for this port fifteen vessels. What they are coming for, the Lord only knows, unless it might be for a 35 shilling freight to Great Britain. The *Grace Darling* is at hand with 1,460 tons Wellington.

Lake Freights on Coal.

The rates given below represent the latest actual charters.

From Buffalo to	Chicago	0.30
" " "	Milwaukee	0.25
From Cleveland to	Chicago	0.50
" " "	Milwaukee	0 40
" " "	Hamilton and Toronto, free, gold	95@1.00
" " "	Brockville, Ontario	1'30
" " "	Marquette	40@50
" " "	Detroit	0.30
" " "	Buffalo	0'45
From Black River	to Milwaukee	0.45
From Sandusky to	Chicago	0.50
" " "	Milwaukee	0.45
" " "	Cleveland	0.50
"	Oswego, N.Y., to Milwaukee	0.60
"	Erie to Chicago	0.40
"	Ashtabula, O. to Detroit	0.30
"	Fairport, O., to Milwaukee	0.45

Rates of Toll

For the above we refer to our issue Sept. 8.

For freights on coal *via Geneva, Ithaca and Sayre Railroad* we refer to our issue of Sept. 8.

For freights on *Pennsylvania & New York Railroad* we refer to our issue of Sept. 8.

For freights on *Lehigh and Wyoming Coal* we refer to our issue of Sept. 15.

For freights on *Schuylkill Coals* we refer to our issue of Sept. 15.

Freights on Bituminous Coals from the Mines to Tide Water Shipping Ports.

For the above see issue of Sept. 15.

Towing.

For above rates see our issue of Sept. 22.

Freights

Representing the latest actual charters up to Oct. 4.

Per ton of 2240 lb.

PORTS.	From Philadelphia.	From Baltimore	From Georgetown.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Augusta, Me.	....	....	....	1 50
Albany	95	....	....	....
Alexandria, Va	72½@75	....	....	....
Annapolis, Md	....	....	....	....
Bangor, Me.	150@155	....	1 70	90
Bath, Me.	....	1 60	....	1 00
Baltimore	50@65	....	....	....
Boston, Mass.	125@140	1 65	1 75	90
Bridgeport, Ct.	....	1 45	1 50	80
Bristol, R. I.	....	....	1 55	80
Beverly, Mass.	....	....	....	1 00
Cambridgeport, Mass.	125@130	..	....	90
Charleston, S. C.	....	....	....	....
Danversport, Mass.	....	....	....	....
East Greenwich, R. I.	 4	....	....	....
Fredericksburg, Va.	120@140	....	....	....
Fall River	115@1 0	1 50	1 55	80
Gloucester	....	....	....	....
Hackensack, N.J.	....	....	....	.
Hartford, Conn.	....	....	....	....
Hoboken	....	....	....	35
Ipswich, Mass.	....	....	....	....
Jersey City	....	....	1 40	35
Lynn, Mass.	....	....	....	....
Medford, Mass.	....	....	....	....
Middletown	....	....	....	....
Marblehead, Mass	....	....	....	.
Nantucket, Mass	....	....	....	80
New Bedford	....	1 50	1 60	80
Newburyport	1 35	1 75	....	1 00
New Haven	....	1 50	....	50
New London	1 20	1 50	1 55	....
Newport	1 20	.	....	80
New York	95	1 30	1 45	35
New Orleans	2 75		....	....
Norwalk	....		..	50
Norwich	1 20	....	.	....
Pawtucket	1 25	1 50	.	90
Philadelphia	....	....	....	....
Portland	115@130	1 60	....	90
Portsmouth, N. H.	1 35	1 75	1 85	.. ..
Providence	1 15	1 50	1 55	....
Petersburg, Va.	1 00	....	....	....
Quincy Point, Mass.	....	....	....	....
Richmond, Va.	80	....	....	....
Saco	1 75	....	....	90
Salem, Mass.	....	1 65	....	....
Saugus, Mass.	....	....	..	....
St. John, N.B.	1 50	....	....	....
Somerset, Mass.	....	....	1 55	....
Troy	....	....	....	....
Trenton, N.J.	....	....	....	....
Washington	70@85	....	....	....
Wilmington, N.C.	....	....	..	.. ..
Weymouth, Mass.	....	....	....	....

* And discharging and towing. † And discharging. ‡ And towing. § 3c. per bridge extra.

IRON MARKET REVIEW.

New York.

FRIDAY EVENING, Oct. 5, 1877.

American Pig.—The improved business which we have reported for several weeks still continues, although it does not show itself in large orders, but is confined to numerous small lots to general consumers, who are only supplying their immediate wants. The opinion that we have seen the bottom in the prices of iron is becoming more firmly seated. There is nothing, however, to indicate that we shall have a quick or large advance from present prices. If our ironmasters do not anticipate the future by bringing into operation too great a portion of our excessive productive capacity, by spring a slight advance may be brought about. If prices were to rise too rapidly it would be a positive injury to the trade, for it might, if general business bore a healthy appearance, cause many furnaces with insufficient working capital to resume operations, and, should the market not take their iron, force prices to even a lower point than has yet been reached. Although a good healthy trade has been done so far this fall, yet a lull must be expected during the winter. Iron has not yet shown that improvement remarked in many other industries, yet no article will more surely feel the results of good crops and a general revival of manufacturing industries. Some of the better brands of iron are scarce and the prices of these are higher than they were a month or six weeks ago, but there is still plenty of good iron held at what may be called quite firm prices. We note for the week sales in small lots of about 1,000 tons of No. 1 Foundry at $18@20, and about 1,200 tons of No.2 Foundry at $17@18. The following are fair quotations: No. 1 Foundry, $18@19; No. 2 Foundry, $17@18, and Forge, $16@17.

Scotch Pig.—During the week there have been sales of 100 tons of Coltness and 150 tons of Eglinton on private terms, and 50 tons of Glengarnock at $25. We quote Coltness at $26@26.50; Eglinton, $24; and Glengarnock at $25@25.50.

Messrs. John E. Swan & Bros., of Glasgow, under date of September 21, report 87 furnaces in blast as against 118 a year previous. Despite this small number, the stock of iron in Connal & Co's stores is constantly increasing, and was at that date 160,504 tons as against 86,894 tons at the corresponding time in 1876. The shipments as compared with last year showed an increase of but 5,738 tons while the imports of Middlesbrough pig showed an increase of 49,785 tons. The quotations of No. 1 Scotch Pig was, for Gartsherrie, 61s 6d; Coltness, 66s; Summerlee, 59s 6d; Langloan, 63s; Glengarnock, 59s 6d; and Eglinton, 55s. Middlesbrough Pig was quoted as follows: No. 1, Foundry, 44s 6d; No. 2, 43s. No. 3, 41s; No. 4, 40s; and Gray Forge, 39s 6d Freights from Glasgow were, to New York, 2s 6d; Boston, 9s; New Orleans, 5s; Baltimore, 8s; Philadelphia, 7s 6d; Montreal, 10s; Rio Janeiro, 15s; San Francisco, 25s.

Rails.—We only note a sale of 500 tons of steel rails on private terms. There is further business pending that will probably be consummated before our next. We quote iron rails at $33@38 at mill and steel at $42@45.

Old Rails.—We note a sale of 600 tons on private terms, and quoted at $18@19.

Scrap.—Holders' views differ on the value of this article ranging from $22 to 24 for No. 1 Wrought. There is nothing doing.

Baltimore, Md. Oct. 1, 1877.

Specially reported by Messrs. R. C. HOFFMAN & Co.

The demand for iron continues fair, and with the light stock of best wheel irons on hand prices are very firm at about quotations.

Baltimore Charcoal	$29@31	Mottled and White	$15@16 00
Virginia Charcoal	28@31	Charcoal C. B. Blooms	50@55 00
Anthracite No. 1	19@20	" " Billetts	55@60 00
" 2	18@19	Refined Blooms	45@50 00
Anthracite No. 3	17@18		

Boston. Oct. 3, 1877.

Pig is reported to have had quite an active movement this week in New York, but here the market continues very dull, with but a slight call from the founderymen.

Bar continues unchanged, quoting $43@45 for refined, and $35@36 for common. Nails are in light demand at unchanged prices. Sheet is selling at 3@3¾c. per pound. Russia is quiet at 12c. currency. We quote, English spring steel at 7@8c. gold; 9@11c. for German; 9@11c. for machinery; 14@16c. for cast; 10@12c. for blister; 8c. for American spring; 13½@14c. for cast, 9c. for blister, and 8c. for machine.—*Commercial Bulletin.*

Buffalo. Sept. 24, 1877.

Specially reported by PALEN & BURNS.

No. 1 Ex Foundry	$20 55
No. 2 "	19 55
Gray forge	18 55
American Scotch A 1 Foundry	24 00
Cherry Valley B 1 "	23 00
" " No. 2 "	22 00

Per gross ton 4 months delivery here.

Chattanooga, Tenn., Oct. 2, 1877.

Specially reported by J. F. JAMES, dealer in pig iron, ores, etc.

The market has remained in the same unsatisfactory condition as last reported. The few shipments that have been made during the past week from the furnaces below this market have been insufficient to cause an improvement in the general feeling among the furnacemen.

Tenn., Ala. and Ga. Charcoal, No. 1 Foundry	$18 00@19 00
Tenn., Ala. and Ga. Charcoal, No. 2 Foundry	17 00@18 00
Tenn., Ala. and Ga. Charcoal, Gray Forge	15 00@16 00
Tenn., Ala. and Ga. Coke, No. 1 Foundry	19 00@20 00
Tenn., Ala. and Ga. Coke, No. 2 Foundry	17 00@18 00
Tenn., Ala. and Ga. Coke, Gray Forge	15 00@16 00
Charcoal or Coke, white and mottled	14 00@15 00
Tenn., Ala. and Ga. Cold Blast (car wheel)	22 00@28 00
Old rails	18 00@19 00
Old car wheels	16 00@17 00
Wrought scrap, No. 1	17 00
Wrought scrap, No. 2	12 00
Cast scrap	10 00
Muck bar	32 00@33 00

Iron Ores.

Red Hematite (about 55 per cent. metallic iron) f. o. c. at mines	1 25
Brown Hematite (about 55 per cent. metallic iron)	1 75

Cleveland, O. Sept. 28, 1877.

Specially reported by Messrs. C. E. BINGHAM & Co.

Per gross ton, on four months' time. Subject to change in market. Discount for cash 4 per cent.

FOUNDRY IRON.

No. 1, L. S. Charcoal	$25 00	Am. S., No. 1, Ch Val.	$23 00
No. 2, " " "	25 00	" " B. 1, " "	22 00
No. 1, Anthracite	23 00	" " No. 2, " "	20 00
No. 2, "	21 00	No. 1, Massillon	23 00
No. 1, Bituminous	23 00	B—1, "	22 00
No. 2, "	21 00	No. 2, "	20 00

CAR WHEEL AND MALLEABLE IRON.

No. 3 L. S. Charcoal	26 00	No. 5 & 6, L. S. Charcoal	$27 00
No. 4, " " "	26 00		

BESSEMER IRON.

Nos. 1 & 2, L. S. Char.	$25 00

FORGE IRON.

No. 1, Gray	$19 00	White and Mottled	$18 00

Cincinnati, O. Oct. 2, 1877.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

There has been a little better demand for pig iron during last week at about present prices, and we continue to quote as follows, viz.:

CHARCOAL.

Hanging Rock No. 1 Foundry and B	1	$23 00@23 50	—4 mos
" No. 2 "		22 00@	—4 mos
" Soft Silver Gray		21 00@22 00	—4 mos
" Mill		18 00@20 00	—4 mos
Tennessee, No. 1 Foundry		22 00@	—4 mos
" " 2 "		21 00@	—4 mos
" Mill		19 00@	—4 mos

STONE COAL.

Ohio, No. 1 Foundry		20 00@20 50	—4 mos
" " 2 "		19 00@19 50	—4 mos
" " 3 "		18 00@18 50	—4 mos
" Mill		18 00@18 50	—4 mos

COKE.

Ohio & W. Va. No. 1 Foundry		21 00@	—4 mos
" " " 2 "		20 00@	—4 mos
" " Mill		18 00@19 00	—4 mos

CAR-WHEEL.

Hanging Rock, C. B.	Hecla, Vesuvius, Jefferson, Etna.	40 00@	—4 mos
Maryland,	Amherst & Cedar Pt.	38 00@	—4 mos
Missouri,	Maramec	32 00@	—4 mos
Alabama,	Woodstock	32 00@	—4 mos

BLOOMS.

Charcoal	45 00@50 00	—cash.

SCRAP IRON.

Cast	40c.@ 45c.	"
Wrought	62c.@ 1 00	"

Louisville, Ky. Oct. 2, 1877.

Specially reported by Messrs. GEORGE H. HULL & CO.

Trade in all grades active. The volume of business is much greater than at the same period last year. No quotable change in prices. The usual time, 4 months, is allowed on the quotations below.

FOUNDRY IRONS.

No. 1 Hanging Rock, Charcoal	$23 00@24 00
No. 2 " " "	20 00@21 00
No. 1 Southern Charcoal	20 00@21 00
No. 2 " "	19 00@20 00
No. 1 Hanging Rock, Stonecoal and Coke	20 00@22 00
No. 2 " " " "	19 00@20 00
No. 1 Southern Stonecoal and Coke	19 00@20 00
No. 2 " " " "	18 00@19 00
"American Scotch"	20 00@22 00
Silver Gray	18 00@19 00

MILL IRONS.

No. 1 Charcoal, Cold-short and Neutral	18 50@19 50
No. 1 Stonecoal and Coke, Cold-short and Neutral	18 00@18 50
No. 2 " " " " " "	17 50@18 00
No. 1 Missouri and Indiana Red-short	21 00@22 00
White and Mottled, Cold-short and Neutral	15 00@16 00

CAR-WHEEL AND MALLEABLE IRON.

Hanging Rock, and Cold Blast	34 00@38 00
Alabama and Georgia "	28 00@33 00
Kentucky Cold-blast	25 00@33 00

Montreal. Sept. 25, 1877.

We quote: Pig iron—Eglinton and Clyde, $18 to $18.50. American, $20 to $21; Summerlee, $18.50 to $19; Gartsherrie, $19.25 to $19.50; Hematite, $24 to $26. Bars per 100 lb.: Scotch and Staffordshire, $1.85 to $1.90; best do., $2.10 to $2.15; Swedes and Norway, $4.75 to $5; Lowmoor and Bowling, $6 to $6.50.—*Monetary Times.*

Philadelphia, Pa.

[Weekly Report of the Philadelphia Iron Market, furnished for THE ENGINEERING AND MINING JOURNAL, by JUSTICE COX, Jr., & Co., Iron Merchants, 313 Walnut Street, Philadelphia, Week ending Oct. 4, 1877.]

PIG IRON.—The demand continues for good pig metal, but only good iron find a ready sale. Prices are firm, with demand to take all iron being offered. We hear of little if any change of regular quoted prices. We report sales this week of about 2,500 tons in the usual lots to consumers only, and for immediate shipment. We quote No. 1, $18.50@20; No. 2, $17@19; gray forge, $16@18.

MANUFACTURED IRON.—Bars continue to be the least in demand, yet prices are held firm, with less cutting than for some time, producers finding they do not sell one pound more at a concession than at full price. There is some inquiry for plates and tank. Of the former, one sale of 500 tons is reported at full price. Skelp continues to sell as wanted. Most mills in this neighborhood are running on short time. We quote bars 2@2 1-10c. per lb.; plate and tank, 2½@6½c. per lb.; skelp, 2 1-10@2¼c. per lb.

RAILS.—Some sales are reported in steel rails at a slight concession in prices. The new rail trade continues to improve, several small orders of 100 to 150 tons are reported this week in the aggregate will amount to nearly 1,000 tons. We quote Steel, $43 to 45; Iron, $32 to 35, all at mill.

OLD RAILS.—The demand continues for old rails and prices are stiffening, in fact, the market is becoming bare and good lots can only be obtained at an advance. We quote $19 to 20.

OLD WHEELS—The demand is good for old wheels and few offering. We hear of many buyers at old prices, with but few if any sellers. We quote $18.50 to 20.

SCRAP.—Scrap, as in all branches of iron, is in better demand, and at firm prices. We quote, Wrought, $20 to 25, Cast, $14@16.

Pittsburgh, Pa. Oct. 2, 1877.

Specially reported by A. H. CHILDS.

There has been no very decided change in the metal market since last report. Prices remain nominally unchanged, and while some holders refuse any concessions the market has been somewhat unsettled by sales of Eastern neutrals at lower prices than have heretofore ruled. It is thought, however, that very little, if any, more will be offered, and that present rates willbe maintained.

	4 mos.		4 mos.
No. 1 F'dry	$22 00@24 00	Mottled&White	$16 00@17 50
" 2 "	20 00@22 00	Hot blast C'coal	21 00@28 00
Gray Forge	18 00@20 50	Cold " Western	—@40 00

Richmond, Va. Oct. 2, 1877.

Inquiries for wheel and foundry grades of pig iron are fair at quotations. There is also considerable inquiry for old rails and car wheels.

Specially reported by ASA SNYDER, Esq.

Virginia Cold Blast Charcoal Pig Iron, cold short		$20 to $26	
" " " " " "	neutral	28 to 31	
" Warm " " " "		20 to 25	
" Anthracite	1 X	20 to 22	
" "	2 X	19 to 21	
" "	2	18 to 19	
" "	Coke West Va. 1 X	22 to 23	
	2 X	21 to 22	

San Francisco, Cal.

From the *Commercial Herald* of Sept. 27, 1877.

Stocks for the most part are very burdensome, and the demand for bar and other manufactured iron is extremely light. The *City of Sydney*, from Sydney, brought 371 ingots block tin, worth 16½c. Pig iron is in large stock, and prices both low and nominal. Tinplate is very plentiful and cheap. Coke, 10x14 and 14x20, may be quoted at $6.50@6.75; charcoal tin, same sizes, $8; Sydney pig tin, 16½c.

METALS.

NEW YORK, FRIDAY EVENING, Oct. 5, 1877.

Although there is not much, if any, profit to either producers or dealers in metals, yet there is a very good feeling, and, upon the whole, decidedly more business than has ruled for several years past. During the week all articles on this list, except copper, have had a fair business, and some a quite active one.

Gold Coin.—During the week under review the price of gold has ranged from 103⅛ to 102¾, and closed at 102¾.

Bullion.—The London market for silver has been unusually firm the past week, but we have not heard any reason asigned, beyond the new policy of the Indian Council spoken of in our last. We quote, in this market, $1.19¼@1.20 per oz.; in London, 55⅛d.; in San Francisco, 7 per cent. discount. Gold bars are quoted at ⅛@¼ per cent. premium.

Daily Range of Silver in London and New York per oz

Date.	London.	New York.	Date.	London.	New York.
	Pence	Cents		Pence	Cents
Sept. 29	55¼	119½	Oct. 3	55¼	119½
Oct. 1	55¼	119½	" 4	55⅛	119⅜
" 2	55¼	119½	" 5	52½	119¾

UNITED STATES ASSAY OFFICE.—Statement of business for the month ending Sept. 29, 1877:

Deposits of Gold--		
Foreign Coin		$90,000 00
Foreign Bullion		65,000 00
United States Bullion		900,000 00
" " "	(re-deposits)	110,000 00
Jeweler's Bars		55,000 00
		$1,220,000 00
Deposits of Silver—		
Jeweler's Bars		$10,000 00
Foreign Coin		125,000 00
Foreign Bullion		10,000 00
United States Bullion (contained in gold)		10,000 00
United States Bullion (re-deposits)		137,000 00
" " "	Colorado	240,000 00
" " "	Idaho	3,000 00
" " "	Lake Superior	1,800 00
" " "	Montana	35,800 00
" " "	Nevada	230,400 00
" " "	New Mexico	29,000 00
" " "	Utah	355,000 00
		$1,187,000 00
Total deposits		2,407,000 00
Gold Bars, stamped		1,575,760 19
Silver Bars, stamped		795,878 84
		$2,371,639 03
Transmitted to Mint of the United States at Philadelphia, for coinage, gold		1,922,201 57
Transmitted to Mint of the United States at Philadelphia, for coinage, silver		519.703 52
		$2,441,905 09

We give below a statement showing the amount of the latest bullion shipments in addition to those of our issue of Sept. 15:

Date.	Mine.	Location.	Amount.
Sept. 18	California	Nevada.	$182,483 00
" 18	Con Virginia	"	147,895 00
" 22	Northern Belle	"	2,900 00
Aug.	Leopard	"	12,044 00
"	Standard	"	79,929 00
Sept. 19	Alps	"	1,012 00
" 22	Modoc	Calif'nia.	5,300 00
Aug.	Empire	"	24,800 00
Sept. 17	Endowment	"	4,158 00
	New England for year 1876	"	21,000 00

U. S. Mint Coinage for September.—The following is a statement of the coinage executed at the mints of the United States during the month of September, 1877, the number of pieces amounting to 5,406,810: Double eagles, $4,492,200; trade dollars, $1,677,000; half-dollars, $408,400; quarter-dollars, $349,600; and dimes, $129,000. Total, $7,056,200.

Helena, Montana, Coinage for August.—There was melted and assayed at the United States Assay Office in Helena, Montana, during the month of August, $68,086 of gold; silver, $51,952.50. Total, $120,038.50.

Pacific Coast Bullion Product.—The bullion product of the mines of the Pacific States for August, was $4,377,000, and for the first eight months of 1877, $30,251,000.

Storey County, Nev., Yearly Bullion Output.—The number of tons of ore crushed in Storey County, during the past fiscal year, was $564,490; assessed value, $33,060,568. The number of tons of tailings worked was 51,295, value at $324,146.

Copper.—We only learn of sales aggregating 100,000 lb., at 17⅞@18c. Although there is but very little copper that can be bought at the prevailing figures, yet with the very small demand, the bears have had things very much their own way. There are now indications of further export business, for which 17½c. is bid. At the present time, consumers of copper are having a much better business in their wares, while the cartridge manufacturers are very actively engaged. These, within a short time past, have been large purchasers of ingot, and although they are not compelled to enter the market now, yet there can be no doubt that they must do so soon, and become larger purchasers than for several years past. A study of the statistics of consumption and production in this country would indicate that if our exports of ingots are much increased above what is already contracted for, domestic consumers will have to pay higher prices for their winter supplies, especially as there will be a disinclination to ship Lake copper overland. Best selected shows a further decline in London, being quoted now at £73 10s. Chili bars are unchanged, and quoted at £66.

Tin.—Straits in London is quoted at £66 10s.@£67 with an upward tendency. Singapore quotes at $19.30 per picul with exchange at 4s 03⅛d. The shipments of Straits for September were 390 tons to America and 30 tons to England. We note sales in this market aggregating about 1,000 pigs of Straits to arrive in a week or ten days at 15¾c. gold. We quote, in gold, per lb., as follows: Straits, 16c.; L. & F.. 15⅜c.; Refined, 15¾c.; Banca, 17½@17¾c.

Tin Plates.—These have been quite active, but weaker, owing to a decline in England. There have been sales of several thousand boxes the particulars of which we did not fully learn. We note, however, 1,000 boxes of charcoal ternes at $6 or a shade under, and 1,000 boxes of charcoal tins, Allaway grade, at $6.45. We quote in gold, per box, as follows: Charcoal Tins, $6.50@6.62½, and Ternes, $6.12½; Coke Tins, $5.62½@5.75, and Ternes $5.37½@5.50.

Messrs. Robt. Crooks & Co., of Liverpool, under date of Sept. 20, say of tin and terne plates: "Considerable orders have been attracted by the low figures lately offering for favorite charcoal tins, these are now held somewhat more steadily With coke tins the reverse is the case, buyers apparently not considering present prices equivalent to rates ruling for other kinds, and that therefore by holding off, lower limits will be workable. In ternes there is no change, the demand being quite sufficient to absorb a limited make."

Lead.—This article has attracted more attention this week than any other on the list. The leading item of interest in it has been a sale to speculators of 2,000 tons at 4¼c. Since then there has been no business to determine the price, 4½c., however, is asked for round lots, while 4·60c.@4·70c. is asked for small parcels. One of two things seems evident, either lead must be put in market at a cost so low that we can export, or production must be curtailed to the actual requirement of the country. We believe the former to be the ultimate position, although the railroads are now reluctant to reduce thefr now exorbitant freight charges, and the mining and smelting companies are almost equally so to introduce the strict economies necessary to reach this point.

Spelter and Zinc.—Spelter has been in quite active request, although prices have only assumed a firmness at 5⅞@6c. Sheet zinc is also quite active at 7¾@8c.

Antimony.—This article is scarce and not much dealt in, although largely inquired for. The quotations are quite conflicting. Cookson's is quoted at 13c. @13½c. gold, while Hallet's is quoted at 12c.@12½c.

COAL TRANSPORTATION AND GENERAL MINING STOCKS.

Name and Location of Company.		Feet on Vein.	Capital Stock	Shares No.	Shares Par Val.	Assessments. Total levied to date.	Assessments. Date and amount per share of last. Mo.	Yr.	Amt.	Dividends. Total paid to date.	Last Dividend. Mo.	Yr.	Amt.	Rate per Ann.	Highest and Lowest Quotations per Share in Currency. Sept. 29. H.	L.	Oct. 1. H.	L.	Oct. 2. H.	L.	Oct. 3. H.	L.	Oct. 4 H.	L.	Oct. 5. H.	L.	Sales.
Coal Stocks.			$			$				$				Per cent.													
Consol. Coal	Md.	....	10.250,000	102,500	$100	*	.....	....	.....	...	Jan..	1877	2½	10	..	..	..	..	..	..	..	..	..	..	..	..	....
Del. & H. Canal	Pa.	....	20,000,000	200,000	100	*	.....	....	.....	38,821,104	Aug.	1876	4	8	41¾	40¼	41⅝	39¾	42	39⅞	45	41½	46½	43¾	44⅞	41½	34,833
Del., Lac. & W. RR.	Pa.	...	26,200,000	524,000	50	*	.....	....	.....	....	July	1876	2½	5	45½	45	47	43½	47⅝	45	50⅞	46⅝	52⅞	49½	52	50¼	352,823
Lehigh C. & N.	Pa.	....	10,448,550	208,971	50	*	.....	....	.....	..	Sep.	1876	1¾	6	18⅞	18⅞	19	19	18¾	18¾	..	..	19½	19⅜	19⅜	19⅜	1,912
Lehigh Valley RR.	Pa.	....	27,042,900	540,858	50	*	.....	....	.....	....	Sep.	1877	1	5	39¾	39¼	40	39½	40	40	..	..	39⅞	31¼	40	39¾	1,215
Maryland Coal	Md.	....	4,600,000	44,000	100	*	.....	....	.....	....	Jan..	1876	1½	1½	..	..	..	..	..	..	..	..	..	..	..	..	3,875
N. J. Central RR.	Pa.	....	20,600,000	206,000	100	*	.....	....	.....	....	Apr.	1876	2½	10	16	15½	16	15½	16½	16	17⅜	17	18¼	17½	..	..	....
Penna. Coal	Pa.	....	5,000,000	100,000	50	*	.....	....	.....	....	Aug.	1877	3	12	..	..	..	..	..	..	..	..	..	..	..	..	....
Pennsylvania RR.	Pa.	....	68,868,700	1,377,376	50	*	.....	....	.....	....	May.	1877	1½	6	28⅞	28¾	29⅛	28¾	29⅛	28⅞	29	28¾	30⅛	29	29¾	29⅝	35,696
Phil. & Read. RR.	Pa.	....	34,278,755	685,575	50	*	.....	....	.....	....	Jan..	1876	2½	10	16	15½	16⅛	15⅞	16	15¾	16	15¾	16⅝	16	16½	16⅜	20,550
General Mining Stocks																											
Alpha Cons. g. s.	Nev.	300	3,000,000	30,000	100	210,000	Aug.	1877	$1 00	....	.....	....	.....	..	14¾	14½	14½	..	15	..	16½	..	..	..	16½	..	700
Am. Flag, g.	Colo.	5,300	600,000	60,000	10	*	.....	....	.....	....	.....	....	.....	..	..	..	11c	10c	..	..	..	..	..	..	..	..	1,560
Belcher, g. s.	Nev.	1,040	10,400,000	104,000	100	968,400	July	1877	1 00	15,397,200	Apr.	1876	$1 00	12	..	..	6½	..	6¾	..	6½	..	6¼	..	..	..	700
Bertha & Edith g.	Vir.	645 acs.	3,500,000	350,000	10	*	.....	....	.....	....	.....	....	.....	..	26c	25c	27c	25c	26c	20c	18c	..	1.c	12c	20c	16c	5,100
Best and Belcher, g. s.	Nev.	545	10,080,000	100,800	100	337,792	Aug.	1877	1 00	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	...
Bobtail, g.	Colo.	2,500	1 •36,630	227,326	5	*	.....	....	.....	....	.....	....	.....	..	..	..	..	..	..	..	2¾	..	..	..	..	..	..
Bobtail Tunnel, g.	Colo.	....	100,000	20,000	5	6,000	July	1873	0 30	20,000	Dec..	1876	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	100
Bullion, g. s.	Nev.	943½	10,000,000	100,000	100	2,552,000	June	1877	1 50	....	.....	....	.....	..	8⅞	8½	8¾	..	10¼	..	..	..	..	..	..	..	...
Caledonia, g. s.	Nev.	2,188	10,000,000	100,000	100	1,360,000	June	1877	50	....	.....	....	.....	..	..	..	..	..	..	..	12	..	13½	..	..	..	1,010
California, g. s.	Nev.	600	54,000,000	540,000	100	....	.....	....	.....	18,360,000	Sept	1877	2 00	24	..	..	..	..	..	..	..	..	..	..	..	..	....
Chollar Potosi, g. s.	Nev.	1,400	2,800,000	28,000	100	1,412,000	July.	1877	3 00	3,080,000	Feb..	1872	1 00	12	..	..	..	..	..	..	..	..	..	..	..	..	....
Cleveland, g.	Colo.	3,715	250,000	25,000	10	*	.....	....	.....	....	.....	....	.....	..	6⅝	..	..	..	..	..	6⅝	..	6¾	6⅝	..	..	200
Cons. Hercules & Roe.	Colo.	16,500	1,000,000	100,000	10	*	.....	....	.....	120,000	.....	....	.....	..	..	..	..	..	..	..	..	..	6¾	..	6¾	6⅞	900
Cons. Imperial, g. s.	Nev.	468	50,000,000	500,000	100	475,000	May.	1877	0 20	....	.....	....	.....	..	..	..	..	..	1	..	1¼	1	..	..	1¼	..	....
Con. N. Slope & E. C. T.	Colo.	15,000	500,000	10,000	50	*	.....	....	.....	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	1¼	..	600
Cons. Virginia, g. s.	Nev.	710	54,000,000	540,000	100	474,600	June	1873	3 00	32,400,000	Sept.	1877	2 00	24	..	..	..	..	..	..	..	..	..	..	..	..	....
Confidence, g. s.	Nev.	130	2,496,000	24,960	100	243,840	Mar.	1873	1 00	78,000	May.	1865	8 ⅓	..	5¾	..	..	..	5½	..	5¾	5½	5¾	5¾	6⅛	..	....
Crown Point, g. s.	Nev.	600	10,000,000	100,000	100	1,573,370	Sept.	1877	1 00	11,588,000	Jan..	1875	2 00	24	..	..	..	..	..	..	..	..	..	..	..	..	1,400
Douglas	Colo.	21,000	1,000,000	10,000	100	*	.....	....	.....	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	5	..	100
Eureka Cons. g. s. L.	Nev.	..	5,000,000	50,000	100	100,000	May	1876	1 00	1,000,000	Aug.	1875	1 00	..	47	..	47	..	..	..	..	..	..	..	..	..	....
Eureka G. Mg. g.	Cal'f		2,000,000	20,000	100	....	.....	....	.....	2,131,000	Aug.	1877	2 00	..	..	..	..	..	..	..	..	..	..	..	..	..	300
Exchequer, g. s.	Nev.	400	10,000,000	100,000	100	280,000	Sept.	1876	1 00	....	.....	....	.....	..	..	..	..	..	12	..	..	..	15	..	..	..	....
Gould and Curry, g. s.	Nev.	621	10,800,000	108,000	100	2,352,000	Aug.	1877	1 00	3,934,800	Oct..	1870	10 00	..	..	..	..	..	..	..	..	..	10¾	..	..	..	200
Granville Gold	N. C.	9,000	1,000,000	100,000	10	*	.....	....	0 50	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	100
Hale & Norcross, g. s.	Nev.	400	11,200,000	112,000	100	2,522,000	Aug	1877	0 50	1,598,000	Apr.	1871	1 00	12	..	..	..	..	..	..	..	..	..	..	..	..	...
Henry Tunnel	Nev.	3,000	2,000,000	80,000	25	*	.....	....	.....	....	.....	....	.....	..	..	..	..	..	..	..	..	..	7¾	..	..	..	100
Hukill, g. s.	Colo.	3,288	1,000,000	100,000	10	*	.....	....	.....	90,000	Oct..	1877	0 10	12	3⅜	..	4	..	..	..	..	..	4	3¾	3¾	..	500
Indian Queen, s.	Nev.	1,000	3,000,000	60,000	50	..	.....	....	.....	60,000	Dec..	1875	0 50	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Julia Cons., g. s.	Nev.	3,000	11,000,000	110,000	100	440,000	Aug.	1877	1 00	....	.....	....	.....	..	3	..	3	..	3½	..	4⅛	4	3½	..	3⅜	..	....
Justice, g. s.	Nev.	2,100	10,500,000	105,000	100	1,817,500	Aug.	1877	1 50	....	.....	....	.....	..	6⅜	..	17	..	16	..	16	..	..	..	16¼	..	900
Kentuck, g. s.	Nev.	95	3,000,000	30,000	100	270,000	Dec.	1874	1 00	....	.....	....	.....	..	6½	..	6½	..	7¼	..	8	..	7½	..	7½	..	600
Kossuth, g. s.	Nev.	2,700	5,400,000	108,000	50	421,200	Aug.	1877	0 15	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	1,000
Lacrosse	Colo.	3,900	1,000,000	100,000	10	*	.....	....	.....	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Leopard, L. G. S.	Nev.	1,500	5,000,000	50,000	100	100,000	July.	1877	50	162,500	Dec..	1876	0 50	..	36c	34c	34c	32c	34c	33c	32c	..	33c	31c	31c	..	8,600
Lucerne Mining	Colo.	4,200	5,000,000	500,000	10	*	.....	....	.....	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Mariposa, preferred	Cal.	44,387	5,000,000	50,000	100	1,425,000	June	1877	1 00	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
" common	"	acres.	10,000,000	100,000	100	1,425,000	June	1877	1 00	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Memphis	Colo.	6,000	300,000	60,000	5	*	.....	....	.....	....	.....	....	.....	..	..	..	..	..	..	..	1¼	..	1¼	..	1⅛	..	1,100
Merrimac, s.	Mass.	1,500	500,000	50,000	10	*	.....	....	.....	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Mexican, g. s.	Nev.	600	10,080,000	100,800	100	1,511,440	Aug.	1877	0 30	85,000	Sept.	1877	40c	12	..	..	..	..	..	..	..	..	..	..	..	..	....
Moose	Colo.	39,000	2,000,000	200,000	10	....	.....	....	.....	50,000	Sept.	1877	0 25	..	1.½	..	11⅜	..	11¾	..	11¾	..	11¾	..	11½	..	....
N. Y. & Colo., g.	Colo.		1,000,000	50,000	20	*	.....	....	.....	20,000	Mar.	1877	0 20	..	5⅞	5⅝	6	5¾	6¼	5¾	6¼	6	5¾	5⅝	6⅛	5⅞	700
Northern Belle, s.	Nev.	1,600	5,000,000	50,000	100	...	.....	....	.....	1,350,000	Aug	1877	1 00	..	1⅝	..	1¾	..	1⅞	..	1¾	..	1⅞	1¾	2	1⅜	19,100
Ontario.	Utah	3,000	10,000,000	100,000	100	....	.....	....	.....	500,000	Sept	1877	1 00	6	21	..	21	..	21	..	22	..	..	..	..	..	2,000
Ophir, g. s.	Nev.	675	10,080,000	100,800	100	2,934,400	May.	1875	2 00	1,394,400	Mar.	1874	4 00	..	22¼	22⅛	22	..	22⅜	22¼	..	..	21¾	..	..	..	500
Original Comstock, g. s.	Nev.	....	10,000,000	10,000	100	....	.....	....	.....	....	.....	....	.....	..	17½	..	17½	..	..	..	18⅛	..	17¾	..	..	..	1,036
Overman, g. s.	Nev.	1,200	3,840,000	38,400	100	2,452,680	June	1877	3 00	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	400
Pleasant View, g.	Colo	1,200	200,000	20,000	10	*	.....	....	.....	....	.....	....	.....	..	24¼	..	..	..	..	..	..	..	..	..	27½	..	....
Quicksil. preferred	Cal.	8,500	4,291,300			*	.....	....	.....	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	100
" common	"	acres.	5,708,700	100,000	100	....	.....	....	.....	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Raymond and Ely, g. s.	Nev.		5,000	3,000,000	30,000	100	540,000	Dec.	1876	1 00	3,075,000	Sept.	1873	3 00	..	..	..	..	37½	35¾	39½	37½	38¼	..	37¾	37	3,935
St. Joseph, L.	Mo.		2600 acs.	1,000,000	100,000	10	....	.....	....	.....	250,000	.....	....	.....	..	..	..	..	21	20½	22⅛	21	21¾	..	..	..	1,020
Santiago, g. s.	Nev.		2,000	11,200,000	112,000	100	....	.....	....	.....	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
Savage, g. s.	Nev.		800	11,200,000	112,000	100	3,408,500	Sept.	1877	1 00	4,460,000	June	1869	3 00	..	..	..	..	..	..	..	..	..	..	..	..	....
Seaton, g. s.	Colo.		1,700	500,000	50,000	10	*	.....	....	.....	10,000	May.	1877	0 10	12	..	..	..	..	95c	88c	95c	..	1.05	..	..	..	1,100
Seg. Belcher, g. s.	Nev.		160	640,000	6,400	100	244,800	Apr.	1876	5 00	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
Sierra Nevada g. s.	Nev.		3,650	10,000,000	100,000	100	1,750,000	Aug.	1877	0 50	....	Jan..	1871	1 00	..	..	..	..	..	..	..	..	..	..	..	..	....
Silver City, g. s.	Nev.		3,900	6,310,000	63,100	100	15,775	Nev.	1876	0 25	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
Silver Hill, g. s.	Nev.		5,400	5,400,000	54,000	100	972,000	July.	1877	1 00	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
South Comstock, g. s.	Nev.		1,500	10,000,000	100,000	100	54,000	Jan	1877	0 25	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
South. California, g. s.	Nev.		1,500	5,000,000	50,000	100	....	.....	....	.....	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
Southern Star, g. s.	Nev.		1,500	6,000,000	600,000	100	....	.....	....	.....	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
Trenton, g. s.	Nev.		..	10,000,000	100,000	100	....	.....	....	.....	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
Union Cons., g. s.	Nev.		850	10,000,000	100,000	100	260,000	Mar.	1876	1 00	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
West Belcher, g. s.	Nev.		1,000	10,000,000	100,000	100	....	.....	....	.....	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
Yellow Jacket, g. s.	Nev.		1,200	12,000,000	120,000	100	1,198,000	Oct.	1877	2 00	2,184,000	Aug.	1871	2 50	..	..	..	..	..	..	..	..	..	..	..	..	....
Young America, s.	Nev.		1,000	3,000,000	30,000	100	6,000	Oct..	1876	0 20	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
Copper Stocks.																											
Allouez, c.	Mich.		..	1,000,000	20,000	50	940,000	May.	1876	5 00	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
Calumet & Hecla, c.	Mich.		..	2,000,000	80,000	25	1,200,000	.....	.....	.....	11,830,000	Aug.	1877	5 00	20	....	....	....	....	....	....	....	....	....	....	....	....
Central, c.	Mich.		..	500,000	20,000	25	100,000	June	1862	0 65	1,160,000	Feb.	1877	7 00	28	....	....	....	....	....	....	....	....	....	....	....	....
Copper Falls, c.	Mich.		..	1,000,000	20,000	50	535,000	May.	1876	.....	100,000	Nov.	1871	1 00	..	....	....	....	....	....	....	....	....	....	....	....	....
Dana, c.	Mich.		..	500,000	20,000	25	68,000	Jan..	1863	0 50	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
Dawson, s.	Ont.		..	1,200,000	60,000	20	....	.....	....	.....	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	....	....	....
Duncan, s.	Ont.		..	1,200,000	60,000	20	75,000	July.	1876	41⅔	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
Franklin, c.	Mich.		..	500,000	20,000	25	360,000	June	1876	5 00	585,000	Nov.	1871	1 00	..	....	....	....	....	....	....	....	....	....	....	....	....
Humboldt, c.	Mich.		..	500,000	20,000	25	100,000	Sept.	1876	0 15	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
International, s.	Ont.		..	1,200,000	60,000	20	....	.....	....	.....	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
Madison, c.	Mich.		..	500,000	20,000	25	123,000	Sept.	1876	0 10	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
Mesnard, c.	Mich.		..	500,000	20,000	25	160,000	Apr.	1876	0 50	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
Minesota, c.	Mich.		..	1,000,000	20,000	50	436,000	June	1869	1 00	1,830,000	Mar.	1876	0 50	..	....	....	....	....	....	....	....	....	....	....	....	....
National, c.	Mich.		..	500,000	20,000	25	195,000	Oct..	1875	1 00	360,000	Oct..	1873	1 00	..	....	....	....	....	....	....	....	....	....	....	....	....
Osceola, c.	Mich.		..	1,000,000	40,000	25	880,000	May.	1876	2 00	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
Petherick, c.	Mich.		..	500,000	20,000	25	165,533	Mar.	1876	0 50	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
Pewabic, c.	Mich.		..	500,000	20,000	25	185,000	June	1868	3 00	460020	July	1873	1 00	..	....	....	....	....	....	....	....	....	....	....	....	....
Phœnix, c.	Mich.		..	1,000,000	20,000	50	817,500	Sept.	1870	3 00	20,000	Jan.	1876	1 00	..	....	....	....	....	....	....	....	....	....	....	....	....
Quincy, c.	Mich.		..	200,000	20,000	10	....	.....	....	.....	2,130,000	Feb.	1877	4 00	..	....	....	....	....	....	....	....	....	....	....	....	....
Ridge, c.	Mich.		..	500,000	20,000	25	200,000	.....	.....	.....	90,000	Feb.	1875	1 00	..	....	....	....	....	....	....	....	....	....	....	....	....
Rockland, c.	Mich.		..	500,000	20,000	25	495,000	Jan..	1874	1 00	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
Star, c.	Mich.		..	500,000	20,000	25	265,000	Mar.	1876	0 50	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....
Superior, c.	Mich.		..	500,000	20,000	25	340,000	Mar.	1874	0 25	....	.....	....	.....	..	..	..	..	..	..	..	..	..	..	..	..	....

g. Gold. s. Silver. L. Lead. c. Copper. * Non-Assessable.

Total Assessments levied to date..... $46,266,370 | Total Sales of Coal Stocks for the week..... $450,704 shares.
Total Mining Dividends disbursed to date..... 23,496,084 | Total Sales of Mining Shares for the week..... 55,691 "

Quicksilver.—The San Francisco *Commercial Herald*, of Sept. 27, says: "We have had rather a dull market for the past ten days or a fortnight, ever since the arrival of the *Oceanic* from Hongkong with 1,000 flasks returned. The quietness of the market is to be attributed in part to the postponement of the sailing of the *Oceanic* to China and Japan, from the 20th September, her regular day, until the 29th inst.; besides, advices from London by cable report a further decline in that market to £7.5s. Buyers now talk about 45c, and some go even lower in their expressed views of the near future of the market, but we have yet to hear of sales as low as 47½c. Since writing the above we are told of a purchase of 250 flasks, (in two lots) one carload, for New York, at 50c. This was secured a few days since, and the explanation given is that the three largest producers are not now sellers. Two of them are under contract to deliver this month to the Bonanza mines all they can produce at 50c.; the other party prefers to ship on his own account rather than sell at present. So far as we are advised the shipment to Hongkong, per steamer of the 29th inst., will be light. At the present London price of $7.58. New York buyers can do 5c. to 10c. better than in California. This state of things cannot be of long continuance. No foreign exports this week, but the receipts have been 1,488 flasks.

Salt Lake Ore and Metal Market.

SALT LAKE CITY, UTAH, October 5, 1877.

Argentiferous Lead (*Base Bullion*).—$43@45 per ton for lead; $1.17@$1.18 per ounce for silver; $20 per ounce for gold. The quotations for silver are based upon the silver contents in the lead of 80 to 120 ounces per ton of 2,000 lb.

The *Inter-Ocean's* correspondent, under date of the 28th ult., says: "The bullion market is very dull, though ten cars of Waterman have been sold to the Omaha Smelting and Refining Company for $45 for lead, and $1.18 per ounce for silver.

"The Emma Mine is to commence work right away under a lease for two years. It will probably be worked through the Bay City Tunnel, which is under and adjacent to it. It would take a great outlay of money to repair the caving-in that occurred just before it shut down, and free it of water.

We all feel interested in this mine. It has done Utah more good and more harm than any other mine in the Territory.

I think there can be but little doubt that it is still a very valuable property, and that it will yield again as it has done before.

"The shipments of ore and bullion for the week ending Sept. 22 are as follows: Eleven cars bullion to New York, 1 car bullion to Omaha, 10 cars bullion to Pittsburg, 2 cars bullion to Chicago, 1 car lead ore to Omaha, 5 cars lead ore to Hilliard. Total, 39 cars.

Bullion, lbs	693,354
Lead ore, lbs	125,358
Total, lbs	818,712

FINANCIAL.

New York Stocks.

NEW YORK, Friday Evening, October 5, 1877.

The dealings in the coal shares have been much more liberal than for a long time past, especially in Delaware, Lackawanna, and Western Railroad, which records sales of 352,823 shares at 45@52⅜, closing at 51¼. The quotations have fluctuated considerable on sundry rumors, among others that much worn one a "new combination." The prices are high and firm on the belief that work will be resumed at the mines next week. Delaware and Hudson has ranged from 39¼ to 46½, closing at 42⅞, with sales for the week of 34,833 shares. New Jersey Central has been very sparingly dealt in, the sales only aggregating 3,875 shares at 15½@18¾, closing at 18 asked.

Moingona Coal Company.—This company has declared a dividend of 3 per cent., amounting to $9,156. This is an increase of 1 per cent. from the dividend paid from the earnings of the previous quarter.

National Tube Works.—A quarterly dividend of 3 per cent. has been declared by this company, amounting to $30,000.

Morgan Iron Company of Michigan.—A special meeting of the stockholders of this company will be held at Morgan, Mich., Oct. 18.

Empire (*Howland Flat*) *Cal. Gold Mining Company.*—This company has paid a dividend of $1 per share, amounting to $10,000, out of the August bullion product.

The Fort Yuma Mining Company of El Dorado County, Cal., has levied an assessment of 20 cents per share, delinquent Nov. 1.

The St. Lawrence Mining Company of El Dorado County, Cal., has levied an assessment of 10 cents per share, delinquent Oct. 29.

The Mount Diablo Mining Company, Esmeralda County, Cal., has levied an assessment of 25 cents per share, delinquent Oct. 29.

Philadelphia Stocks.

PHILADELPHIA, FRIDAY EVENING, Oct. 5, 1877.

The fluctuations in the coal stocks dealt in in this market have been quite unimportant and the business hardly worthy of comment. Quotations and sales will be found in our regular table.

AUCTION SALES OF STOCKS.—During the week under review the following stocks and bonds were sold at auction:

Morris Canal and Banking Company.—34 shares at $50 per share.

Pennsylvania Steel Company.—34 shares at $58 per share.

Shamokin Valley & Pottsville Railroad Company.—$1,000 7 per cent. coupon bonds, J. & J., at 95¾ per cent.

American Exploring Company.—2 shares at $5 per share.

Pennsylvania Canal Company.—513 share at $2.37½ per share.

Piedmont Coal & Iron Company.—1,818 shares at 5c. per share.

Keystone Zinc Company.—500 shares at 2c. per share.

Two-Mile Run Oil Company.—150 shares at ½ cent per share.

Oil Spring Petroleum and Refining Company.—100 shares at ⅛ cent per share.

Petroleum Centre Company.—600 shares at ¼ cent per share.

Sugar Valley Oil Company.—10,000 shares at ⅛ cent per share.

Walnut Island Oil Company.—700 shares at ⅛ cent per share.

Barclay Railroad and Coal Company.—10 shares at 15 cents per share.

Beaver and Sandy Run Coal Company.—$100 bond at $1.50.

Schuylkill Navigation Company.—342 of the convertible 6 per cent. mortgage loan of 1852, due 1907, at 60¼ per cent., and 10,000 6 per cent. bonds of 1895, at 52½ per cent.

Caldwell Oil Company.—500 shares at 1¼ cents per share.

Mineral Oil Comyany.—1,000 shares at ⅛ cent per share.

Union Petroleum Company.—100 shares at 2 cents per share.

Irwin Petroleum Company.—100 shares at 8 cents per share.

Beaver Oil Company of Deer Creek.—1,000 shares at ⅛ cent per share.

Olmstead Oil Company.—400 shares at 5½ cents per share.

Mahanoy Coal Company.—200 shares at 1 cent per share.

Pennsylvania Salt Manufacturing Co.—The semi-annual dividend period of this company will occur during the present month.

Westmoreland Coal Co.—The semi-annual dividend period of this company will occur during the present month.

Cambria Iron Co.—The semi-annual dividend of this company will occur during the present month.

Nescopec Coal Co.—The semi-annual dividend period of this company occurs during the present month.

Pennsylvania Steel Co.—This company has declared a semi-annual dividend of 3 per cent., payable on the 15th inst.

The Pennsylvania Railroad Co. paid, on the 1st inst., the last coupon on the 7 per cent. million loan of the Sunbury & Erie Railroad Company, and renewed the loan for twenty years at the same rate of interest.

Miscellaneous Sales and Quotations.

Sales and quotations of the stocks and bonds dealt in here at Philadelphia, and Baltimore for the week ending the 5th inst. are given in the following tables. The Philadelphia quotations will have a * affixed. The Baltimore quotations are indicated thus †.

BONDS.

D., L. & W. 7s, Convt.,	1892	J. & D.	—	—	101	—	
" " 2d mtge.,	1881	M. & S.	—	—	104½	—	
N. J. C., 1st mtge., new		F. & A.	109	—	109¾	$1,000	
" " 1st mt., cons.	1899	Q.	68¾	—	67	10,000	
" " Convt		M. & N.	64	63½	64	12,000	
L. & W. B. Coal Co., cons.		Q.	35	31¼	35	27,000	
Am. Dock & Imp. 7s		J. & J.	48	—	48	1,000	
D. & H. C. Co., 1st m.,	1884	J. & J.	98	37¾	97¼	7,000	
" " " "	1891	J. & J.	—	—	—	—	
" " " "	1877	J. & J.	—	—	102⅝	—	
" " " reg.,	1894	A. & O.	—	—	—	—	
" " " coup.,	1894	A. & O.	97	—	—	5,000	
St. L. I. M. & S., 1st mt.	1892	F. & A.	96¼	96	96⅛	18,000	
Ches. & Ohio, 1st mt.,	1899	—	23	—	22¼	2,100	
*L. V. RR., con. m. 6s,	1923	J. & D.	97½	96	97⅝	4,000	
" " 2d m., 7s,	1910	M. & S.	111	—	110¼	1,000	
" " reg.,	1898	J. & D.	110	—	109	3,000	
" " coup.,	1898	J. & D.	—	—	108½	—	
*P. RR., 1st mtge.,	1880	J. & J.	105½	105¼	105¾	91,000	
" Gen. mtge. reg.,	1910	A. & O.	106	—	—	2,000	
" Con. m. 6s, cou..	1905	J. & D.	—	—	92	—	
" " " reg.	1905	Q.	—	—	92	—	
" gen. M. Coup.,	1910	J. & J.	106¼	106½	106¾	7,000	
" New Loan 5s		—	108¾	108	—	24,800	
*P. & R. RR., 7s,	1893	A. & O.	—	—	—	—	
" " con. m. 7s. cou.	1911	J. & D.	103	—	102⅞	24,000	
" " Deb. 6s,	1893	J. & J.	47	—	—	1,000	
" " New convt. 7s.	1893	J. & J.	58	—	57½	2,000	
" " Con. mtge. 7s. reg.		J. & D.	103	102⅜	—	20,000	
" " 6s, 44-80	1880	J. & J.	104¼	—	104	2,000	
*P. & R. C. & I. Co. Deb. 7s		M. & S.	—	—	—	—	
*P. & R. C. & I. Co		—	—	—	55	—	
*L. C. & N. Co. 6s.	1884	M. & Q.	—	—	104	—	
" " RR. loan	1897	F. & Q.	105	—	104½	1,000	
" " Con. mtge. 7s.		J. & D.	—	—	—	—	
" " Cvt. gold,	1894	M. & S.	—	—	98	—	
" "Gold Loan,	1897	J. & D.	90	89⅜	89½	4,500	
Schuylkill Nav., 6s.	1897	M. & Q.	—	—	90	—	
Pa. and N. Y. Canal, 7s ..		J. & D.	109⅛	—	109	4,000	
Pa. Canal Co		J. & J.	—	—	60	—	
Susquehanna Coal Co. 6s.		—	—	—	—	—	
Ches. & Ohio 1st m. 6s ..		M. & N.	—	—	—	—	
Balt. & Ohio 6s. 1880		J. & J.	103½	—	102½	500	
" " 6s. 1885		A. & O.	105¾	—	104¾	1,000	

Total transactions for the week.....$193,800

STOCKS.

	Quotations.—Highest.	Lowest.	Closing.	Sales Shares
American Coal Co	—	—	30	—
*Cambria Iron Co	—	—	55	—
*Pennsylvania Salt Manf'g Co.	—	—	65	—
*Westmoreland Coal Co	—	—	60	—
*Buck Mountain Coal Co	—	—	25	—
*Schuylkill Nav. Co	—	—	—	—
St. Louis, I. M. & S. RR. Co	6⅛	6¼	6¼	400
Spring Mountain Coal Co	—	—	30	—
†Balt. & Ohio RR. Co. pref	102⅞	102½	—	40
" " " common	110	110	109	115
†Pittsburg & Connellsville RR.	—	—	—	—
†George's Creek Coal Co	—	—	96	—
†Santa Clara Mining Co	—	—	7	—
†Atlantic Coal Co	—	—	1.35	—

Gold and Silver Stocks.

NEW YORK, Friday Evening, Oct. 5, 1877.

The sales of Bertha & Edith being reduced, the business of the board has assumed its old and not encouraging proportions. This stock has been the feature of the week, having declined to 16c. with sales of only 5,100 shares. Moose has held its old position with sales of 19,100 shares of 5⅝@6¼. Outside of these the business in the other stocks has been but a repetition of numerous previous weeks. Merrimac and Hukill report their usual dividends.

Ontario Silver Mining Company.—The total production of this company from Sept. 1 to Sept. 28, inclusive, was 76 bars of bullion, equal to $160,527.28 assay value.

Eureka Consolidated Silver Mining Company.—This stock closed on the San Francisco market yesterday, at $47½ per share.

The August bullion production of this company is put down at $232,000, the K. K. Con., at $50,000, and the Matamoras at $35,000. That is not a circumstance, says the *Sentinel*, to what the September return of the Eureka will show.

The total product of the Eureka District, since its discovery, is estimated at over $40,000,000.

MINING STOCK QUOTATIONS IN SAN FRANCISCO.

We give below a table showing the closing price of mining shares in San Francisco yesterday:

Alpha	16	Mexican	11
Belcher	6	Northern Belle	20¾
Best & Belcher	26½	Ophir	17
Bullion	13	Original Comstock	..
Caledonia	4¼	Overman	25
California	31	Raymond & Ely	11
Chollar Potosi	36½	Santiago	..
Con. Imperial	1¼	Savage	7½
Con. Virginia	33¼	Seg. Belcher	39
Confidence	6	Sierra Nevada	5
Crown Point	4¾	Silver City	..
Eureka	47¾	Silver Hill	6¾
Exchequer	13¾	South Comstock	..
Gould & Curry	10	South California	..
Hale & Norcross	7	Southern Star	..
Indian Queen	..	Trenton	..
Julia	3¼	Union Con	7
Justice	15½	West Belcher	..
Kentuck	7¾	Yellow Jacket	9½
Kossuth	..	Young America	..
Leopard	1¼		

The *Commercial Herald* of the 27 ult. says: "The mining stock market has been somewhat more active the past week, probably due to bringing forward a more than usually large number of outside stocks, which sold at fluctuating prices. The prominent stocks have been quite well maintained, a more or less advance being observable under less free offers than is usually the case in this condition of the market. While we can not say that the market looks very promising for a 'deal' very soon, which is always looked forward to by those who speculate in stocks, still the business may be said to be improving, and a better feeling seems to be working itself into the foreground. The bullion output from the bonanzas continues large, while the other claims on the lode show very little change. So soon as any of them do we may look for a smart advance along the whole line in the stock market here."

We take the following summary from the Gold Hill *News* of the 27th ult.: "Justice is showing still better at the 1,150-foot level, and the prospects of the entire group of mines in that vicinity are correspondingly raised. Yellow Jacket is also showing a little ore at the lower level. The ore and bullion yield of the great bonanza of the Consolidated Virginia and California is fully sufficient up to the present time to insure the payment of the regular $2 dividend by each next month. In fact, the ore yield is considerably ahead of the milling capacity, and twenty stamps are to be added to the crushing department of the California mill forthwith. Air connections are the order of the day at present, and some very important ones in the bonanza mines, as well as at the south end, have recently been made, as, for instance, that from the Belcher and Crown Point air shaft connecting with the 2,000-foot level of the Crown Point completed this morning. Another valuable connection will be made in the next two weeks from the Savage through the Gould & Curry to the Best & Belcher at the 1900-foot level. Rumors of a compromise between the principal mine managers and the Sutro Tunnel Company have fallen through. As we told you, on good authority, "there's nothing in it." No authoritative and official attempt at such compromise has yet been even attempted, the published opinion of some of our San Francisco contemporaries to the contrary notwithstanding. And now let Sutro put his tunnel through to completion a little faster

than he is doing. Then let him go in a for a water "royalty," draining the mines. He will find that it will pay better than any royalty on ore, especially in case of the Savage and Hale & Norcross, which yield more water than ore at present. The face of the header of the tunnel continues in soft porphyry, clay and other difficult and unreliable ledge matter, requiring careful and close timbering, consequently the advancement is considerably impeded and slow at present. Forty additional men are to be put at work in the tunnel at once. The mines of Tuscarora are attracting a good deal of attention now, even on the Comstock."

AUCTION SALES OF STOCKS.—During the week the following stocks were sold at auction in Philadelphia:

Mexico California Silver Mining Company.—1,000 shares at ¼ cent. per share.

Colorado Gold Mining Company.—200 shares at ⅛ cent. per share.

Pioneer Mining Company.—100 shares at ⅛ cent. per share.

Triunfo Silver Mining Company.—150 shares at 2 cents per share.

Moutour & Colorado Gold Mining Company.—500 shares ai ½ cent. per share.

The Endowment Silver Mine.—The San Francisco *Stock Report* says: "This mine is in Esmeralda county, Nevada, 140 miles southeast of Carson, and 16 miles west from the Northern Belle mine. There are 1,200 feet in the claim. The distance from the mine to the mill is 3⅜ miles. A five-stamp mill was started July 4th, but there was a loss of ten days during the month. On the 1st of July they started a five stamp mill of their own, which has run constantly on ore from their mine, and has yielded in bullion, from 700 tons of ore, about $20,000. The ore is chiefly carbonate and chloride, crushes easily and amalgamates freely, yielding by net crushing an average of 76 per cent. The company own the mill, roads and timber, and there is sufficient water for a fifty stamp mill. Wood costs $7.50 per cord, and there is plenty of timber at the mine. No assessment has been levied, and none probable, as the bullion produced more than pays cost of development. The shaft is down 216 feet, where the ledge is seven feet wide, and the ore mills about $100 per ton. At a distance of 400 feet from that point they have a tunnel in the ledge some 200 feet in the same character of ore, which is a slate and quartzite formation, similar to the Raymond & Ely. The mine was incorporated May 2, 1877, with a capital of $10,000,000 in 100,000 shares.

The Confidence Mine in Tuolumne county, California, is located 13 miles east of Sonora, on the Sonora and Mono road. The claim comprises the Confidence, Independence, Jesse, and Edith—in all 4,040 feet. It has been prospected to a depth of 800 feet, and has six levels. The 500-foot level is 1,400 feet, on the vein, and the 800-foot level, 1,200 feet. The property of the company, in addition to the mine, comprises a 40-stamp mill of modern construction, fully equipped, complete pumping and hoisting works, ore houses, office, boarding house, cottage for superintendent, dwellings for men, etc., together with three hundred and twenty acres of timber land. The cost of these improvements has been chiefly borne from the proceeds of the mine. The face value of the ore produced to date is $611,853, of which $195,000 has been paid in dividends to stockholders. The stock has never been listed on the Boards, and is chiefly in few hands. The company was organized, in May, 1870, with a nominal capital of $800,000. In March, 1874, the capital was increased to $2,500,000, in 25,000 shares of $100 each. An assessment of 10 cents per share, aggregating $2,500, was levied on the stock in July.

Algoma Silver Mining Company.—20 shares of the stock of this company were recently sold at auction at $1.50 per share.

Ophir Gold and Silver Mining Company of Nevada.—20 shares of the stock of this company were recently sold at auction at $15.50 per share.

Mexican Gold and Silver Mining Company.—5 shares of this stock were recently sold at auction at $7 per share.

The following list of securities recently brought at an auction sale $164 for the lot: 5 shares Burns Ranch Union Mining Co., $100 each; 200 shares Ac. Transportation of Nicaragua, $100 each; 2 Gold and Stk. Tel. Co., $25 each; 3,600 shares Potosi Lead Co., $5 each; 4,000 shares Downy G. M. Co. of Col., $1 each; 250 shares Silver Val. Min. Co. of Baltimore, $5 each; 1 share Mercantile M. Ins. Co., $50; 100 shares Metrop. Oil Co., $5 each; $1,000 Ohio Cannel Coal Co.'s 7 per cent. mortgage bonds, $500 each.

INCORPORATIONS.

We note the recent organization of the following companies in addition to the announcements in our issue of September 1:

Name of Company.	Location.	Capital Stock.
Pittsburg Gold Mining Co.,	California.	$10,000,000
Shawmut G. & S. M. Co.,	"	7,500,000
Bechtel Gold Mining Co.,	"	6,000,000
Bodie Gold Mining Co.,	"	5,000,000
South Standard Mining Co.	"	5,000,000
Chesapeake Quartz Mining Co.,	"	5,000,000
Meeker Gravel Mining Co.,	"	4,800,000
San Jacinto Flume & Lumber Co.,	"	1,000,000
New Basel Con. Gravel M. Co.,	"	300,000
Weske Consolidated Mining Co.,	"	1,000,000
Am. Mining & Dredging Co.,	"	600,000
Am. River Dreding & Mining Co.,	"	240,000
Hydraulic Gravel Elevating M. Co.,	"	500,000
Walker Oil Co.,	"	200,000
West Point Mining Co.,	"	200,000
Channel City Oil Co.,	"	300,000
Liberty Hill Gold Mining Co.,	"	100,000
Esperadance Mining Co.,	"	1,000,000
Pawnee Mining Co.,	Nevada.	10,000,000
Industry Gold & Silver Mining Co.,	"	10,000,000
Belle Isle Mining Co.,	"	10,000,000
Grand Prize West Mining Co.,	"	10,000,000
South Navajo Mining Co.,	"	10,000,000
Tuscarora Mill and Mining Co.,	"	10,000,000
E. Alpha Gold & Silver Mining Co.,	"	10,000,000
Olompale Silver Mining Co.,	"	10,000,000
Alexander Mining Co.,	"	5,000,000
Pacific Mill and Mining Co.,	"	5,000,006
Temple Mill & Mining Co.,	"	7,500,000
Golden Prize Mining Co.,	"	10,000,000
Itusbide Gold & Silver Min'g Co.,	Arizona.	10,000,000
Gila Consolidated Mining Co.,	"	10,000,000
Tip Top Silver Mining Co.,	"	10,000,000
Peck Mining Co.,	"	10,000,000
Hackberry South Mining Co.,	"	6,000,000
Arnold Gold and Silver Mining Co.,	"	6,000,000
Argonaut Mining Co.,	"	6,000,000
Idlewild Mining Co.,	"	5,000,000
Lewiston & Kanawha Coal Co.,	West Va.	8,000

The Stonington Gold and Silver Mining Company has increased its capital stock from $700,000 to $4,900,000.

The Young American South Mining Co. has increased its capital stock from $3,000,000 to $10,000,000.

Copper Stocks.

Reported by Wilson W. Fay & Co., Bankers and Brokers Room 7, Traveler Building, 31 State Street.

BOSTON, THURSDAY EVENING, Oct. 4, 1877.

The week has been a dull and uneventful for copper stocks, the transactions have been light and very little interest has been manifested by those who usually take most interest in them. In Calumet and Hecla there has been no change, the stock offering at 173½ with 173¼ bid, and sales at 173½ and 174. Copper Falls has recovered from the effects of the break and is firm at 3⅜ bid and 3½ asked; Central has a wide margin between the bid and ask, 37 being the best bid, and offering at 39; Franklin is quiet at 8.00@8.50, there being a sale of a small lot at 9.00.

The annual meeting of the stockholders of the National Mining Company for the election of officers for the ensuing year, and the transaction of any other business which might legally come before the meeting, was held at the office of the company, No. 75 State Street, Boston, on Wednesday, Oct. 3, 1877. The following named gentlemen of Boston were elected directors: T. H. Perkins, Reuben E. Demmon, G. W. Carr, and Dan'l. L. Demmon, with John Chynoweth, of Michigan, Agent.

The following is a synopsis of the Treasurer's report for the past year.

Assets,	$49,865.35
Liabilities,	28,320.10
Balance assets.	$21,545.25
Balance of receipts over expenditures,	22.73
Cash on hand,	22.73
Due Tributes,	$4,460.00

A committee of three was appointed, consisting of John C. Watson, James P. Brewer, and D. L. Demmon, to levy an assessment of such amount per share as they should think best to pay the debt of the Tributes. The stock has declined since the meeting, there being sales at .07 and .10c., and closing this evening at .07@.12. Osceola remains firm at about the same figures, $19.00@20.00, with a sale at $20.00. Quincy is a little weak at 37@37¼. Ridge is unchanged at 2⅛@2⅝. The others hold their own, and have not changed to any extent since our last report. In the Silvers, Dawson sold at .09, and is now .07 bid and .09 asked; Duncan remains unchanged at 1½@1¾, with sales at 1½ and 1⅝. International has fallen off a little and sold at .25, and is now .25 bid and .27 asked.

Gas Stocks.

NEW YORK, FRIDAY EVENING, Oct. 5, 1877.

Gas stocks continue very dull, and but few alterations in the quotations. The Mutual, of New York, has declared its usual quarterly dividend of 2½ per cent.

Metropolitan, N. Y. Gas Company,—We note recent auction sales of 19 shares of the stock of this company at from $129¼ to $130 per share.

Peoples' Gas Company of Baltimore.—100 shares of the stock of this company sold during the week at 14½ per cent.

The Chicago Gas Question.—At a meeting of the Chicago Common Council on the 24th ult., the following ordinance was passed: That the Mayor and Comptroller be, and the same are hereby, directed to close a contract with the Chicago Gas-Light and Coke Company for lighting the street lamps and the public buildings from May, 1877, to May, 1878, at a price not exceeding $1.65 per 1,000 cubic feet; and with the People's Gas-Light and Coke Company from the 1st day of October, 1876, to the 1st day of May, 1878, at a price not exceeding $2 per 1,000 cubic feet. The ordinance was referred to the Gas Committee, and made the special order for Octobe 8th.

It is understood that the Gas Committee favor the above contract, and it is probable that it will be the final settlement to a long controversy.

Terre Haute, Ind., will hereafter be illuminated by gasoline. There are 305 gas-posts in the city. The city will save $4,000 per annum by the change.

The Cumberland (Md.) Gas Question.—At a meeting of the Common Council of Cumberland on the 3d inst., the Gas Committee reported favorably on the proposition of the Baltimore Company, which offers to light the streets for $17.46 a lamp-post per annum, the company to pay the expense of lighting, repairs, etc.

The West Troy, N. Y., Gas Supply.—We note the statement that a Maine Gas Company is considering the expediency of supplying the village of West Troy with gas at popular rates.

Suburban, Trenton, N. J., Gas-Light Company—This company has declared a quarterly dividend of 1 per cent., payable Oct. 15.

Boston Gas Light Company.—Interest on the 6 per cent. bonds of this company, due in 1880, amounting to $15,000, will be paid on presentation.

Assessed Valuation of Illinois Gas Companies.—At a meeting of the State Board of Equalization at Springfield, Illinois, on the 2d inst. the following companies were assssed, on their tangible property and capital stock as per the amounts annexed:

Quincy Gas-Light & Coke Co.	$39,246
Aurora Gas-Light Co.	4,095
Kankakee Gas-Light Co.	5,602
Jacksonville Gas-Light & Coke Co.	18,000
Peoria Gas-Light & Coke Co.	31,334
Springfield Gas-Light Co.	24,737
Rockford Gas Co.	3,442

The following list of Companies in New York and vicinity are corrected weekly by GEORGE H. PRENTISS, Broker and Dealer in Gas stocks, No. 30 Broad street, N. Y.

Companies in New York and vicinity.	Capital Stock.	Par.	Dividends. Rate per an.	Am. of last.	Date of last.	Quotat'ns Bid.	As'd
	$						
Mutual, N. Y.	5,000,000	$100	10%	2½	Oct. '77	*92½	95
" Gold Bonds	90,000	1,000	7%	3½	Feb. '77		107
N. York "	4,000,000	....	10%	5	May '77	128	130
Metrop. "	2,500,000	100	10%	5	June '77	127	130
" " Certf.	1,000,000	....	7%	3½	" "	100	103
" " Bonds	500,000	1,000	7%	3½	" "	102	—
Harlem "	1,850,000	50	8%	3½	Aug. '77	95	100
Manhat. "	4,000,000	50	....‡	5	July '77	198	200
Brooklyn, B'klyn.	2,000,000	52	15%	5	July '77	165	175
Nassau, "	1,000,000	25	....‡	4	July '77	76	80
" " Certf.	700,000	1,000	7%	3½	July '77	98	101
People's, "	1,000,000	10	....‡	3½	July '76	—	45
" " Certf.	300,000	1,000	7%	3½	July '77	80	85
" " B'ds	325,000	....	7%	3	Feb. '77	96	100
Metrop. "	1,000,000	10	5%	2½	May '77	67½	72
Wmsb'rg "	1,000,000	50	10%	2½	Apr. '77	115	122½
" " Certf.	1,000,000	....	7%	3½	July '77	100	102
Citizen's "	1,200,000	20	....‡	4	Jan. '77	71	76
" " Certf.	320,000	1,000	7%	3½	Apr. '77	97	100
J. C., N. J.	750,000	20	10%	5	July '77	160	—
Cent. Westch. N.Y	466,000	50	7%	4	July '77	80	90
Subur'n " "	295,000	50	7%	3½	Apr. '77	90	100
Municipal, N.Y.	1,500,000	100	.....	.....	.....	75	85

‡Paid irregularly. *Ex-dividend.

ADVERTISERS' INDEX.