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[WITH SUPPLEMENT.]

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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 :

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

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THE RIGHTS OF BOYS.

We hear a great deal about the rights of workingmen—a term which has been narrowed in its meaning of late to apply to a few classes of workmen only, and which has been stretched, on the other hand, to cover a good deal which is no liberty, but tyranny. But what we do not hear so much about is the rights of boys, and particularly the right of every boy in this country to learn a useful handicraft. Scarcely any other folly into which the trades unions have been betrayed is more disastrous than their attempt to put a violent end to the apprentice system. One would hardly think workingmen capable of conspiring against their own sons; yet such is the spectacle which the present generation offers to us. The result is plainly seen on every side. Employers find it difficult to obtain skilled and trustworthy men. Workmen, on the other hand, find difficulty in getting employment, because their own short-sighted measures have reduced to a minimum the amount of work which the public can afford to have done. And meanwhile—a worse effect than either—the young men are growing up in idleness, to vice and crime.

In the busy city of San Francisco, which holds, by reason of its position at the Golden Gate, the only road to the sea from the vast interior plain of California, and from many fair territories beyond, we witnessed two scenes which seem to us to have had a deep significance.

The same moral might be drawn from events in many other parts of the country, but we prefer to select the Pacific Coast, because there it is impossible to pretend that over-population has caused a surplus of labor. The pretense would be ridiculous anywhere in the United States, but it is most ridiculous in California, where there is room enough, food enough, and work enough for all.

Of the two scenes to which we refer, the first was the building of a house, and the second was the destruction of a house.

The building was in this wise: Walking out one day with a citizen of San Francisco, we came to a half-finished house, which was in process of erection under contract, as his residence. After admiring the ingenuity and simplicity, the elasticity, lightness, and strength of the peculiar California "balloon frame," we congratulated the proprietor upon the cheapness with which, after such a plan, a handsome and comfortable dwelling could doubtless be erected. His smile in reply was not altogether mirthful. Pointing to a laborer, whose only duty was to carry boards from the street into the house, he said: "Do you see that man? He is a full-fledged, full-paid carpenter; that is, he belongs to the Union. No common laborers are allowed to touch this job, even by way of carrying materials. No boys, no Chinese (heavens! of course no Chinese), nobody but members of the Union for Obtaining Big Wages."

"But, cannot the journeymen carpenters get regular work at their trade?" we asked.

"No; they have put up their demands until people cannot afford to build; and now, because there is little building going on, they refuse to work at all in company with common laborers or apprentices. And they, with other unions, have issued an appeal to workingmen of the East and of Europe, in opposition

to the circular of our Immigration Society. They tell their brethren abroad that there is no room for any more skilled labor on this coast."

We watched for awhile the leisurely "skilled workman," as he handled plank at \$4.50, gold, per day, and thought of the hungry thousands in other places who would be glad to labor for one-quarter as much; and strange to say, although we knew he was a "workingman," the fellow somehow seemed to us to be a "bloated aristocrat," taking money that he was not earning.

The other scene occurred a couple of years later, in fact only a few weeks ago. From the balcony of our hotel in San Francisco, between midnight and dawn, we saw a mob of young men and boys, led by an imp of thirteen, destroying the house in which it was supposed a Chinaman took in washing. In one instance—perhaps the one we mentioned—we are told that the mob had made a mistake, and sacked the shop of an honest Irishman, beating him nearly to a jelly before they found out their error. But they made atonement by finding a number of genuine Chinese establishments, which they smashed thoroughly. The "demnition total" was not very large—only some \$50,000 for the City of San Francisco to pay—but the same young ruffian element kept the town in alarm for more than a week, caused thousands of citizens, besides the National Guard, to remain day and night under arms, and brought about at least one large incendiary fire, and one somewhat bloody skirmish, not without loss of life.

The "hoodlums" of San Francisco are the first generation sprung from the workingmen of the Pacific Coast. In them may be seen the effects of the policy we have described. Ignorant, idle, brutal, combining the cruelty of fiends with the thoughtlessness of children, they constitute one of the worst classes of criminals which can be found in the world. Yet this must be said in excuse of them: they have been wronged by their own parents. The avenues of honest industry have been shut in their faces by those who prate about the rights of labor.

Thoughtful and thrifty workingmen are not blind to these evils. How long will they submit to the dictation of demagogues, and follow the vagaries of fools or abet the schemes of knaves?

THE DELAWARE & HUDSON CANAL COMPANY'S REPORT.

For many years past the officers of the Delaware & Hudson Canal Company have been satisfied to present to their stockholders a report which practically gave the gross receipts in one item, the expenditures in a second, and the balance in a third, for it gave little or no information that would enable any one to form an accurate estimate of the value of the company's property, or the wisdom or recklessness with which it has been managed. The well-founded distrust with which the public generally has come to look upon concerns managed in this manner, and their repeated calls through the press for fuller reports, have not been without effect.

We have before us the most elaborate, and, in that respect at least, the most satisfactory report that the stockholders of this company have received for many years. This report is one made by a committee appointed at the annual meeting held in May last, and is signed by MESSRS. JOHN V. L. PRUYN, ADOLPHUS HAMILTON, H. M. OLMSTED, HENRY H. FARNAM, and E. B. GRANT. We gladly recognize the ability displayed in this report, and congratulate these gentlemen on having done real service in enlightening stockholders on several important points in connection with the value and management of their property.

The first question which naturally occurs in taking up this document is: Why should it be necessary to have a committee make a report of this kind, if the officers of the company do their duty, for the information here given is simply what should have been furnished in the annual reports of the directors? The very fact of publishing it now admits that the stockholders are entitled to it, if, indeed, any one ever questioned this.

As we shall see, in the course of this review, that, in an account of about thirty-nine million dollars—the value of the company's assets as by the annual report—the committee makes a difference in valuation of about fifteen million dollars, and declaring as without any value some five million dollars of the assets, no one can question the wisdom of its appointment, or the importance of its report to the stock and bond holders.

The next question which naturally suggests itself to any thoughtful reader will be: If this committee and the officers of the company differ by fifteen millions in their valuation of the estate, which are we to believe? If it be true, as the committee assures us, that five millions of the assets included in the officers' report, which showed the company to be worth but one million of dollars more than its liabilities, are worthless, then a portion of the capital has been sunk. And, if, on the other hand, the items which the books of the company state to be worth thirty-three million dollars are in reality worth ten million dollars more than this, why should the stockholders have been left in ignorance of the fact? Nevertheless, in recording these startling discrepancies, these distinguished gentlemen facetiously tell us that these "methods of accounts are comprehensive, simple, and clear," and that "there can be no other corporation in which exact results are kept more constantly in view than are those of the Delaware & Hudson Canal Company." If the committee is here speaking from knowledge, then it seems to us there is need of a vast number of committees to look after the other companies.

Without further preliminary, we give below a copy of the "balance sheet, December 31, 1876," indicating both the valuations as they stand on the books and those of the committee.

The value of many of these estimates depends entirely upon the expert knowledge upon which they are based. It seems, therefore, a most regrettable oversight on the part of the committee that, with a few rare exceptions, this authority is not mentioned, and the conclusion might be drawn that the valuations have been made solely by the committee, none of whom are "experts" in certain of the questions involved.

Owing to the length of the following table, we shall defer our review of it to our next issue. We shall then take up a few of the principal items and endeavor to elucidate them, and supplement the information contained in this valuable report by a discussion of it from an independent and totally disinterested standpoint.

As the questions discussed are of general interest, and our remarks apply to many other companies than that which gives occasion to them, they will justify us in continuing this review through several numbers of the JOURNAL.

BALANCE SHEET, DECEMBER 31, 1876.

	Amounts per Ann'l Report.	Committee's Valuations.
Cost of Canal:		
New York section	\$4,454,107 89	\$5,000,000 00
Pennsylvania "	1,885,102 60	2,000,000 00
	\$6,339,210 49	\$7,000,000 00
Railroads and Equipment:		
Gravity Road	2,693,568 34	2,693,568 34
Valley	888,533 06	
Union Railroad Extension	85,370 55	
Equipment	1,188,745 00	4,000,000 00
Lackawanna and Susquehanna Railroad	1,021,153 45	
	\$5,877,370 40	\$6,693,568 34
Improvements to leased lines, Rensselaer and Saratoga RR.:		
Steel rails, cost over iron	\$308,491 40	
Roadway	104,595 96	
Real estate	56,504 07	
Schenectady and Duaneburg Railroad	24,427 49	
Equipment belonging to D. & H. C. Co., but in use on R. & S. & N. Y. C. Railroads	494,018 92	0
Total being	\$45,127 60	\$45,276 00
Railroads and Equipment	\$6,105,511 87	
Lackawanna and Susquehanna RR.	1,021,153 45	
Cherry Valley Railroad	7,216,668 32	7,538,844 34
Lackawanna Palace Car Company	320,118 62	200,000 00
	54,073 36	50,000 00
Real Estate:		
Coal Lands:		
18,302 acres in fee, including coal and surface		
1,700 " " coal without surface		
5,077 " leased lands and coal leases		
111 " surface without coal		
25,230 acres in coal fields, standing on books of company, at (Mortgage of \$1,000,000 on lands purchased of Union Coal Co. deducted.)	\$5,862,522 50	\$11,015,000 00
Lands at Rondout, and line of canal in N. Y., exclusive of those occupied by canal	280,817 09	712,119 50
Lands on line of Gravity Road, and Pennsylvania Section of canal, exclusive of those occupied for right of way	63,145 41	63,145 44
Real Estate at Buffalo, N. Y.	220,058 66	900,000 00
Weehawken, N. J.	401,888 60	345,000 00
Bridgeport, Conn.	95,745 23	75,000 00
Hudson, N. Y.	6,940 66	6,940 66
Brooklyn, N. Y.	150,025 00	150,000 00
Rochester, N. Y.	9,550 00	8,000 00
Newark, N. J.	30,003 08	30,000 00
Schenectady, N. Y.	13,710 11	13,716 11
Scranton, Pa.	6,209 75	val. with R.R.
Utica, N. Y.		13,000 00
New Hartford, Oneida Co., N. Y.	117,465 92	20,000 00
Allegany, Cattaraugus Co., N. Y.		10,000 00
New York city	1,567,693 35	800,000 00
	\$8,934,781 37	\$14,761,921 71
Less at credit, real estate sinking fund	401,908 02	
	\$8,532,873 35	
Opening mines and improvements	2,373,264 76	3,300,000 00
Mine fixtures and equipment:		
Mine fixtures (including mine cars)	205,074 86	
Horses and mules	87,000 43	291,584 29
Boats, barges, and steamboats	684,712 28	954,125 00
Telegraph lines	14,734 80	14,734 80
Coal yards, tools, and fixtures:		
Improvements at retail yards	90,000 00	90,000 00
Tools and fixtures	10,000 00	10,000 00
Dredging machine	2,000 00	val. with Boats
Coal depots at interior points:		
Buffalo	\$55,026 66	
Rochester	5,019 98	
Utica		
Binghamton	1,127 21	Original cost of which was \$137,565 82
Carbondale	584 05	Less charged off to cover wear and tear
Wilkes-Barre	16,440 00	59,364 92
	\$78,200 90	78,200 90
Culm pressing machine	12,660 06	10,000 00
Fixtures and furniture New York Building	40,000 00	0
	\$22,860 96	\$188,200 90
Supplies on hand:		
Coal Department, per inventory	104,677 71	
Southern Railroad Department, per inventory	228,111 79	
Rondout Department	49,782 54	
Canal Department	83,682 35	
Northern Railroad Department	853,350 49	
	\$1,310,604 88	1,310,604 88
Coal on hand:		
At Honesdale	123,333 tons	
On Gravity Cars	13,629 "	
On Line Canal	128 " "	
On Erie Railway	5,278 15 "	
	142,368 17 tons, \$2.50	355,922 12
At Rondout	60,278 tons	
At Weehawken	37,675 03 "	97,953 03 tons, \$3.50
	240,322 tons,	342,836 03
		\$698,758 15

	Amounts per Ann'l Report.	Committee's Valuations.
Advances to Leased Lines, payable in Stocks and Bonds:		
Rensselaer and Saratoga Railroad	\$91,488 92	
Albany and Susquehanna Railroad	336,011 91	
	\$427,500 83	\$427,500 83
Bonds:		
\$300,000 Rhinebeck and Connecticut Railroad	300,000 00	300,000 00
124,000 Jefferson Railroad Co.	103,950 00	124,000 00
1,420,000 Boston, Hartford and Erie Railroad, guaranteed	1,254,268 83	1,254,268 83
420,000 Albany and Susquehanna Railroad, consolidated	420,000 00	420,000 00
5,000 " " 2d Mortgage	2,700 00	5,000 00
35,000 Union Coal Company	35,000 00	35,000 00
5,000 New Orleans Water Works	3,000 00	3,000 00
1,500 Ulster County	1,400 00	1,500 00
1,000 Delaware and Hudson Canal Company, 1891	1,000 00	1,000 00
35,000 " " 1894	35,000 00	35,000 00
21,000 Town Westport, N. Y.	21,000 00	21,000 00
1,000 Albany and Susquehanna Railroad, 3d Mortgage	1,000 00	1,000 00
40,000 Town Kingston, N. Y.	40,000 00	40,000 00
And other bonds aggregating	25,000 00	15,000 00
25,000 par value		
Reserve against underlying mortgages on Company's property in New York and New Jersey, viz.:		
D. & H. C. Co., 1877	\$178,000	
" " " 1891	10,000	
	188,000	
Against Bonds and Mortgages, payable as follows, viz.:		
Weehawken Property	\$20,000	
Brooklyn	140,000	
Newark	22,250	182,250
	5,750 00	5,750 00
Bonds and Mortgages receivable	50,122 67	50,122 67
	\$2,298,291 50	\$2,311,641 50
Less Mortgage on Courtlandt Street property (purchased subject thereto)	75,000 00	75,000 00
	\$2,223,291 50	\$2,236,641 50
Stocks:		
39,218 shares New York and Canada Railroad	3,597,086 51	0
9,000 " Albany and Susquehanna Railroad	900,000 00	900,000 00
7,529 " Rensselaer and Saratoga Railroad	750,912 50	752,900 00
210 " Rhinebeck and Connecticut Railroad	21,000 00	0
200 " Niagara River Iron Co.	20,000 00	10,000 00
100 " Providence Gas Co.	10,000 00	10,000 00
366 " Van Storeh Coal Co.	9,510 84	9,510 84
340 " Carbondale Gas Co.	8,500 00	8,500 00
30 " Archbald Water Co.	1,500 00	1,500 00
28 " Schenectady and Whitehall Railroad	54 00	0
1,035 " Schenectady and Duaneburg Railroad	1,000 00	0
" " New York and Albany Railroad	2,170 80	0
Undivided Interest Troy Union Railroad	22,500 00	22,500 00
	\$5,344,243 74	\$1,714,910 84
Advanced Royalties	521,179 32	521,179 32
Cash on hand:		
New York, in Bank and Office	439,659 79	
Scranton	61,924 40	
Albany	123,000 00	
	\$624,584 19	624,584 19
Cash Assets:		
Customers' Open Accounts and Bills Receivable	1,684,265 20	1,552,231 44
Interest and dividends due (collected in January)	68,088 75	68,088 75
Receivers' Certificates, N. Y. & Oswego Midland Railway	142,500 00	142,500 00
Notes, New York and New England Railway Co. (with collateral, interest paid)	77,500 00	77,500 00
Open Book Accounts	90,883 10	66,814 85
	2,063,237 05	1,907,135 04
Total Assets	\$39,285,099 89	\$43,751,725 79
LIABILITIES.		
Capital Stock	\$20,000,000 00	
Funded Debt	15,116,000 00	
Sinking Fund, Boston, Hartford, and Erie Bonds	274,545 19	
Interest and Dividends Payable January 1	700,765 90	
December Bills Payable in January	502,590 71	
Depositors	634,318 99	
Taxes Payable in January	57,833 54	
Interest and Dividends Unclaimed	35,721 80	
Bills Payable	855,000 00	
	\$38,236,776 13	\$38,236,776 13
General Profit and Loss (being surplus)	1,048,323 76	5,514,949 66
Aggregate	\$39,285,099 89	\$43,751,725 79

MINING AND ORE REDUCTION.

Staff Correspondence of the Engineering and Mining Journal.

Should they be carried on together, or apart? Nearly all mining companies at the commencement of their existence have this question presented very forcibly for their consideration. In the case of free gold ores, where the metal is present only in small quantities, and where the mineral will bear neither the cost of transportation nor of smelting, there is but one answer. The mine should have its own mill and reduce its own ores. Again, when the mineral is of a uniform character and its beneficiation a very simple process, or when the mine is located so that transportation to a smelting center is a matter of much expense or inconvenience, the same rule would hold good. Examples of the first case are to be found in the free gold district of Central City, Colorado, and similar camps; of the second, in the silver-lead mines of Utah and Nevada; and of the third, in such remote mining towns as Silver City, New Mexico, Pioche, Nevada, and Phillipsburg, Montana.

As the mining States and Territories of the West have become settled and opened, and means of intercommunication increased, reduction centers always grow up, and assume an importance commensurate with the production of the neighboring mines. Beyond all doubt, smelting, in one form or another, is the most comprehensive and economical method of ore reduction for all ores requiring much chemical manipulation. But, like most other branches of manufactures, to be carried on at the highest profit, the work must be done on a large scale. The ore supply must be large and unfailing, and, if these conditions are fulfilled, any and all ores containing enough metal to pay the cost of handling anywhere and under any system can be reduced most advantageously by smelting.

We have in the West a number of these smelting centers. Golden and Black Hawk in Colorado, Sandy in Utah, and Reno in Nevada are the best examples. They are growing yearly in importance and size, and absorbing the produce of mines for hundreds of miles in every direction. At these points rates for the payment on ores is settled, and other works find themselves compelled to pay the same, less the freight. It is these central establishments that by their growth and progress are yearly raising the standard of excellence in American metallurgy, and gradually drawing to themselves the ores which formerly went to the East or abroad for treatment. They are competing in all but the most inaccessible mining districts with the local works, and, we believe, will finally drive the latter to the wall in the majority of cases. A glance over most of the older districts of the coast will show that this process has been and still is going on.

Nevertheless a number of reducing establishments of small power—say 10 to 20 tons per day—are being built. If there be a mistake here, it is going on still with undiminished energy, and it may be well to look closely into the question, and endeavor to find the correct course. Certainly, mines of comparatively low grade mineral cannot afford the expense of transporting their ores any great distance to market. Something must be provided for these cases. Special reduction works would appear to offer a solution of the question, and in some cases they do, and the only solution. The number of failures and abandonments show, however, that something else is requisite. We would suggest that this is to be found in proper systems of ore dressing, or in concentration or separation establishments.

Concentration, after one or the other of the well known and well proven systems, being entirely a mechanical operation, is applicable to every kind of ore that can be produced. In this point it is to be found one of the great elements of success. Very many mills, erected to treat ores of individual mines, have, as the mines were opened more extensively, found themselves confronted by the very formidable difficulty of a change in the character of the ore, necessitating costly alterations in the works, and frequently an entire abandonment of the process. This would never occur in the other system, and we think a critical examination of the question will indicate that in a majority of cases, where mine owners are now thinking of putting up bullion mills, there is a positive advantage to be gained in substituting dressing works.

As an example, let an average silver and gold mine be taken, located, we will say, 25 miles by rail or good wagon road from a large smelting establishment. Its production will be assumed as 8 tons daily of \$100 ore and 20 tons of \$35 ore. Three courses are then open for its manager to pursue:

1. To hand-sort the ore to as high grade as possible, ship this to market, and throw aside all the balance. This would result in the production of about 5 tons of \$150 ore, which would bring at current rates \$553; deducting transportation and sorting, \$50; leaving a balance of \$503.

2. To erect a leaching or amalgamation mill, capable of treating 30 tons per day, at an expense of \$18 per ton, and a saving of 90 per cent. The yield of the mine would then be all thrown together, and would average nearly \$54 per ton. The income and expense would be as follows:

Income—28 tons of ore at \$54.....	\$1,512 00	
Expense—Loss, 10 per cent.....	\$151 20	
Reduction charges, 28 tons, at \$18 00.....	504 00	655 20
		\$856 80

3. To concentrate the entire production up to the best possible grade, and sell the product outright as in the first case. Putting 4½ tons into one at a loss of 15 per cent., we would have,

6 tons worth \$212.50, which at current rates at the smelting works would bring.....	\$982 00
Expense—Concentrating 28 tons at \$1.50.....	\$42 00
Transportation 6 tons.....	30 00
	72 00
	\$910 00

A decided advantage in favor of dressing works is thus shown, and this is more apparent when it is remembered that good 20-ton concentration works can be put up for \$20,000, whereas a bullion mill of the same power will cost nearly double that amount.

This question is one worth considering. Any one can understand how a manufacturing operation like the production of bullion can be most economically done where large quantities of ore are handled. It is, therefore, directly to the interest of mining men to help build up these large smelting centers, for their success, under the proper amount of competition, will result in the future as it has in the past—in an advance on the prices they will be able to pay.

At the same time there are localities and circumstances where bullion mills, either on the leaching or amalgamation principle, are absolutely required, and it will be a long time before these can be abandoned. The establishment of large and successful smelting works at the proper points is a process that cannot advantageously be hastened unnaturally. Mines must first be opened, railroads built, and the fuel question settled. In place of the half-dozen large works now running in the mining districts there will be a score in time, but then the mines will be yielding double their present quantity of ore, and the railroad will have made its way into the heart of every permanently opened district.

THE MARSHALL SILVER MINING COMPANY.

(ILLUSTRATED WITH SUPPLEMENT.)

Staff Correspondence of the Engineering and Mining Journal.

The Marshall Silver Mining property, located on Leavenworth Mountain, near Georgetown, Colorado, an illustration of which is given in this issue of the JOURNAL, is one of the most extensive and valuable mining tracts in the State. Discoveries began to be made on this mountain as early as 1866, since which date, owing to the great size of the veins found and the richness of the ore, the annual yield has been large and steadily on the increase, though at times interrupted by a lack of means for development.

Leavenworth Mountain is the terminal elevation of an easterly spur from the main range of the Rocky Mountains, which breaks off from the latter at Grey's Peak, and ends abruptly at the town of Georgetown. The Marshall Company's

mines are located on the southeasterly slope, about a mile above town. The view of the hill given in our illustration shows that part undermined by the Marshall Tunnel, which enters the face of the mountain at the level of the creek. The tunnel is 1,300 feet in length, and has in that distance attained a depth of 700 feet from the surface. In driving this distance ten ore veins have been cut, but it is highly probable that further explorations in depth will show but two or three main fissures, the Bull Dog being the most easterly, the Colorado Central the central, and the Ni-Wot, Tilden, and O. K. the westerly. The tunnel has now been pushed through the first two, and nearly up to the third. It is the intention of the owners to drive it under the crest of the hill, where a depth of more than 1,000 feet will be gained, and still further until the mountain is pierced from one side to the other. On the western slope of Leavenworth, owing to the depth of the surface debris, and the greater length of time in which the winter snows lie, but little prospecting has been done; but enough discoveries have been made to show that this slope, like the opposite one, is crossed by numerous silver veins, and that when these are opened in depth they will show as well in every way as those on the eastern slope of the hill.

Concerning the mines already opened by the Marshall Tunnel, the following may be said: On the first group, of which the Bull Dog is the central lode, but little has been done. At the point of intersection no ore was found, and as the company was very desirous of pushing ahead rapidly to the Colorado Central group, where extensive surface developments were going on, no lateral explorations to any extent were made. A short drift, however, was cut on the Astor, which showed ore, but of too low grade to be handled at the time. This first group has all the appearances and qualifications of ore-bearing fissures, and there can be no reasonable doubt that drifts run on the larger veins will open more or less extensive bodies of ore. In driving west depth will be gained rapidly. This work should be immediately begun, for the discovery of low grade ore will not be a useless "find" now as it was seven years ago, when there was no profit in mineral worth less than \$200 per ton.

The Colorado Central group of veins has been the most productive of any bunch of veins around Georgetown, and is very extensively opened from the surface. The Marshall Company owns 1,960 feet on this vein. Connection has recently been made between the upper workings and the tunnel by a raised shaft, and before long the lode will be worked exclusively through the latter. Its width at the surface ranges from 100 to 250 feet. The tunnel opens it 450 feet below its out-croppings, and displays an enormous fissure, which directly at the place of intersection shows no concentrated bodies of ore, but carries silver ores disseminated throughout its entire breadth. From the upper workings a total of \$200,000 in silver ore has been taken out and sold, nearly the whole of which has been realized from high grade ore. About 8,000 feet of shafts, drifts, and winzes have been driven upon it, and in doing this, aside from the ore extracted and sold, many thousand tons of low grade mineral have been opened, which, owing to the successful operation of concentration works in Georgetown, are now, for the first time coming into market. Owing to the irregular and desultory way in which this property has been worked, because of the lack of sufficient working capital, these developments have cost more than they should. Advantage has also been taken of the company's position by irresponsible mining pirates, who have burrowed indiscriminately on the surface, and before the company could have time to prove by the absurd method of demonstration which our defective mining law calls for, that they were on the Marshall lodes, many thousand tons of rich mineral were stolen. Through these causes the history of the company has until lately been that of a continuous battle, in which every cent of profit was expended in further developments and legal contests. No circumstance so thoroughly proves the great value of the Colorado Central vein as the vigor and persistence displayed by that class of miners who thrive on locations not their own, and who are locally known as "jumpers." From the date of the organization of the Marshall Company until within the last year there has never been a time when the organization was not being robbed by the pirates.

The western group of lodes on this property comprises the John Bull, Ni-Wot, Broadway, Tilden, O. K., and others. On the surface they are characterized by being rather narrow, as compared with the central group. The ore is, however, of very high grade, actually averaging over \$500 per ton. The Tilden is the latest discovery in the group, and it has well sustained the high reputation of its comrades. Traveling up the slope of the hill, on the line of the tunnel, one reaches the nearest outcrop of the group about 500 feet west of the central group. The country rock here is harder, and it appears likely that these numerous narrow veins are simply evidences of one large vein below, and that at a comparatively shallow depth they will unite. It is almost certain that at least two are absorbed at the tunnel level, and perhaps three. The belt will be cut at a depth of 700 to 800 feet from the outcrop, and, in the opinion of all who have given the geology and formation of the mountain close study, will prove as productive as at the surface. The yield from such irregular and disconnected operations as have been carried on from time to time on this belt has amounted as nearly as may be ascertained to \$25,000. Last year a Home Company was organized to open the Colorado Central lode below the tunnel level. A large chamber was excavated at the intersection of the vein and the tunnel, an engine and hoisting appliances erected, and work prosecuted to the depth of 150 feet along the south wall. The panic in silver which occurred in the summer of 1876 interfered, however, with the continuation of the work, so that it has not yet been resumed, but it soon will be. More than almost any mining enterprise in Colorado with which we are acquainted, this property requires a large working capital, and we believe it will prove under proper expenditures exceedingly remunerative. A vast amount of development has already been done, the whole of which has been paid for out of the mines of the company. Owing to the lack of ready means, much of this work has been done at a higher cost than would otherwise have been the case, but even under this disadvantage a magnificent property has been developed. A few thousand dollars more expended in driving ahead the breast of the tunnel will carry it into the northern belt of veins, and in all probability will open bodies of ore of great extent and richness. Efforts are now being made to secure this needed capital, much will be expended, not only in prosecuting work at the breast of the tunnel, but in exploring laterally some of the veins already cut, and in continuing the deep shaft already begun on the Colorado Central. The vein on this mine is divided 269 feet west of the Marshall Tunnel, the Marshall Company owning 1,960 feet east, and the Colorado Central Company owning 1,500 feet running southwest of this point. The Colorado Central has been opened to a depth of 200 feet, and about 200 feet in length by levels and cross-cuts, and has produced from these developments about \$200,000, leaving about \$100,000 more in sight in the mine, and about \$50,000 of low grade ore now lying on the dump waiting the erection of concentration works. We can recommend the property of the Marshall Company to investors as one that will bear thorough examination.

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

LABYRINTH CANON.

Labyrinth Cañon is cut through a homogeneous sandstone. The features of the cañon itself have been described, but the cliffs with which it terminates present characteristics peculiar to themselves. Below, we have rounded buttresses, and mounds and hills of sand, and piles of great angular blocks; above, the walls are of columnar structure, and sometimes great columns, seen from a distance, appear as if they were elaborately fluted. The brink of this escarpment is a well-defined edge. But if these formations extended over the underlying beds at one time, and if they have been carried away by rains and rivers, why has not the country between been left comparatively level, or embossed with hills separated by valleys? It is easy to see that a river may cut a channel, and leave its banks steep walls of rocks; but that rains, which are evenly distributed over a district, should dig it out in great terraces, is not so easy to perceive.

The climate is exceedingly arid, and the scant vegetation furnishes no protecting covering against the beating storms. But, though little rain falls, that which does is employed in erosion to an extent difficult to appreciate by one who has only studied the action of water in degrading the land in a region where crasses, shrubs, and trees bear the brunt of the storm. A little shower falls, and the water gathers rapidly into streams, and plunges headlong down the steep slopes, bearing with it loads of sand, and for a few minutes, or a few hours, the district is traversed by brooks and creeks and rivers of mud. A clear stream is never seen, without going up to a moister region on some high mountain, and no permanent stream is found, unless it has its source in such a mountain.

In a country well supplied with rains, so that there is an abundance of vegetation, the water slowly penetrates the loose soil, gradually disintegrates the underlying solid rock, quite as fast as, or even faster than, it is carried away by the wash of the rains, and the indurated rock has no greater endurance than the more friable shales and sandstones; but in a dry climate, the softer rocks are soon carried away, while the harder rocks are washed naked, and the rains make but slow progress in tearing them to pieces.

When a great fold emerges from the sea, or rises above its base level of erosion, the axis appears above the water (or base level) first, and is immediately attacked by the rains, and its sands are borne off to form new deposits. It has before been explained that the emergence of the fold is but little faster than the degradation of its surface, but, as it comes up, the wearing away is extended still farther out on the flanks, and the same beds are attacked in the new land which have already been carried away nearer the center of the fold. In this way the action of erosion is continued on the same bed from the upturned axis toward the down-turned axis, and it may and does often happen that any particular bed may be entirely carried away, with many underlying rocks, near the former line, before it is attacked near the latter. Now, as the beds are of heterogeneous structures, some hard and others soft, the harder beds withstand the action of the storms, while the softer beds are rapidly carried away.

The manner in which these beds are degraded is very different. The softer are washed from the top, but the harder are little affected by the direct action of the waters—they are torn down by another process. As the softer beds disappear, the harder are undermined, and are constantly breaking down; are crushed, more or less, by the fall, and scattered over, and mingled with the softer beds, and are carried away with them. But the progress of this undermining and digging down of the cliff is parallel with the upturned axis of the fold, so that the cliffs face such an axis.

When the fold is abrupt, so that the rocks on either side are made to incline at a great angle, ridges are formed, and this topographic structure of a country may be found even in a land of rains, though the ridges will usually be low rounded, and more or less irregular, while in a dry climate they will be steep and regular, and will usually culminate above in a sharp edge; but where the rocks are slightly inclined, terraces will be formed, with well-defined escarpments.

It is interesting to note the manner in which the textures of these hard capping rocks affect the contours of the cliffs. When the hard rocks are separated into well-defined layers, or beds, the cliffs will be more or less terraced, as the strata vary in hardness. This is well seen in the Brown Cliffs and the upper portion of the Book Cliffs. In the last-mentioned escarpment the harder beds are underlain by soft bluish shales, which appear below in the beautifully carved buttresses.

In the Orange Cliffs there are a thousand feet of homogeneous light-red sandstone, and this is underlain by beds of darker red, chocolate, and lilac colored rocks, very distinctly stratified. The dark-red rocks are very hard, the chocolate and lilac are very soft, so below we have terraced and buttressed walls, and huge blocks scattered about, which have fallen from the upper part of the escarpment. The homogeneous sandstone above is slowly undermined—so slowly that, as the unsupported rocks yield to the force of gravity, fissures are formed parallel to the face of the cliff. Transverse vertical fissures are also formed, and thus the wall has a columnar appearance, like an escarpment of basalt, but on a giant scale; and it is these columns that tumble over at last, and break athwart into the huge blocks which are strewn over the lower terraces.

The drainage of an inclined terrace is usually from the brink of the cliff toward the foot of the terrace above, i. e. in the direction of the dip of the strata. As the channels of these intermittent streams approach the upper escarpment, they turn and run along its foot until they meet with larger and more permanent streams, which run against the dip of the rock in a direction opposite the course of the smaller channels, and these latter usually cut either quite through the folds, or at least through the harder series of rocks which form the cliffs.

In some places the waters run down the face of the escarpment, and cut narrow cañons or gorges, back for a greater or less distance into the cliffs, until what would, otherwise, be nearly a straight wall, is cut into a very irregular line, with salients and deep re-entering angles.

These cañons which cut into the walls also have their lateral cañons and gorges, and sometimes it occurs that a lateral cañon from each of two adjacent main cañons will coalesce at their heads, and gradually cut off the salient cliff from the ever retreating line. In this way buttes are formed. The sides of these buttresses have the same structural characteristics as the cliffs from which they have been cut. So the buttes on the plains are terraced and buttressed below, and fluted and columned above. Often the upper parts of these buttes are but groups of giant columns.

The three lines of cliffs which I have thus described have been traced to the east but a few miles back from the river. The way in which they terminate is not known; but, from a general knowledge obtained from a hasty trip made through that country, it is believed that they are cut off by a system of monoclinical folds. To the west they are known to gradually run out in plateaus and mountains, which have another orographic origin.

Climb the cliff at the end of Labyrinth Cañon, and look over the plain below, and you see vast numbers of buttes scattered about over scores of miles, and every butte so regular and beautiful that you can hardly cast aside the belief that they are works of Titanic art. It seems as if a thousand battles had been fought on the plains below, and on every field the giant heroes had built a monument, compared with which the pillar on Bunker Hill is but a milestone. But no human hand has placed a block in all those wonderful structures. The rain drops of unreckoned ages have cut them all from the solid rock.



FIG. 20.—BIRD'S-EYE VIEW OF THE TOOM-PIN WU-NEAR TU-WEAP', LOOKING TO THE NORTHEAST. Showing the Sierra La Sal on the right, the Cañons through the center, and lines of Cliffs on the left.

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

HYDRAULIC MINING IN CALIFORNIA.*

By Ang. J. Bowie, Jr., A. B., Mining Engineer.
(Concluded from page 189.)

RELATIVE YIELD OF HYDRAULIC CLAIMS.

In many localities the yield of the gravel is not figured per cubic yard, but on account of the facility with which it can be applied, the results obtained are proportioned per inch to the amount of water used.

The yield per miner's inch is figured under peculiar local conditions and

circumstances, which, apart from its own variations, are multifarious in every district. Therefore, any comparative estimates of the value of gravel deposits, based on such calculated returns or comparisons of work done per inch in the several mining camps, are exceedingly difficult to make, and in most cases unsatisfactory when obtained. The quantity of dirt moved by any given head of water properly applied is dependent on the height of the banks, character of the gravel, and grade of the sluices. The value of the ground per cubic yard varies in the different parts of the country, changes even occurring in a claim, the discovery of which is only made after an extensive run and clean up.

TABLE I.—SHOWING THE YIELD OF GRAVEL PER CUBIC YARD AT VARIOUS HYDRAULIC CLAIMS.

NAME OF CLAIM.	LOCATION.	NO. CUBIC YARDS WASHED.	GROSS YIELD.	YIELD PER CU. YARD.	HEIGHT OF BANKS FEET.	AUTHORITY.	REMARKS.
American Co.	Sevastopol, Nev. Co.	5,171,834	\$1,241,240 30	\$0 24	120	Hamilton Smith, Jr.	Estimated by several engineers, R. R., 1874, p. 19.
Blue Tent	Nevada Co.	5,138,150	780,000 00	15		Raymond's Rep., 1874.	
Eastground, Dry Creek	Shasta Co.	50,000	9,000 00	18		"	Raymond's Rep., 1874.
Westside	"	2,000	741 26	37		"	
Piety Hill	"	1,333	22,000 00	16 50	20	W. K. Conger	Calculated from data, p. 84.
Dry Creek	"	200 lin. ft. channel	170,000 00			Cooper	
Whitesides Mine	El Dorado Co.	97,222	100,000 00	1 02	70	Raymond's Rep., 1875.	" " " "
Spanish Mine	"	1,422	13,600 00	9 56	4	"	
Nagler Claim	"	20,000	100,000 00	5 00	30	"	Gravel worked in a mill. Cubic yards estimated from coarse dirt in cars, p. 100.
Indiana Hill	Placer Co.	14,738	75,422 47	5 29		"	
Bald Mountain Co.	Sierra Co.	115,950	328,352 38	2 83		"	Deep placer mining; gravel extracted and then sluiced. Cubic yard-estimated from coarse dirt. Calculated from data in Raymond's Rep., 1872.
Bennet's Claim	Calaveras Co.	963	1,320 00	1 37	13	J. Rathgeb	" " " "
Johnston Claim	"	2,268	1,560 00	68 5	12 1/2	"	
Hedwick's Claim	"	2,963	1,450 00	48 5	20	"	" " " "
Kansas Co.	Fr Corral, Nev. Co.	67,500	223,000 00	3 30	27	Hamilton Smith, Jr.	
Empire Claim	"	29,166	200,000 00	6 85	18	"	Cement claim. The richest gravel selected and milled.
Nebraska Co.	"	(tons) 600	9,000 00	15 00 pr ton.		"	
Blue Point	Smartsville, Yuba Co.	93,944	115,728 17	1 23	57	"	" " " "
No. 8 Claim, 1874-5	N. Bloomfield, Nev. Co.	1,858,000	74,271 77	03 9	80	"	
" " " " 1875-6	"	2,919,000	192,735 73	05 6		"	" " " "
French Hill	Stanislaus Co.	16,368	9,782 98	61	18	R. Abbey	
Light Claim	"	73,566	8,468 35	11 4	57	"	" " " "
Sieard Claim	"	155,347	20,197 07	13	38	Joseph Me serer	
New Kelly Claim	"	161,032	8,852 31	05 1/2		J. L. Jernegan, Jr.	Top gravel. Upper bench gravel. This deposit contains many large boulders.
Gold Run	Placer Co.	43,000,000	2,074,356 00	04 8		Wm. H. Pettee	
Paragon Mine	"	124,000	92,000 00	74 2	70	Joseph McGillivray	" " " "
Dardanelles & Oro	"	22,275	17,387 78	78	71	"	
McCart's Diggings	Forest Hill, Plac. Co.	3,630,000	476,000 00	13 1	150	"	Rep. Eureka Lake & Yuba Canal Co. Clms., p. 37.
Smartsville Mine	Columbia Hill, Nev. Co.	3,000,000	345,663 10	04 3		J. D. Hague	
Union Gravel Mine	Sucker Flat, Yuba Co.	2,042,880	400,000 00	19 5	112	Amos Bowman	See Report on the Smartsville Blue Gravel and Excelsior Canal Co., pp. 32-35.
Pactolus Gravel Mine	Empire Hill	792,000	120,000 00	15	90	"	
Blue Gravel Mine	Yuba Co.	1,468,300	295,000 00	20 8	85	"	" " " "
Pittsburg	Temperance Hill	2,449,120	1,500,000 00	63	83	"	
Pactolus	Yuba Co.	565,760	237,000 00	41	59	"	" " " "
Crawford's Claim	El Dorado Co.	77,880	35,046 00	45	85	Wm. Ashburne & J. D. Hague	
Pioneer Tunnel	Sierra Co.	883 37	1,400 53	1 59		J. J. Crawford	1,186 ft. tunnel in gravel; 10 to 20 ft. above bedrock.
Green Flat	Plumas Co.	22,000	15,000 00	67 5	15	Charles Hendel	
Fale's Hill	"	25,000	4,704 49	19	75	Aug. J. Bowie, Jr.	" " " "
McDoran Claim	"	5,555	300 00	05 4	20	"	
Bean's Hill	"	314	220 00	70	5 1/2	"	Shallow spots.
Jack's Hill	"	740	37 37	05	8 1/2	"	
Gardner's Point	"	148,148	118,000 00	79	80	"	Estimated from best obtainable data. Banks contained several thick strata of sand. Pay stratum adjoining bedrock previously drifted. Originally rich; portion drifted in early days. Results obtained from cleaning out a deep hole.
Light Claim, La Grange	Stanislaus Co.	746,640	64,714 27	08 6	42	"	
Kelly Claim	"	701,685	15,770 34	02 2	100	"	" " " "
French Hill Claim	"	1,020,347	188,433 11	15 5	30	"	
Kelly Claim	"	83,660	3,406 33	04	85	"	Shallow ground. Drifted in placer. Virgin ground.
Chesnan Claim	Patrickville, Stanislaus [Co.]	27,250	11,009 00	40 4	15	"	
New Light Claim	"	338,880	62,980 37	18 6	60	"	" " " "
Johnson Claim	"	667,347	45,511 81	06 8	35	"	
New Claim	"	196,632	9,148 27	04 6	30	"	" " " "
Trans-Baikal Mines	Siberia	17,796	773 72	43 3	43	R. Pumpelly	
Riviere du Loup	Canada	4,143,280	8,814,210 90	2 12		Sir W. E. Logan	Sluice washings, App.s "Across America & Asia." "Geological Survey of Canada," '53, vol. 1, p. 741 ENG. & MIN. JOURNAL, vol. 22, pp. 425, 426.
Musa Gold Field	Oshima Prov., Japan	3,226	4,321 00	1 34		Henry S. Munroe	
		2,800,000	21,000 00	00 75			Cu. yd. in grams.
Gold dig'gs of Miassk, 1822-41	Siberia	2,097,592		3 14		N. Sewastjanon	
" " " " 1841-51	"	2,829,769		2 85		"	These results have been calculated from tables published in the "Berg- und huttenmannische Zeitung," June 12, 1877. Official report of the Director at Miassk
" " " " 1851-61	"	3,861,956		2 00		"	
" " " " 1861-75	"	3,776,250		2 46		"	
Toshibetsu Gold Field:		Cu. Met. washed.	Value of Cu. Met. in Cents.	Yield per Cubic Yard.	Dpth. gravel tested.		
Upper Toshi	Iburi Prov., Japan	1 25	\$0 03 11	\$0 06 13	4 to 6	Henry S. Munroe	" These results were obtained by wa-hing measured quantities of gravel in different parts of this field. In measuring, no allowance has been made for the increased bulk due to the loosening of the gravel and to vacant spaces necessarily left between the stones in filling the measuring box." See Report of Henry S. Munroe, M. E., "Gold Fields of Yesso," pp. 23, 24.
Akabuchi	"	3 00	6 81	5 16		"	
Kunsube	"	3 00	4 66	7		"	
Highest Terrace	"	3 00	3 00	2 25	35 to 37	"	
Okajisawa	"	3 00	4 06	3 07	18	"	
Ponkajisawa	"	1 00	1 84	1 40		"	
Ch'ngkombe	"	1 00	0 20	0 15		"	
Nisheumbetsu	"	1 00	0 21	0 01	5	"	
Average			5 00	3 77			

TABLE II.—SHOWING THE YIELD OF GRAVEL PER CUBIC YARD AT VARIOUS GRAVEL CLAIMS.

NAME OF CLAIM.	LOCATION.	NO. OF CUBIC METERS WASHED.	VALUE OF CUBIC METER IN CENTS.	YIELD PER CUBIC YARD.	HEIGHT OF BANKS IN FEET.	AUTHORITY.	REMARKS.
Moshibetsu	Kudo Gold Field, Shiribeshi Province, Japan	2	\$0 00 42	\$0 00 30	5	Henry S. Munroe	See "Gold Fields of Yesso," p. 35.
Usubitsu	Kudo Gold Field, Shiribeshi Province, Japan	2	0 07	0 05	3	"	" " " "
Otobe	Esushi Gold Field, Oshima Province, Japan	0 25	0 71	0 09		"	" " " " p. 42, 43.
Jimkishi	"	1	10 46	1 31	8	"	
Gokatte	"	3	1 58	0 20	3 3	"	" " " " " "
Todo	"	0 50	0 07	0 01	5	"	
Mena	"	1	0 42	0 05	4	"	" " " " " "
Sangiurono	Musa Gold Field, Oshima Prov., Japan	1	0 29	0 04	5	"	
"	"	7	1 89	1 44	10	"	" " " " " " p. 64.
Shikubeno	"	2 50	1 31	1 00	6	"	
Unoshiri	"	3	1 00	0 75	10 to 12	"	" " " " " "
Minagoya	"	8	0 60	0 46	13	"	
"	"	4	0 56	0 43		"	" " " " " "
"	"	7	0 50	0 38		"	

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

TABLE III.—YIELD OF THE RUSSIAN GOLD FIELDS FOR THE YEAR 1874.*

NAME OF WORKS.	NO. PLACES WHERE WASHING IS CARRIED ON	NO. CUBIC YARDS OF GRAVEL WASHED.	TOTAL YIELD OF GOLD. TROY POUNDS.	YIELD OF GRAVEL PER CUBIC YARD WASHED. TROY GRAINS.	NAME OF WORKS.	NO. PLACES WHERE WASHING IS CARRIED ON	NO. CUBIC YARDS OF GRAVEL WASHED.	TOTAL YIELD OF GOLD. TROY POUNDS.	YIELD OF GRAVEL PER CUBIC YARD WASHED. TROY GRAINS.
GOVERNMENT WORKS:					PRIVATE WORKS.—Continued.				
Beresowsk	16	293,198	1,004'88	19'7	Bergusinsk	22	155,083	1,702'65	63'2
Bogolskowsk	28	111,548	646'48	33'5	Nertschinsk	213	852,205	7,493'10	59'6
Miassk	15	384,312	2,260'98	33'8	Wercholsensk	1	6,191	17'19	16'01
Nertschinsk		564,944	6,590'23	67'2	District of Amur	4	328,707	6,508'40	114'1
PRIVATE WORKS, EAST'N SIBERIA:					WESTERN SIBERIA:				
District Jenisei:					Marinsk				
Northern Division	104	1,190,022	7,158'26	34'8	Altai	34	731,774	3,507'31	27'6
Southern Division	110	1,198,116	7,521'39	36'1	Semipalatinski District	12	210,568	407'97	11'2
Atschinsk	19	168,868	727'70	24'8	Akmolenski District	1	137	14	5'9
Minusinsk	30	318,046	1,423'91	25'8	URAL:				
Kansk and Nischneudinsk	20	115,071	727'84	36'4	Government Orenburg	213	791,109	4,575'57	33'3
Oleksmsk	34	687,332	26,768'18	224'3	Government Perm	124	480,194	2,543'17	30'5
Werchneudinsk	13	59,070	264'59	25'8	Other Works in Ural	81	713,525	3,349'78	25'9

TABLE IV.—No. 8 CLAIM, NORTH BLOOMFIELD GRAVEL MINING COMPANY.†

Year.	Length of run. Days.	Washings commenced.	Washings ended.	Amount of water used. Mining inches.	Grade of sluices.	Depth of banks.	Cubic yards gravel hydraulicked.	Gross yield.	Total costs.	Cubic yards gravel washed per inch of water.	Relative yield.		Relative cost.	
											Per inch water.	Per cu. yard.	Water etc. per cubic yard.	Labor, etc. per cu. yard.
1874-5	295	January 1	October 14	386,972	6½ inches to 12 feet.	180 feet	1,858,000	\$74,271 77	\$53,088 83	4'80	19'1	3'9	'0077	'0207
1875-6	342	November 13	October 18	700,000	do.	260 feet	2,919,700	192,735 73	94,823 75	4'17	27'5	6'6	'0074	'0245

To better familiarize the reader with the subject of gravel mining, to enable him to form an idea of the amount of water used per cubic yard of dirt moved, corresponding yield, and attendant costs, an exhibit of a claim running on an approximate minimum basis, viz. light pressures and smallest practicable grades, has been selected as affording the most desirable information on the subject of hydraulic mining. For this purpose the claims of the La Grange Hydraulic Mining Company have been chosen, as the yield per cubic yard and the grades there used can be considered as nearly the lightest with which a hydraulic claim can yield any remunerative returns.

The annexed tabular statements show in the most convenient form the desired data.† The tables have been carefully arranged, and the results were obtained at cost of great labor, several examinations, and surveys of the ground. The data of the yield and disbursements are accurate. The apportionment of the material account has in some places been calculated pro rata per cubic yard from general material account. The measurements of the ground washed were made at each clean up, and subsequently the entire ground was resurveyed, and the work checked. (See Tables I, II, and III.)

A resume of the entire work done by this company from June 1, 1874, to September 30, 1876, showing gross receipts and total disbursements, including the rebuilding of the dam at the head of the ditch, the construction of roads, ditches, etc., but excluding the purchase of some mining ground, gives the following result:

1,533,728 inches (2'159 cubic feet each) washed
2,275,997 cubic yards of gravel, which yielded
\$231,893 = 12,026'84 troy oz.

DISBURSEMENTS.

Water	\$17,307 62	Contingent	\$3,125 80
Labor	82,345 70	Taxes	1,130 41
Materials	21,788 35		
Officials	11,244 94		\$130,942 82

Average value of the oz. metal, gold and silver.....\$19 29
Total cost per oz. metal produced.....11 38

Water, per ounce	\$1 43	Contingent	\$0 26
Labor	6 85	Taxes	0 09
Material	1 81		
Official	0 94		\$11 38

Total cost of hydraulicking per cubic yard is.....\$0 06
Segregated as follows:

Water	\$0 008	Official and Contingent	\$0 006
Labor	0 036		
Material	0 010		\$0 060

Average yield per cubic yard.....\$0 1019
Average amount of gravel hydraulicked per inch water, cubic yards.....1'48

The following tabular statement shows the workings of a mine on 4 per cent grades, deep banks, and heavy water pressure. The advantages of heavy grades and pressure, over the minimum La Grange grades, are clearly shown by the quantity of material moved, and a comparison of the work and costs will be of interest to those engaged in hydraulic mining. (See Tables IV. and V.)

TABLE V.—STATEMENT OF DISBURSEMENTS AND RELATIVE COSTS PER CUBIC YARD.

	1874-5	1875-6	1874-5	1875-6
Labor account	\$22,790 39	\$40,975 85	\$0 0122	\$0 0140
Blocks and lumber	3,007 21	5,212 62		
Explosives	2,044 04	10,279 73	0 0032	0 0053
Material account	5,663 81	9,249 96	0 0030	0 0032
General expense account	4,201 95	7,364 12	0 0022	0 0025
Water	14,480 41	21,740 97	0 0077	0 0074
	\$53,088 80	\$94,823 25	\$0 0203	\$0 0323

* These tables have been calculated from the official statements published in the *Berg- und hüttenmännische Zeitung* of April 20, 1877. The gold pounds have been figured from the Russian doli, which, according to the mint standard, is .50 fine. The number of yards washed has been estimated from the Russian pud. 100 puds have been assumed to equal 1,058 cubic yard. See *Berg- und hüttenmännische Zeitung*, January 19, 1877. On this basis the cubic yard gravel weighs 3,397 pounds avoirdupois. The cement gravel of Nevada County, Cal., will approximate 3,800 pounds avoirdupois per cubic yard.

† For details see Reports of the North Bloomfield Gravel Mining Company for years 1874-5-6. ‡ In obtaining the data for these tables, I am greatly indebted to the valuable assistance of Mr. Joseph Messerer, Superintendent of the La Grange Ditch and Hydraulic Mining Company. § Material account excludes \$8,807.71 on hand.

1875-6—Gold bullion, ounces	10,401'28
Value per ounce, gold and silver	\$18 53
Total cost per ounce	\$9 08
Segregated as follows:	
Labor	\$3 93
Blocks and lumber	0 50
Explosives	0 98
Material	0 88
General expense	\$0 70
Water	2 09
	\$9 08

CONCLUSION.

The question of the yield and costs of working hydraulic claims is one of great interest to the engineer. In estimating the production of gravel mines, the calculation of a given number of cents per cubic yard refers to the entire quantity of gravel moved or to be moved, since it is impracticable to wash out the gold-bearing strata without moving the entire superincumbent mass. The yield is, therefore, apportioned to the total quantity of ground hydraulicked.

Having prospected a claim, and ascertained the approximate value of the gravel per cubic yard, grade and quantity of available water being known, its yield can be estimated for a reasonable period.

In discussing the question of working unexplored localities, and even those already developed, it must be stated that there are no known means which enable one to predetermine accurate economical results.

Therefore, in estimating the yield of gravel properties, even under the best of circumstances, the most careful opinion drawn from immediate facts is owing to the nature of deposits necessarily qualified.

APPENDIX.

A METHOD OF BANK BLASTING.

The following observations respecting bank blasting are inserted here, and are complementary to those given in "Blasting," on page 188 of this JOURNAL:

The following method of bank blasting has been found to give excellent results with banks from 50 feet to 125 feet high, such as are generally encountered in hydraulic mining, and likewise in cement gravel of ordinary tenacity. In the absence of more definite knowledge on the subject, its adoption can be recommended.

The main drift should be run in two-thirds in length the height of the bank to be blasted. The cross-drifts from the end of the main drift should be driven parallel with the face of the bank, and their lengths should be determined by the extent of the ground which is to be blasted. A single T is all that is necessary. The amount of powder required for charging the drift is from one-half to two-thirds of a keg of powder, minimum quantity, per 1,000 cubic feet of ground covered by the drifts—i. e., height of bank × length of cross-drifts × length of main drift = cubic contents. The quantity of powder used must depend on and vary with the position** of the bank and the character of the gravel.

Late experiments made with the Judson powder, applied as above directed, have given good results, and, though not definitely determined, the indications at present are that the use of this new explosive will be productive of considerable economy in the costs of bank blasting.

The shattering effects of powder used in the manner and proportion already described have been roughly estimated from the appearance of the ground subsequently washed at from 225 to 230 cubic feet of ground shattered per pound of powder exploded.††

Apropos of tamping, one of the attendant costs of bank blasting, it may be well to remark that as yet, with the present explosives employed, all experience in bank blasting proves that, with a strong tamping, the best results are obtained. With 150, 250, and 350-foot banks a different method of blasting is adopted. The main drift in such cases is driven in from the face of the bank 45 to 50 feet in length. The cross-drifts are run parallel with the face of the bank, and their length determined by the ground to be moved.

In charging these drifts the amount of powder used would be calculated so as to blow out the bottom ground (the line of least resistance), the bank then falling by its own weight. The firing of all blasts is best done by electricity, and where exploders with platinum are used the compound circuit is most desirable.

† Ordinary black blasting powder, 25 lb. per keg.

** The quantity of powder is increased when the banks are strongly bound, or when the gravel is exceedingly tough.

†† Experiments made with blasts of 250 to 400 kegs powder.

THE DISTRIBUTION OF GOLD IN TAIL SLUICES.

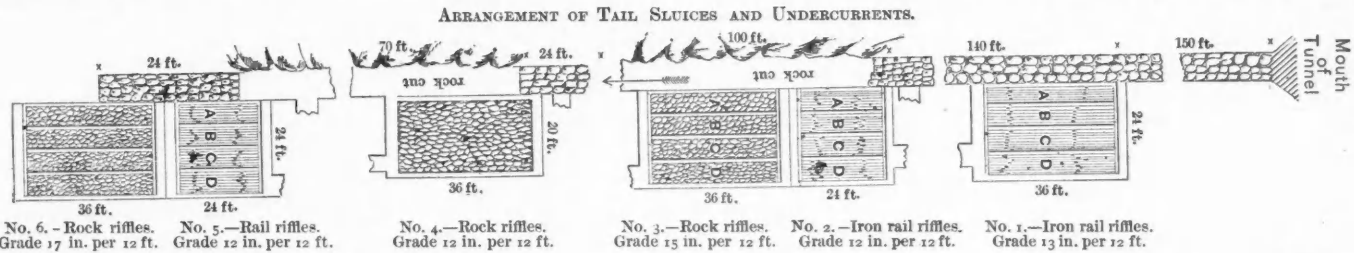
The following additional information on the distribution of gold in tail sluices will be found interesting in connection with that given on page 129 of this JOURNAL :

The North Bloomfield tunnel (8,000 feet in length) has 1,800 feet of sluices, paved with blocks, at its upper end, but in the succeeding 6,200 feet no sluices are used, the tailings being allowed to run on the bare bedrock (a tough slate).

At the mouth of the tunnel a sluice paved with rocks receives the tailings. From here on they are carried through sluices and cuts, distributing them over undercurrents set on different grades, paved in some instances with rocks and blocks, and occasionally arranged with longitudinal riffles covered with strap iron. The grizzlies used are made of wrought iron 1 by 4 inches in size, set on edge.

The discharge from the several undercurrents is taken up by the main sluice, and subsequently re-discharged over the succeeding undercurrents, till the lowest sluice and undercurrent finally discharge the tailings into the cañon. From Dec. 1, 1876, to June 1, 1877, three hundred and fifty thousand (350,000) 24 hour miner's inches of water (2,230 cubic feet each) conveying the tailings passed through the tunnel, and were discharged through the tail sluice and undercurrents.

The annexed sketch shows the general arrangement of the tail sluices and undercurrents, which latter were subdivided into compartments as shown.



The distribution of the gold along the line of sluices and in the several undercurrents was as follows : *

TAIL SLUICE, ETC., FROM DEC. 1, 1876, TO JUNE 1, 1877.		
Miner's inches of water, 24 hours each.....	350,000	
150 feet at head down to No. 1 undercurrent, yield.....	\$3,150 00	
" " remainder of sluice.....	350 00	
Total.....	\$3,500 00	
No. 1 Undercurrent.—Size, 24 by 36 feet; grade, 13 inches to 12 feet; chute, 2 feet wide at opening, contracted to 10 inches; iron rail riffles.		
A yielded 108 1/2 oz. amalgam.	} 3 clean ups.	
B " 83 3/4 " " "		
C " 46 1/2 " " "		
D " 31 1/4 " " "		
Chute " 46 1/4 " " "		
	316 3/4 oz.....	\$1,920
No. 2 Undercurrent.—Size, 24 by 24 feet; grade, 12 inches to 12 feet; chute, upper end 2 1/2 feet, lower end 2 feet; iron rail riffles.		
A yielded 48 3/4 oz. amalgam.	} 2 clean ups.	
B " 36 3/4 " " "		
C " 20 3/4 " " "		
D " 23 1/2 " " "		
Chute " 14 " " "		
	143 3/4 oz.....	\$874
No. 3 Undercurrent.—Size, 24 by 36 feet; grade, 15 inches to 12 feet; chute, 2 1/2 feet upper end, 2 feet lower end; rock riffles.		
A yielded 50 1/2 oz. amalgam.	} 2 clean ups.	
B " 35 1/2 " " "		
C " 18 1/2 " " "		
D " 16 " " "		
Chute " 8 1/2 " " "		
	128 3/4 oz.....	\$883
No. 4 Undercurrent.—Size 20 by 36 feet; grade, 12 inches to 12 feet; rock riffles.		
	71 1/4 oz. amalgam.....	\$430.
No. 5 Undercurrent (constructed in March).—150,000 miner's inches of water; size, 24 by 24 feet; grade, 12 inches to 12 feet; chute, 2 1/2 feet upper end, contracted to 2 feet lower end. Riffles, 1 1/4 by 4 inches lumber, covered with strap iron, rails 1 inch apart.		
A yielded 5 oz. amalgam.	} 1 clean up.	
B " 8 1/2 " " "		
C " 5 " " "		
D " 6 1/2 " " "		
	25 oz.....	\$150
No. 6 Undercurrent.—Size, 24 by 36 feet; grade, 17 inches to 12 feet of rock riffles; chute, 2 1/2 feet upper end, 2 feet lower end. 150,000 miner's inches of water.		
A yielded 8 oz. amalgam.	} 1 clean up.	
B " 5 " " "		
C " 3 3/4 " " "		
D " 3 " " "		
	19 1/4 oz.....	\$115

The total yield of the undercurrents and tail sluices for the period mentioned was \$7,872, whilst the total yield of the claims was \$145,000. The amalgam from the main sluice is worth from \$7.50 to \$8.50 per oz. troy, whereas that of the undercurrents varies from \$6 to \$6.20 per oz. troy. The increased quantity of gold found in the tail sluices for 1876-7 as compared with

1875-6 is no doubt owing to the character of the gravel washed. Last year the bulk of the material moved was "top gravel," whilst this season a much larger proportion of cement gravel has been moved through the sluices.

In the heavy cement at French Corral and Manzanita a high percentage of the gross yield of the mines is found in the undercurrents. The most expeditious and efficient means of saving gold from cement gravel is by a liberal use of the best shattering powder, breaking up the cement before it is washed into the sluices, and by the introduction of several "drops" when possible along the line of the sluices. Frequent drops and short lines of sluices give better results than a long continuous line of sluices does. Gravel moving in sluices is subjected to a grinding and scouring process which alone is not sufficient to disintegrate the cement gravel except at considerable cost.

THE PRESENT CONDITION OF THE ZINC INDUSTRY OF UPPER SILESIA.

By Max Georgi.

(Concluded from page 187.)

Between the years 1860 and 1872, twenty-nine of the existing Silesian zinc works were closed, and from 1844 to 1873 eleven, and in 1876 two new ones were built. At the present time twenty-nine are at work; of these, eleven are provided with furnaces with plain grate firing after the old Silesian pattern. In the newer works, however, gas furnaces are invariably employed. Owing to the dry

character of the coal, it is necessary for complete gasification to burn it by means of a weak blast, which is, in the larger number of instances, produced by a fan, but in the newer furnaces generally by Korting's steam-jet blower. The blast is introduced immediately below the grate in the gas producer by a cast-iron mouth-piece of square section; that required for combustion of the gas is supplied through a series of twelve rectangular slits in the mouthpiece of the gas supply passage, which is a square shaft of firebrick work. The number of muffles in a furnace of this kind varies from twenty to twenty-eight, with the gas burner at one end, but in some instances double furnaces with two gas producers are arranged in two parallel series, and twice that number of muffles are used, with the points of combustion placed equidistant from the end walls. These have the advantage of more perfectly heating the end muffles, of diminishing the amount of radiating surface, and generally the cost of labor and supervision, but they require much greater skill in management, especially to prevent loss in the event of defective working; besides which, an increase in the number of muffles is attended with loss of time during cleaning, charging, etc., so that the reducing work of the furnace may be actually diminished if the number is too great. Experience shows that the maximum should not exceed forty, the best results being got with thirty-two. The waste flame of the older grate-fired furnaces is sometimes used for calcining calamine, and in a few instances for heating the air for combustion of the gas. Only in one instance (at Tarnowitz) is a regular iron pipe stove used.

The above conditions limiting the size of the furnaces do not, however, apply to those on Siemens' principle, where, from the greater uniformity of temperature obtained in the heating chamber, a larger number of muffles can be heated than in the common gas furnace. In addition to the saving in coal, wages, and distilling vessels due to these causes, the duration of the working period of the furnace is considerably longer, being for furnaces of equal size, two years as against one year and a half. Against this, however, must be set the increased cost of erection, more than 50 per cent., and consumption of fire clay, difficulty of management with unskilled workmen, and, more particularly, the necessity of rich gas-making coal, which render its use improper for localities where the coal is of an anthracite character. Where, however, the proper conditions are fulfilled, there is a notable advantage in the use of the furnaces, as appears by the following comparison made upon the working of the year 1874 :

	Ordinary furnace.	Siemens furnace.
Ore worked per 24 hours.....	24 muffles.	56 muffles.
Consumption per 5 tons of ore :		
Coal.....	35'14 cwt.	108'27 cwt.
Muffles.....	54 quarters.	33'8 quarters.
Yield per cent. on ore.....	1'75	1'42
Cost per cwt. of zinc for wages, ore, materials, tools, and repairs.....	11'17 per cent.	11'39 per cent.
	18s. 1 1/2 d.	16s. 5d.

In the works last built, four furnaces, with sixty muffles each, with two double gas producers, have been provided.

The working and management of the furnaces are described in considerable detail by the author, the chief points of interest being in the method adopted for detecting broken muffles. In furnaces heated by gas under pressure, the cracks in the muffle are seen by the entry of the furnace flame, which alters the blue flame issuing from the mouth of the zinc receiver to a brownish red; while in Siemens furnaces, where there is a chimney draft, air is drawn through the muffle and zinc flame appears in the chimney. Flaws in the roof of the muffle are seen by the issuing of zinc flame, as soon as the receivers are adapted after charging. These cannot be repaired unless they stop themselves by deposit of zinc oxide in the apertures. Holes in the bottom of the muffles are detected after clearing out the residue of the preceding charge, by producing a body of luminous flame in the fire-place, either by the sudden addition of coal in grate furnaces, or by stopping off the top-blast in gas and Siemens furnaces, which then finds its way through the cracks. These may often be repaired by plastering the surface with tempered clay, but large cracks in the roof render a shifting of the muffle necessary.

The yield of zinc is from 62 to 75 per cent. of that indicated by analysis of the ore. As a rule, it is sold as produced, but in some instances it is refined to render it fit for rolling, by remelting in a reverberatory furnace with a bed 15 1/2 feet long, 6 1/2 feet broad, and inclined 3° longitudinally from the bridge towards the flue end, where there is a pit about 2 feet deep below the ladling hole. The

* I am indebted to Mr. H. C. Perkins, Superintendent N. B. M. Co., for the data given. The results show the total yield of the many places, the number of "clean ups" made being noted in each case.

† 700,000 miner's inches water used in 1875-6, the yield was \$1,800.

flame is kept as smoky as possible, and returns by a double arch above the bed to the chimney, in order to protect the furnace from loss of heat by radiation. About 9 tons of crude zinc are treated daily, and the original proportion of 2½ per cent. of lead is reduced to ½ per cent., the loss in skimmings being 0.15 per cent.

The zinc dust (oxide of zinc) collected from the receivers, etc., is returned to the ordinary charges, except when there is a special demand for it, when it is sold. In some instances cadmium is prepared from it by a process of fractional distillation, but there is not sufficient call for this metal to render its production generally profitable at the present time.

The paper is illustrated by drawings of the various furnaces.—(*Berg- und hüttenmännische Zeitung*, vol. xxxvi., pp. 71, 73, and 97).—*Proceedings of the Institution of Civil Engineers*.

THROUGH THE UTAH MINING DISTRICTS.—IV.

(Special Correspondence from our Western Office.)

Little Cottonwood District possesses the greatest number of producing mines, which seems wrong compared to the name of Big Cottonwood. The mines of Little Cottonwood are almost exclusively found in the limestone formation, the ore being dispersed in zones of dolomite, and occurring mostly in pockets and chimneys, which are found by following seams of iron ore, sometimes broad and well defined, and again pinching up to the width of a knife blade, but easily discernible, having a yellowish iron-stained appearance quite in contrast to the bluish white color of the dolomite. Sometimes a little "prospecting" is necessary where the zones of dolomite are particularly wide, but when the ore pockets are found they yield largely. Take for instance the great ore body found in the *Emma*, which was 300 feet long by 50 feet wide, and note the vast sums it yielded, about three millions of dollars. Such a pocket has never been found since, though the mines on this slope give good evidence that all the big fish have not been caught yet.

The ore-bearing zones pitch into the hill at about an angle of 45°, which generally precludes the sinking of vertical shafts, as the slight extra cost of hoisting from an incline would be more than overcome by sinking a vertical shaft to any considerable depth and running a cross-cut to tap the ore zone. The limestone proper is, of course, hard and tough, but the dolomite is comparatively soft, and breaks down readily under the persuasive influence of "black powder" and Hercules, while the ore itself is easily extracted with the pick.

Where large chambers have been emptied of their precious store, it is necessary to timber pretty heavily, especially if near the surface, but in the shafts and small stops the rock does not seem to have a tendency to close in so much as in fissure veins. The comparative absence of water is a great boon in most of these mines, doing away with much cost and expense for heavy pumping machinery, etc., although there are some of them that in the spring time make considerable water from the melting snows, etc.

It is very hard to arrive at the average cost of mining a ton of ore here, as where the ore occurs in great masses, even so that a man can pull down a ton of it in five minutes with his bare hands, a line cannot well be drawn, the cost varying 300 per cent., perhaps, in the same mine during a period of 30 days.

The ore is shipped entirely in sacks at present, although the *Flagstaff* and *Alta Consolidated* companies contemplate shipping theirs shortly in bulk, the former having now a tramway and ore bins in course of construction, so as to load cars on the track, and the latter only awaiting the arrival of the lately built bulk cars by the railroad, they having already a wire tram in operation which carries their ore down to the railroad track.

The cost of shipping the ore varies as to location of the mine. From the *Wellington*, located over towards American Fork, \$4.50 a ton to the railroad is paid, and \$4.50 from there to Sandy, making the cost per ton to market \$9. From the *Grizzly*, located three-quarters of a mile above town, \$5 carries a ton of ore to market at Sandy. The *Flagstaff* and *Alta Consolidated* companies probably pay somewhat less.

Wages have been reduced within the last three months. Those paid at the *Prince of Wales* are probably a fair criterion of the whole, to wit: Head foreman, \$4.50 a day, with board; night foreman, \$4 a day, with board; head engineer, \$4 a day, without board; second engineer, \$3.50 a day, without board; drill runners, \$3.50 a day, without board; miners, \$3.00 a day, without board; laborers, \$2.50 a day, without board; head cook, \$75 a month, with board; second cook, \$50 a month, with board; waiter, \$45 a month, with board; chore man, \$30 a month, with board.

To describe each mine in detail would occupy too much space at this writing, so I will mention briefly what the principal ones are doing, hoping later to perhaps illustrate, somewhat after the style of the "Caribou Supplement," the town of *Alta*, *Little* and *Big Cottonwood* districts, and the most developed of the mines.

Emma.—One feels almost as if he were treading classic ground when going over the ruins of this once splendid property. There stand the buildings, looking like a ship stranded on a coral reef. The concentrating mill was struck by a snow-slide winter before last, and lies a mass of shapeless rubbish. The tunnel-house stands firm. The boarding-house has become more or less a prey to ruin, and together with the superintendent's house, which is in pretty good preservation, is propped up by heavy timbers to help it resist the onslaught of any avalanche that may take a notion to come down that way. It is needless to go into details about the condition of the mine, with its 12 x 12 solid timbers snapped in two like matches. Suffice it to say that a gleam of hope hovers on the horizon that in the course of two or three months the mine will be cleared of water and put in shape for further legitimate working.

The *Flagstaff* is under lease to Messrs. Billings & Co., and is working a force of 125 men, and shipping from 28 to 30 tons of ore daily. When the new extension to the tramway is completed, the cars will run a distance of 2,800 feet from the mine to the foot of the hill at the railroad. Below the 500-foot level beneath the tunnel the shaft is full of water, as a number of bodies of ore are being worked and developed above, and considerable timbering is being done at places which were weakened by the water standing in them some time ago.

The *Alta Consolidated* Company are working a force of from 30 to 40 men on the *Valejo* tunnel property and the *South Star* and *Titus* mine, and are shipping considerable ore. The *Frederick*, *Emily*, *Windsor*, *McKay*, *Highland Chief*, *North Star*, and a number of others are being worked under lease, the *North Star* especially turning out a fair quantity of ore.

The *Grizzly*, or better known at present as the *Lavinia*, located in Little Cottonwood, and not far from Big Cottonwood, is employing about 40 men and shipping monthly some 6,000 sacks of \$40 ore, each sack weighing 70 to 80 lb.

One of the finest "prospects" lately struck in Little Cottonwood is the *Nabob*, which certainly has every indication of developing into a very fine mine. Some 1,000 sacks of ore have been shipped to date, and late returns have shown

it to be ore of the most valuable quality, assaying 44 oz. silver, \$24.15 in gold, 43 per cent. lead, and 38 per cent. of iron. The shaft is down 50 feet and sinking, while drifts are running east and west on ore.

The *Bay City Tunnel* stands idle under lease to the *Flagstaff Co.*, who stopped work there after 30 days' run. It will probably be started up again as soon as the *Flagstaff* lease runs out, which will be in December this year.

The *Sieskiew* is being worked by the owners, and turning out ore.

The *Wellington*, across the valley from *Emma Hill*, is under lease to John Varcoe, who is working two men there, and lately shipped some ore. I mention Mr. Varcoe's name particularly because that gentleman has a history, and of such a nature that it may, perhaps, interest the readers of the *JOURNAL*. It was Mr. Varcoe's lot to look death square in the face for five days and nights, and to escape to tell the tale. It occurred as follows:

Last December the *Wellington* was leased to several parties, Mr. Varcoe among them, and on the 28th day of December the *Wellington* cabin was occupied by four men, one woman, and a child.

The "boss" of the little colony was a man by the name of John W. Parks, who had married his then present wife while her husband was yet buried in the icy folds of a snow slide, and it seemed as if fortune had decreed for the sacrilegious pair the same terrible fate. On December 28th the air gave no premonitions of danger or warning of the tragedy to come. About 3 P. M., as Parks was shoveling the snow off of the cabin roof, John Varcoe and John Brown resting in the upper room, and James White, Mrs. Parks and child in the lower room, suddenly, before the unfortunates in the cabin could collect their senses, a terrific avalanche struck the house and hurried four out of the six to immediate death. Varcoe and Brown at the first instant of fright rushed for the stairs, and before half-way down were caught between the crushing floor and the stairs, and instantly inclosed in a mass of snow 25 feet deep over their heads, so tightly packed around them that they could only move an arm or a hand at first. The space between the overhanging floor, pressed down by the mass of snow above, and their icy couch was only eight or ten inches wide. As the snow melted a little under them, and they awoke to a realizing sense of their position, they could move their arms and hands a little more freely, but were firmly held about the waist and body as in a vise. Thus they lay for five days. Brown wanted to commit suicide, but Varcoe persuaded him not to. They endeavored to dig their way out, but the snow had packed so hard that it resisted all attempts to loosen it with a pocket knife. They tried to get some sustenance from a piece of beef that fortunately hung in the stairway and lay near Brown, but it was frozen so hard that the teeth could not penetrate it.

A man coming over from American Fork took the news to *Alta* that the cabin had been overwhelped, and immediately a party of 25 started up to dig any possible survivors out. The poor fellows below could hear them walking over the snow, but could get no sound to them. They went away and returned the next day to dig with shovels and picks, and at last brought the two men out to the light of day. Brown, being an older man with his constitution shattered, died on the second day of deliverance, while Varcoe, being only 26, young and vigorous, survived, and is to-day working the same mine.

The *Antelope* and *Prince of Wales* mine, located in Big Cottonwood District, is the most extensively developed mine here. It employs at present 78 men. Uses Wood & Ingersoll air drills, deriving the air supply from a Bower patent compressor No. 5. The shipments from this mine for the month of July were 350 tons of ore. The mine is managed in a very efficient manner by Mr. W. E. Hall.

The *Richmond & Butte* are also shipping ore, and are good mines. The *Reid & Benson* is working some 35 men, and shipping ore of high grade. The *Toledo Company* is preparing to work the *Fuller* mine vigorously, having purchased a No. 4 duplex Bower air compressor, which will be run by water power down in the valley, and the air carried up to the mine through 3-inch pipe to run a 60 horse power hoisting engine and a 20 horse power pump. The length of pipe required is 4,500 feet. The company has been at work getting the machinery ready this summer, and will be ready to start up probably some time next week.

Altogether the Cottonwoods are doing fully their share of ore production this season in spite of the low market, and when the *Emma* starts up again, and the *Fuller* gets to work, and one or two lawsuits are settled, the inhabitants of *Alta* will have good reason to be proud of their camp as an ore producer, if not as a model of temperance.

ROSE.

ALTA, UTAH.

MINING NEWS.

Staff Correspondence of the Engineering and Mining Journal.

COLORADO.

The following extracts from the *Register* refer to some of the noted gold mines in Gilpin County:

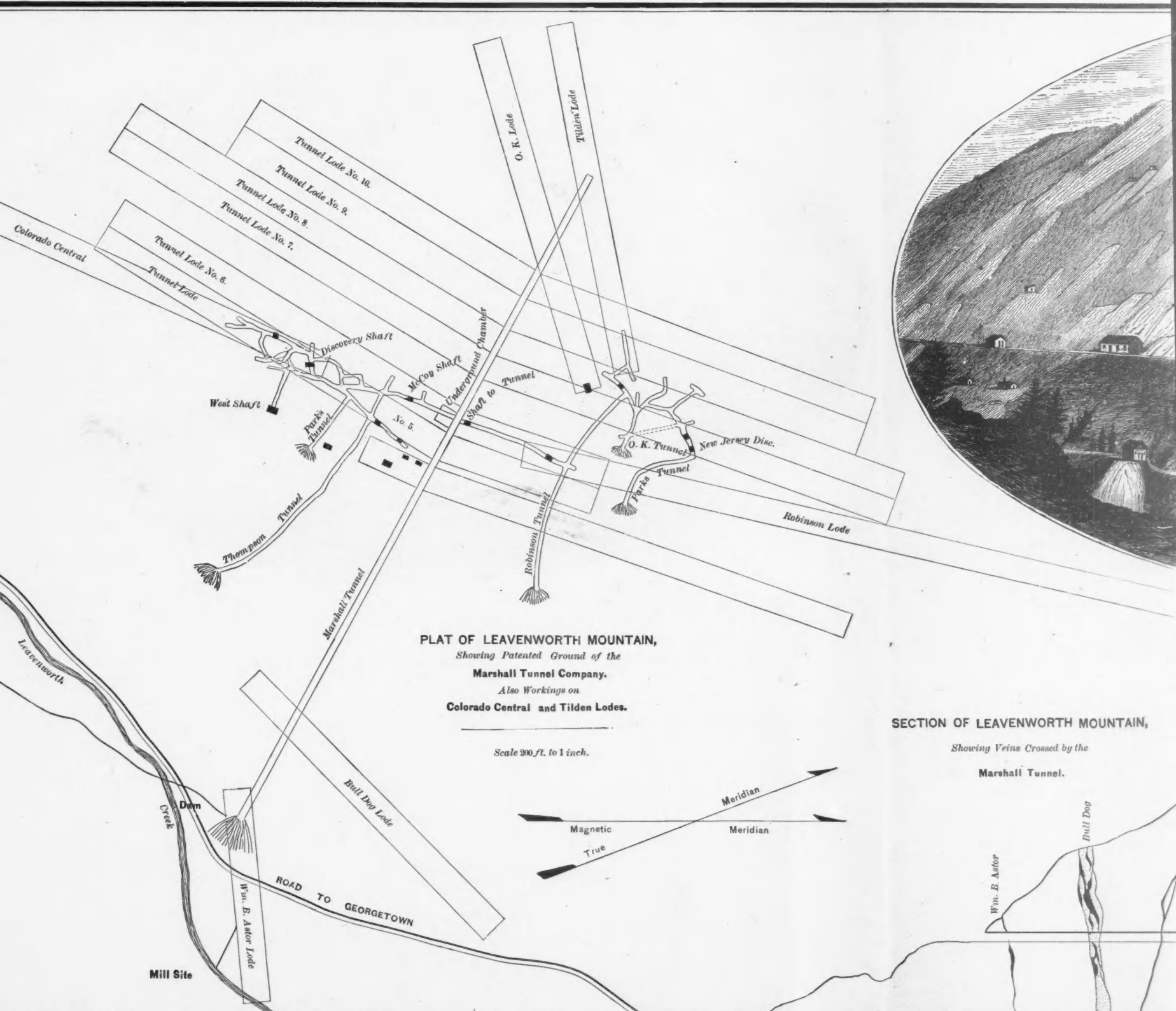
"One of the most important consolidations ever recorded in Gilpin County was recently effected. It embraces 1,300 feet of the best known portion of the Bates, 3,000 feet on the Maryland lode, and the twenty-stamp Becker Mill in Chase Gulch. The leading men in the Union-Bates have brought about this enterprise. Properties on the Bates are purchased at the rate of \$20,000 per hundred feet, or \$200 per foot of the ground along the line of the vein.

"The Maryland lode is not developed very extensively. Soon after its discovery a very rich pocket yielded \$42,000 in one season, but after Becker & Co. bought it they came on to the 'hard iron,' and that was then thought to be barren rock. It lay idle for over fifteen years. Less than a year ago some leasers went to work, and have since been sending good ore to the mills. It now yields a cord or less per day. This summer W. H. Bush & Co. and another party have been at work on either side of the paying ground, but have not found much ore yet.

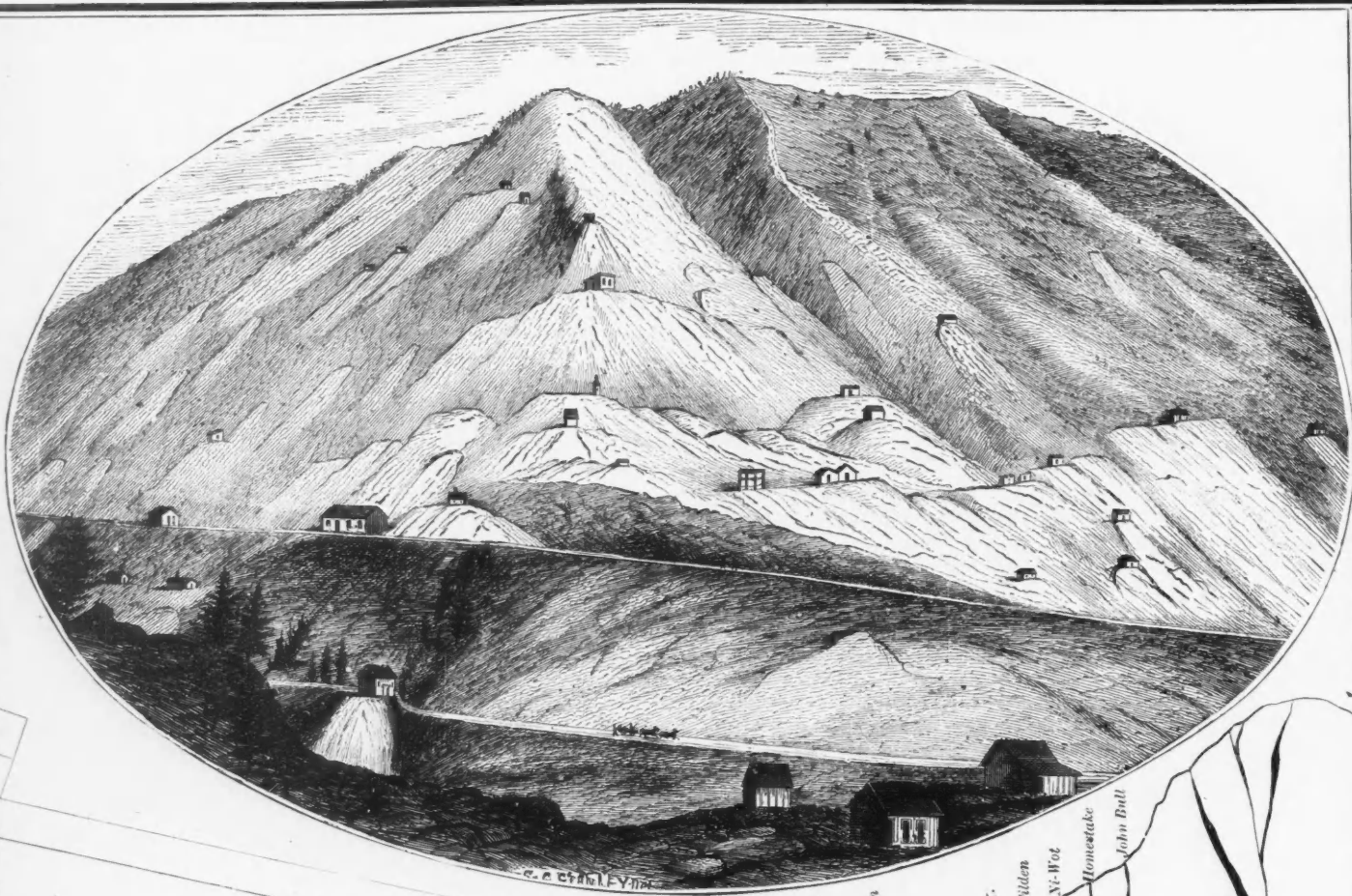
"The Bates was discovered by J. H. Gregory, in May, 1859, for Capt. Bates, who pre-empted 200 feet. Some 30 additional claims of 100 feet each were taken up by separate parties, after the custom of those days. The surface dirt and quartz was enormously rich in some places, and the lode ranked with the Bobtail, Gregory, and Gunnell. The yield had been quite large up to 1864, when ten New York companies were organized on the vein. From various causes, chiefly from mismanagement, these companies were generally unfortunate and did not continue operations for a great while, although some of them resumed at intervals. The total work done on the Bates, outside of the gopher-digging of the early days, would not amount to three years of heavy operations on the 1,300 feet of consolidated property, and yet from \$800,000 to \$1,000,000 have been obtained therefrom.

"Over \$40,000 were taken from the Baxter in a single month before the sale was made to the company, with fifty per cent. profit. The Union claims had a body of barren ground 200 feet in depth. Then an immense ore body was opened

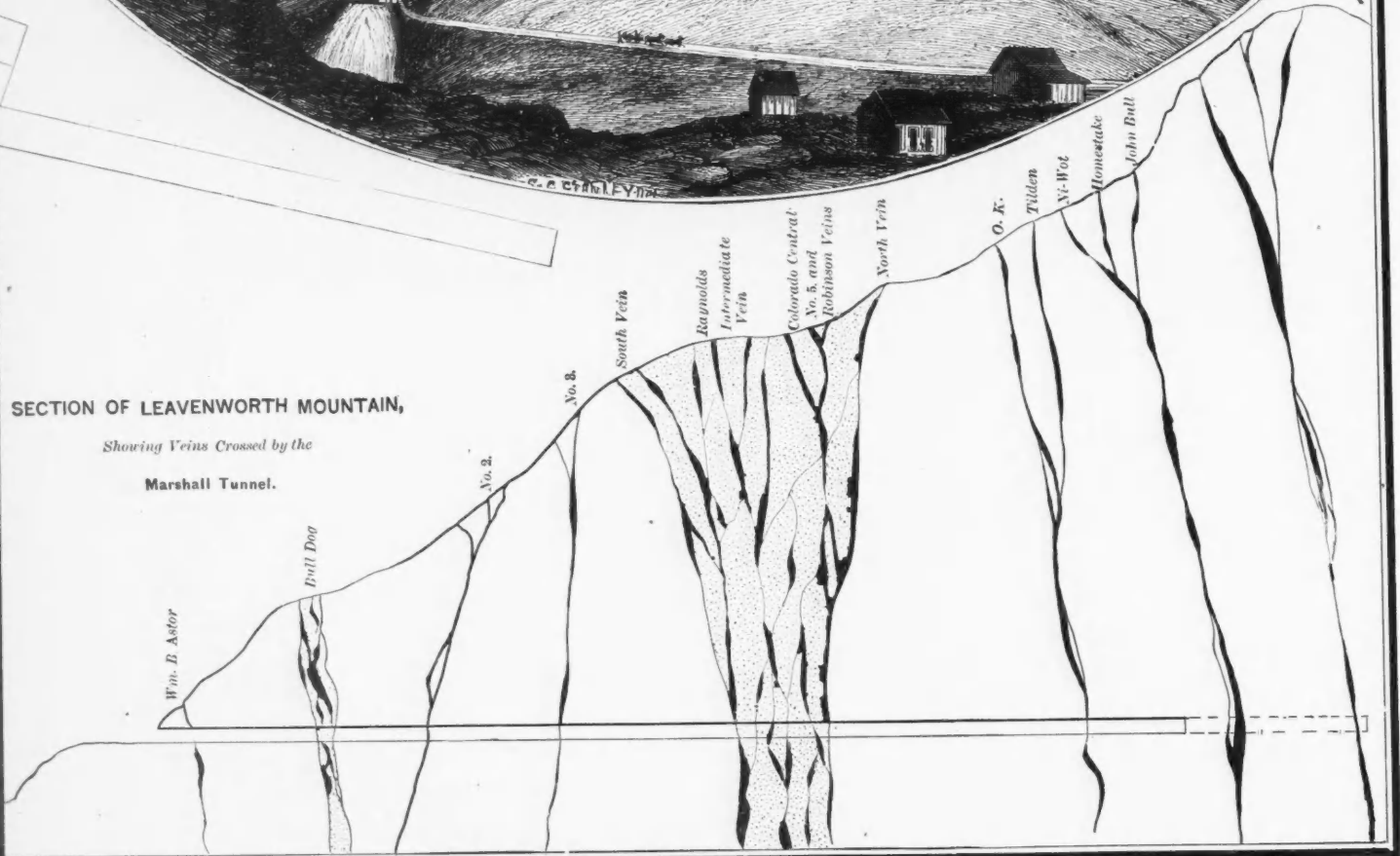




(SUPPLEMENT,) SEPTEMBER 15, 1877.



SECTION OF LEAVENWORTH MOUNTAIN,
Showing Veins Crossed by the
Marshall Tunnel.



NY, GEORGETOWN, COLORADO.

and four or five hundred thousand dollars turned out. In sixteen months of 1867-8 the yield was nearly a quarter of a million. The ore body was from eight to twelve feet wide, and the smelting ore sold for several hundred dollars per ton. Work was suspended owing to a heavy suit against the company and to company troubles, while this great ore body was yet unexhausted. The Borham claim had one deposit that yielded \$150,000, of which \$100,000 came out in ten months. Lately more ore of very rich character was found by sinking and drifting. Other claims have paid well at times, some of them not included in the new combination—for the lode has been traced for nearly a mile.

"The company will be known as the 'Consolidated Bates,' and embraces the Baxter, 300 feet; Union, 200; Rocky Mountain, 250; Borham & Company, 200; Becker, 400, and other properties. More additions may yet be made.

"There are several shafts about 400 feet deep. One of these is in Gregory Gulch. This will be doubled in size and then sunk to a depth of 1,000 feet as rapidly as possible. The sum of \$100,000 has been raised and reserved for this purpose alone. From this shaft levels will be extended east and west along the vein for hundreds of feet, or through the entire length of the consolidated property. Work will begin in September. When the mine is fairly opened, it will be as extensively worked, and will probably be as productive as any in the county, for no vein of anywhere near the same size is said to have as rich ore as is found in the Union and one part of the Borham properties."

The Georgetown Courier says of the Colorado Consolidated that the Silver Ore Tunnel is now in 614 feet, and progressing at the rate of 30 feet per month. About 200 feet back from the face a level was cut, supposed to be the "Last Chance." No drifting has been done upon it. About 125 feet further in, the Brown will be cut. The Union Tunnel, the lowest tunnel of all developing the property, is in 393 feet, and progressing at the rate of 25 feet per month. A lode was cut last week, but not in paying ground. It is not expected to cut any lode of importance till the Terrible or Silver Ore is reached. The dressing house at the mouth of the Terrible Tunnel is nearly completed and ready for use.

The yield of the Central belt of gold mines for August amounts to \$180,000. The Collom dressing works are treating ore for \$3 per ton in 100 ton lots.

Reports from Geneva District, which lies wholly above 10,000 feet, are most encouraging. The Revenue tunnel is now nearly 800 feet in length, and will reach the vein in a little over 100 feet more. The Celtic and Baltic lodes, which were cut in driving this tunnel, are yielding well. The Gilman-Planet property is doing finely, and shows a good body of ore in its workings, on which some stoping is being done. The Colorado Mine, below the Gilman, is also showing finely, having as high as two feet of ore in sight at several points. These mines are now opened sufficiently to permit continuous working the year round, in spite of the terrible winters experienced at this altitude. A large force of miners, probably 200 in all, if not more, will winter in this camp, and next spring the amount of ore on hand will be found to be considerable. At present all ore is packed from Geneva on jacks across the range to Georgetown, but a road is now being built down Geneva Gulch to Grand P. O., where the Denver and South Park road is met. It is hoped that this road will be completed before snow flies.

The Melville reduction works at Silverton are at last running. There are renewed reports from Tyndall Hill, near Rosita, of additional rich gold discoveries. The Bassick Mine, which was the first important discovery of this group, still continues yielding fair ore, and has no rival that we are aware of in the vicinity.

In Cement Creek cañon, along the shore of Lake Como, there has been found an abandoned open cut on a silver vein, which is thought to be the remains of some old Spanish explorations. The traces of drilling are found in the rock, and though the cut has caved in extensively and is hardly recognizable, it is evidently not nature's work. The vein has been re-located. It runs down the mountain side into the lake, and the latter is to be partially drained to assist in its development.

MONTANA.

Our Montana exchanges, though crowded at present with war news, still find space for many mining items, and show by their columns that the industry in that favored part of the West is advancing with rapid strides. The *New Northwest* and the *Butte Miner*, papers which are not surpassed in enterprise, interest, and real worth in the West, will always be found full of information regarding the mines, and our experience has given us great reliance on their accuracy, knowing them to be in charge of able, intelligent, and well-posted editors. From their columns we cull the following summary of Montana news:

"A shipment of 30 tons of \$300 ore from the Late Acquisition Spur occurred lately.

"An incline sunk upon the Stevens lode for 40 feet has developed a fine lode of free milling ore of very high grade.

"Some argentiferous copper ore, taken from a newly-discovered vein adjacent to the Silver Moss lode, in Silver Lake District, is attracting considerable attention. It carries from 150 to 300 ounces of silver.

"The Monroe Mill, at Denny Flat, has lately been employed on ore from the Mammoth lode, with very satisfactory results.

"The new furnace at Glendale, 30 miles from Butte, has been completed and is in operation. It has a capacity of 50 tons daily, and will run on base ores. Purchases of argentiferous copper and lead ores, which have hitherto found a market only at Salt Lake or Omaha, are being made at Butte, a good price being paid for the same. The Hecla Mining Company are the owners and operators of the new furnace.

"The Dexter mill, at Butte, which has for some time past been turning out bullion with great regularity and success, is temporarily shut down, pending a legal contest over its title.

"The new gold quartz camp at the head of Silver Creek, and named Idaville, has made so far a very successful season, and is developing into a first rate district. Work is being prosecuted on the Belmont, Emma Miller, Bluebird, Penobscot & Snowdrift, and Whippoorwill, which are down respectively 85, 95, 55, 50, and 112 feet. These mines are all developed farther by levels two and three hundred feet long, and are producing about 30 tons of \$15 quartz daily. The Bluebird, which is undoubtedly the great mine of the district, is a huge vein which will average over 10 feet in width, the ore from which is averaging \$18 per ton. Six arrastras and twenty-five stamps are running constantly."

As the early fall returns from the placer and bar mines begin to come in, it is apparent that the season in Montana has been a good one, better than any for some years past, provided the production is not curtailed by early cold weather, which is not likely. In Silver Creek about five miles of the gulch are under work. A bedrock flume is to be put into the lower part this winter. Trinity, Piegan, and other small gorges in this vicinity have done very well. On Virginia Creek the *Herald* reports a \$14,000 clean up from a three months' run,

with a prospect of \$12,000 more before the season closes. Thompson's Gulch, heading in the Bell Range, which has been worked profitably and continuously for ten years, is still doing finely. Five companies are working in the gulch.

MONTANA AND IDAHO.

Work is being pushed vigorously at the Alice Mine, in Butte, Idaho, where a fine mill and a full complement of hoisting machinery are under construction. The manner in which the owners of this property—the Walker Bros. of Salt Lake—are opening that mine, gives excellent evidence of their faith in the district. The shaft is being retimbered, preparatory to putting in cages and a No. 7 pump, and all work is being done which is required for working the mine upon a large and comprehensive scale.

Both of the Phillipsburg mills are at work once more, and there is a promising outlook for that fine camp for the winter.

The threatened trouble at the Empire Mine (Silver City) has been averted by the return of the agent, Mr. Crutcher, from San Francisco, with funds to pay off the miners. The mine is now working with full force.

THE PACIFIC COAST.

Since the decision in the case of the Eureka and Richmond mines the production of the former has increased very rapidly. A new furnace has been erected, which will raise the daily smelting capacity to 50 tons.

On August 30 the ore vein was cut in the 1,750-foot cross-cut from the C. and C. shaft on the Consolidated Virginia, and good mineral found. It is thus shown that the immense ore body now producing so heavily above extends still further below. The discovery adds heavily—many millions—to the value of the mine.

The Virginia City Miner's Union has made a compromise with owners and operators on the Comstock, so that the difficulty which was impending has been obviated. Wages on that mine are now \$4 per day, the highest paid in any opened mining district in the world. There are hundreds and thousands of idle laborers in the West who would gladly work there for half the price.

The Paymaster Mine at Ward (Nev.), though being badly managed—according to the local paper of the place—is nevertheless producing finely and proving itself a magnificent property.

In the raise between the 1,000 and 900 foot levels in the El Dorado South at Belmont, another strike of very rich ore has been made.

The Tybo, which during the past year has become one of the noted mines of Nevada (base metal), has developed a new and extensive deposit in the Hunkidori shaft.

The Manhattan Concentrating Works (Krom's system) are to be running shortly once more.

Fully 900 tons of ore have accumulated on the dumps of the Raymond & Ely, and the company's mill at Bullionville, which for a long time past has been running on tailings, has commenced crushing the raw rock. In the mine there is no material change to note, except in the 6th level, where the stopes are showing a much higher grade of mineral. On the 1,000 foot level there is still a good lode of ore, with every prospect that it will continue so.

In the Alps the ore vein is showing finely in the lower levels, and yielding steadily and well.

The shipments of Pioche bullion range from ten to fifteen thousand tons per week, and from Leed, the new and famous camp of Southern Utah, \$10,000 weekly.

The Pioche Record reports as follows regarding Bullionville, where all the Pioche ore is worked:

"Bullionville now has the appearance of a pretty lively camp, although a small one. The business men there express themselves as well pleased with their present business and future prospects. The Raymond & Ely 30-stamp mill had the eighteen pans and eight settlers all at work on tailings, the ore cars being so constructed as to run down into the tailing pit, load up, and return with a supply of the tailings for the pans. The tailings are worked with much more satisfaction now than on the first start, the bullion also being of a much finer quality. The concentration works of Hugh White were in full blast, doing good work and concentrating many tons of tailings during the day. The smelting furnace was not running, but every preparation was being made for an early start. The Alps, or American Flag mill, was going to its full capacity under the charge of John Collier, five stamps being about to run on custom ore. Several parties having custom ore at the mill for crushing were waiting anxiously their turn to take battery samples. Ore at the Raymond & Ely mill is accumulating rapidly, preparatory to starting the batteries on it. The 20-stamp mill is at present engaged in pumping up water for the mill, etc."

Affairs at White Pine are advancing slowly. The Eberhardt and Aurora tunnel is in 1,600 feet, with no sign as yet of the deposit. Explorations above are being vigorously prosecuted. The Eberhardt mill is now running on a 500-ton lot of Stafford ore, after which the mill will run on the company's ore, a supply of which, about equal to a three months' stock, has accumulated. The tunnel is now being driven at a cost of \$23 per foot. It is reported that recently a change has occurred in the limestone rock in the header, that it has become softer and shows indications of chemical action. This would be expected on nearing an ore deposit of the nature of those in White Pine district. We trust the report is true. The discovery of a large ore body in Treasure Hill at the depth of this tunnel would be worth in its encouraging effects many millions to languishing White Pine.

GENERAL WESTERN NEWS.

The following Montana items we clip from the *Butte Miner*: "In the Lexington work is going on with the accustomed regularity. This mine employs altogether about 35 men. The ore from it is hoisted by hand windlass, a slow and expensive process, but in the middle of this month a double whim will be put on one of the western shafts, which will afford abundant hoisting power for all developments above the water level.

"In the La Plata but eight men are now employed, prospecting for the ledge. The owners of the Late Acquisition Spur are now at work taking out ore that will yield from 275 to 300 ounces of silver to the ton. This first class ore is all shipped to Utah for reduction, and it is expected that 100 tons of ore of this quality will be shipped this fall. The mine now presents a very fine appearance, the vein being seven feet wide.

"Within the last two weeks Messrs. Young & Roubens have shipped 425 pounds of very fine bullion, and have something more than 100 pounds still on hand. This bullion was from ore taken from the Burlington lode, but the mill is now employed upon ore from the Nettie lode, belonging to the same proprietors, with most satisfactory results, the yield being a little over 100 ounces per ton. The mill began work only last February, and at the present rate of profits will have itself paid for in less than two months."

The Owyhee *Avalanche* reports as follows regarding the Silver City (Idaho) mines: "Operations at the Empire mine have been temporarily suspended. The men working there were much dissatisfied at not receiving their monthly pay on the 10th as usual, and not receiving satisfactory assurance that it was forthcoming immediately, they resolved to quit for a few days. They have charge of the works in the meantime, and if no change for the better occurs in a few days they will proceed to work the mine themselves."

"Great hopes are entertained by all here relative to the starting up of the Poorman."

"The Sultan claim, which is not far from the Belle Peck in this vicinity, is yielding well."

"At the Belle Peck work is progressing under the most favorable auspices. A winze is being sunk on the main body of ore in the lower level. Another winze is also being sunk from the main tunnel to the lower level which will give abundance of air. The main ledge is looking first rate, and sufficient ore will soon be turned out to keep a mill running night and day. A crushing is now going on at the Shoobar armster."

"The Potosi continues to improve. Stopping is progressing night and day, and there will soon be a hundred tons of good rock out. A crushing will be commenced at the Leonard mill next week."

LABOR NOTES.

THE COAL MINES at Princess Furnace near Greenup, Kentucky, are putting out 2,000 bushels a day. Pay 45 cents per ton for screened coal.

AT PANCOAST, Jefferson County, Pa., wages are fifty cents per ton, 2,240 lb., of clean coal, the seam is four feet; the men complain that they send out 3,600 lb., to net them only 2,240 lb.

THE KANE CREEK COAL MINES, near Hunnewell furnace, Kentucky, are working a seam averaging thirty inches. The price paid is 25 cents per mine car, containing twelve bushels.

INTIMIDATION.—The *Scranton Republican* of the 12th inst. says: "A mob of idle miners comprising about one hundred men went to Forest City at two o'clock Wednesday morning, and calling upon the several miners there, forbid them doing further duty for the Erie Company, and, we learn, threatened to destroy property if they failed to obey their commands."

THE LUZERNE COLLIERY STRIKE.—POTTSVILLE, Penn., Sept. 13.—The miners of the Mahanoy region held a meeting at Glover's Hill, near Shenandoah, to-night, for the purpose of receiving a committee from the Luzerne region who came to ask for donations for the Luzerne men who are now on a strike. Committees were appointed to call at all the collieries in that neighborhood next pay day (Saturday). The Luzerne men state that they will stay out as long as they have a crumb of bread in the house.

THE SEATTLE (WASHINGTON TERRITORY) COAL MINES.—The *Seattle Tribune* of August 24th reports the finding of another rich vein of coal eight feet in thickness, and of a superior quality; and our informant, a Welsh miner, says of the Seattle coal fields: "The mine now has a capacity, when fully worked, of 1,600 tons of coal a day, or enough to supply, unaided, the entire demands of the San Francisco market. Its output is a little over 400 tons a day, and its shipments to California 10,000 tons a month. No mine on the coast, operated at present or to be operated within a year or two, can place its product in the San Francisco market as cheaply as the Seattle mine, and as long as this is true, and it continues furnishing a 'superior article,' its sale will be practically unlimited."

PRICES PAID FOR MINING COAL AT DIFFERENT PLACES.—The miners at the Castle Shannon mines, who were on a strike for several weeks back, have resumed work, their demands being acceded to. These were the same as given by Messrs. Hays & Bro., which are three cents a bushel for mining, seventy-six pounds to the bushel, and the appointment of a check weighman. Pay will be made every two weeks. The company, however, keep a reservation, which is that cars will be furnished the men only as the coal is disposed of. The manufacturers refuse to pay the additional half cent of the cost of the coal caused by the increased cost of mining. The company's customers are, therefore, greatly reduced in number.

The miners who have been on a strike at the Jackson coal mines (Mich.) resumed work at the old wages, with the promise of better should the coal trade improve.

The miners at Penn. Irwin, and Larimer mines and Spring Hill Station, Westmoreland County, are again at work at the old rates, with the exception of the Irwin Station diggers, who have obtained an advance of five cents per ton.

NOTES.

COAL DISCOVERIES IN TEXAS.—We note the statement that extensive coal mines have been discovered in Stephens County, Texas. They are said to underlie pretty much the whole county, and the coal is of excellent quality.

ALBERT RAILROAD, NEW BRUNSWICK.—This road is now fully opened for traffic from Salisbury, N. B., southwest to Hillsboro, about 24 miles. It is intended chiefly to carry coal from the mines about Hillsboro to the Intercolonial.

ENTERPRISE OF THE READING COAL & IRON COMPANY.—The *Philadelphia Inquirer* learns that President Gowen proposes the formation of an immense coal depot at Alexandria, Va., to supply the Southern trade. "It will be a depot for water shipment. The company will run their steam colliers to Alexandria laden with coal, where they will be unloaded and a large supply secured in case the rivers should be closed by ice during the winter. In this way the South can always have a full supply of coal without any let or hindrance from the weather."

THE HAYDEN SURVEY.—A letter from the West received at Washington on the 12th inst. speaks of the safety and success of most of the parties comprising Professor Hayden's exploring expedition. The party under the charge of Professor C. A. White has just arrived at Salt Lake City, having carefully explored the country from Denver across the main ranges of the Rocky and Wasatch Mountains to that place. Professor White says that his investigations have resulted in the discovery of some most important phenomena, which will form very interesting scientific contributions to the knowledge of the geology and paleontology of a comparatively little known part of the West. Information from other divisions of the survey show that the valuable character of the entire region explored this year when made known will attract the attention of the public generally. The parties will all return to Washington by the 1st of October.

THE SILVER ISLET REGION.—Our special correspondent writes: It is known that business has been quiet for some months, but recently a number of the gentlemen interested in the place met there and resolved to go on with the work. The Diamond Drill has been removed to Burnt Island and placed in the old shaft, and a test will take place there and at other points upon the Island. It is decided upon "taking the roof of the Silver Islet," and to do so an artificial roof has to be constructed. We learn that the new roof is about 900 feet long, width about 12 feet, and will be below the water-surface 60 feet, and built of brick and cemented to be water tight. In the event of water getting in, while removing the ore roof the artificial one will protect the mine by keeping the water out. The Diamond

Drill has been steadily to work in the Duncan Mine of late. It is working at the bottom of the shaft, 400 feet below surface. It first bored 103 feet to the south, next 50 to the north, and then in different directions downward, making in all 350 feet. A good deal of information has been gained, but nothing that would warrant a "sensational report."

THE MIRACULOUS PEN.—We have received from Messrs. Mawson and Swan samples of a new pen which will, we think, serve a useful purpose. It is called "The Miraculous Pen," for writing without ink. It is used like an ordinary pen, but dipped into water instead of into ink. The ink which this pen generates instantaneously is always limpid, dries rapidly, and remains fixed and unalterable on the paper, and the writing obtained with it may be copied by the press. The chemical composition which is fixed to it is said to be concentrated to such a degree that each pen in ordinary use lasts at least several months. These pens are prepared with different colors, such as dark purple, red, dark blue, black, etc., and to write in these various colors a single little glass of water in the office is sufficient.—*Chemical News.*

PREPARATION OF CELLULOSE.—Paper is treated by a continuous process with five parts of sulphuric acid and two of nitric acid, which convert it into a sort of gun-cotton. The excess of acid is removed by pressure, followed up by washing with abundance of water. The paste, when thus washed, drained, and partially dried, is ground in a mill, mixed with camphor, ground again, strongly pressed, dried under a hydraulic press between leaves of blotting-paper, cut, bruised, laminated, and compressed again in a special apparatus suitably heated. It is said to be hard, tough, transparent, elastic, fusible, becoming plastic and malleable at 125°. It ignites with difficulty, is decomposed suddenly at 140° without inflammation, and gives rise to reddish fumes. It is inodorous, and does not become electric on friction.—*Bull. de la Soc. Industrielle de Rouen.*

WAGES OF COAL MINERS AT PITTSBURG, PA.—We take the following from the *American Manufacturer* of the 7th inst: "In order to ascertain the truth of some of the many statements made regarding the wages of mechanics and laborers we recently instituted inquiries in certain branches of labor to obtain the actual facts. The following figures are the amounts paid by Joseph Walton & Co., coal operators, to their miners during the month of April. This month was taken because it is a fair average. The figures are taken from the pay rolls. It is to be remembered that the mine ran nineteen days during that month, and that a portion of the miners did not work full time. Some worked less time. The following are the amounts paid, as shown by the rolls:

\$57 72	\$31 80	\$47 70	\$40 86	\$27 36
66 72	40 19	81 63	71 22	31 11
42 81	115 37	115 36	46 80	39 58
51 45	41 43	44 16	61 71	51 03
40 81	43 26	37 50	30 21	26 43
69 51	48 90	64 92	77 96	60 07
36 17	27 40	63 99	42 27	47 37
39 42	54 68	41 34	59 10	59 19

The total amount paid to the forty men, taken as they come on the books, was \$1985.35. This averages \$49.63 per man. If all worked nineteen full days, the average would be \$2.61 per day. But as some worked fewer days than nineteen the average would necessarily be in excess. An impartial examination of the books of the firm would indicate that \$3 per day is an average day's work at three cents per bushel. This requires the digging of a hundred bushels, which is considered by miners as a large day's work. Some men begin as early as three o'clock in the morning, while others come late and work on until late in the afternoon. The average number of hours spent in the mines will not exceed eight per day."

ASSAY DEPARTMENT OF THE ENGINEERING AND MINING JOURNAL.

This department is opened for the benefit of miners, prospectors, and others interested in minerals.

Replies will be made in these columns, and *without charge*, to questions asked regarding the natural and commercial value of minerals, and of samples sent.

Assays determining the actual composition and value of ores will be made at the following rates.

The amount should invariably accompany the order, and expressage or postage must always be prepaid.

Assay for Gold.....	\$2 00	Assay for Lead.....	\$1 50
" Silver.....	1 50	" Zinc.....	3 00
" Gold and silver.....	2 50	Control Assays.....	3 00
" Copper.....	2 00	Zinc Analyses.....	5 00

Where reply by letter is desired, an additional charge of 50 cents should be included.

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Denver, Colorado.

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ENGINEERING AND MINING JOURNAL,
(P. O. Box 4404.) 27 Park Place, New York.

ANSWERS.

New York Office:

ASSAYS.

LXV. A. M. G., Mt. Union, Pa.—Specular iron ore, contains iron 62.99 per cent.
LXVI. J. R. W., New York.—Hematite ore, contains iron 42.95 per cent. (By an error the assay of LXV. was given to J. R. W. for that of his ore LXVI. Had his address been left, he would have been notified at once of the mistake.)

LXVII. W. M. GRAY, New York.—

No. 1. Marked H. H.....	Gold.....	0'02 oz.
" 2. " ".....	" slimes.....	" 0'04 "
" 3. Marked No. 0.....	" ".....	" 0'02 "
" 4. " ".....	" 1.....	" 0'22 "
" 5. " ".....	" 2.....	" 0'03 "
" 6. " ".....	" 3.....	" 0'02 "
" 7. " ".....	" 4.....	" 0'17 "

LXVIII. LONG & DERRY, Colorado.—

No. 1. Silver.....	651'99 oz.	Lead.....	36'3 per cent.
" 2. ".....	280'67 "	".....	32'0 "
" 3. ".....	177'00 "	".....	23'9 "

(A part of this report was published last week.)

LXX. R. H. L.—Oxide, carbonate, and sulphide of copper, yields copper 68.94 per cent.

LXXI. T. BRANIFF, New York.—

1. Sulphuret and carbonate of copper, yields copper 6.14 per cent. Probably contains nickel also, and, perhaps, in quantity to be of greater value than the copper.
2. Specimen for examination is a titaniferous mineral, probably perovskite, of no value.

LXXIV. E. B., New York.—Virginia gold ore:

No. 1. Gold.....	0'3 oz.	No. 4. Gold.....	4'2 oz.
No. 2. ".....	1'79 oz.	No. 5. ".....	1'51 oz.
No. 3. ".....	2'4 oz.		

LXXV. J. GOMARD, Curaçao.—Copper ore:

1. Original.....	4'79 per cent.	4. Middlings.....	4'33 per cent.
2. Slimes.....	5'60 "	5. Tailings.....	3'65 "
3. Concentration.....	6'60 "		

Boston. Sept. 8, 1877.

COAL.—Cargo prices are nominally unchanged. The retail rates are supposed to be \$5@5.50, but some dealers are selling at \$4.75 at wharf. The cargoes of Nova Scotia, now arriving, were previously disposed of. Since the close of the strike supplies of Cumberland have been coming forward quite freely, and there have been sales at \$3.25 free on board in Baltimore, and \$3.10 at Alexandria. With very few exceptions the private firms and corporations in the Lehigh region are now all at work. It is generally thought that the New York companies will resume within a fortnight.

Coal freights from Philadelphia now rule at \$1.20 @ \$1.25; Baltimore, \$1.40 @ 1.50; Alexandria and Georgetown, nominally, \$1.40 @ 1.50; New York, \$1 @ 1.10.

We quote Boston wholesale prices as follows:

Table listing coal prices in Boston, including Anthracite, do. egg, do. stove, Cumberland, Clearfield, Westmoreland, and Caledonia.

—Commercial Bulletin.

Chicago, Ill. Sept. 4, 1877.

Specially reported by Messrs. RENO & LITTLE.

The following are the prices to-day for coal:

Table listing coal prices in Chicago, including Lackawanna Stove, Chestnut, Grate and Egg, and others.

The Pennsylvania Coal Company is selling at 50c. under the above prices.

Cincinnati, O. Sept. 11, 1877.

Specially reported by the Consolidated Coal and Mining Co.

Table with columns for Afloat and Delivered prices for various coal types like Youghiogheny lump, nut, slack, etc.

Anthracite.

Table listing Anthracite prices for Wilkes-Barre and Lackawanna.

Hamilton, Ont. Sept. 11, 1877.

Specially reported by H. BARNARD.

I beg to hand you state of our market corrected to date.

Table listing coal prices in Hamilton, including Grate, Egg, Stove, and Nut.

Cleveland, O. Sept. 12, 1877.

Specially reported by Messrs. LAMBIE & BATES. Per ton of 2000 lbs. f. o. b. vessels.

Table listing coal prices in Cleveland, including Brier Hill, Straitsville, Hocking Valley, etc.

The following are the prices established by the Coal Exchange until further notice:

RETAIL TRADE.

Table listing retail coal prices for various types like Brier Hill lump, Massillon, etc.

Lehigh \$1.25 per ton higher. All sales to be strictly cash with order or C. O. D.

Indianapolis, Ind. Sept. 10, 1877.

Specially reported by Messrs. COBB & BRANHAM. Wholesale on board cars, and retail delivered to consumers.

Table listing coal prices in Indianapolis, including White River, Brazil Block, etc.

Retail, per bushel, delivered.

Table listing retail coal prices per bushel, including Sand Creek, White River, Brazil Block, etc.

GAS COKE (measured.)

Table listing gas coke prices, including Crushed and Lump.

Louisville, Ky. Sept. 10, 1877.

Specially reported by Messrs. BYRNES & SPEED.

Below find latest quotations:

WHOLESALE.

Table listing wholesale coal prices, including Pittsburg and Raymond City.

RETAIL.

Table listing retail coal prices, including Pittsburg and Raymond City.

Montreal. Sept. 6, 1877.

Specially reported by Messrs. ROBERT C. ADAMS & Co.

Arrivals of Scotch coal by the fall fleet depress the market for bituminous coal. Prices rule very low. The price of anthracite continues to advance. Canal freights are a little higher. We quote:

Wholesale per 2,000 lb. ex ship.

Table listing wholesale coal prices in Montreal, including Scotch Steam and Pictou.

Milwaukee, Wis. Sept. 10, 1877.

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

Retail price per ton of 2,000 lb.

Table listing retail coal prices in Milwaukee, including Anthracite and Lehigh lump.

New Orleans, La. Sept. 8, 1877.

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

PITTSBURG COAL.

Table listing Pittsburgh coal prices, including steamboats and families.

ANTHRACITE COAL.

Table listing anthracite coal prices, including wholesale and retail.

VIRGINIA CANNEL COAL.

Table listing Virginia Cannel coal prices, including steamboats and families.

Philadelphia. Sept. 13, 1877.

Specially Reported.

It is becoming every day more evident that the advance in tolls and in wages in the Schuylkill region is not a success, that the move was a rash one, and will lead to considerable trouble hereafter. It may have brought temporary assistance to the company, but it has been at a fearful cost. Such business as the coal trade ought not to be trifled with in that way.

The dealers here are generally very full of coal, and the consumers are not buying so freely. The prices on board are weak, and there is considerable shading off the circular rates. The shipments continue large and vessels in abundant supply at last quotations.

Pittston, Pa. Sept. 11, 1877.

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

Table listing Pittston coal prices, including Lump, Egg and Stove, Chestnut, and Pea.

Richmond, Va. Sept. 11, 1877.

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

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

Table listing Richmond coal prices, including Kanawha Cannel, Coalburg Splint, etc.

Sandusky, O. Sept. 12, 1877.

Specially reported by C. E. BLACK, Agt. Con. Coal & Mg. Co.

We quote coal on cars at Sandusky, as follows:

Per ton of 2,000 lbs.

Table listing Sandusky coal prices, including Anthracite and Bituminous.

St. Louis, Mo. Sept. 11, 1877.

Reported by JAS. J. SYLVESTER, Secretary of the Anthracite Coal Association.

Retail prices, delivered. Ton of 2,000 lb.

Table listing St. Louis coal prices, including Anthracite and Bituminous.

San Francisco, Cal.

From the Commercial Herald of Sept. 6, 1877.

COAL—Imports from January 1 to Aug. 1:

Table listing coal imports to San Francisco, including Anthracite, Australian, Coos Bay, etc.

The arrivals have been numerous, causing a still greater depression in market values than we have ever before been called upon to record. The following coal-laden vessels are to hand: Schr. Frithiof, 438 tons Seattle; Una, 416 tons from Vancouver Island; Br. ship Ann Millicent, Newcastle, N. S. W., 1,361 tons; Earl Granville, Glasgow, 448 tons Scotch coal and 99 tons coke; City of Nankin, Hull, 1,332 tons; Lunatio, Nanaimo, 750 tons; Portland, Seattle, 903 tons; Empire, 500 tons Coos Bay; Palmyra, Cardiff, 1,813 tons; Samoset, 1,025 tons Seattle; Aureola, 1,355 tons Seattle; The Bruce, London, 460 tons; City of York, Liverpool, 1,525 tons; H. S. Gregory, Philadelphia, 2,565 tons; Comet, Hull, 1,544 tons; Frolic, Liverpool, 1,750 tons; Enoch Talbot, 1,800 tons Wellington; Triumphant, Liverpool, 2,371 tons coal and 142 tons coke. Here we find the arrivals for the week are about twenty cargoes, in the aggregate some 22,356 tons. A few cargoes of this sold long prior to arrival at \$1.20 a ton above the present nominal quotations. The Samaria's cargo of 1,650 tons Westminster Brimbo sold at \$7-60 days; the cargo of Wallsend, per Francis Thorpe, 1,658 tons, sold at \$8.50-30 days; the cargo of 2,774 tons English steam, per Glory of the Seas, sold at \$6.87 1/2. We are also informed that English steam per cargo has been sold deliverable at Portland, Oregon, at \$6.50. The Abner I. Benyon, from New York, brought 316 tons; and Palestine, from Boston, 405 tons; and the Ellen Bank, from Glasgow, with 1,480 tons Scotch. At the close \$8 may be considered the cargo price for West Hartley, although some ship owners prefer to land and job out their cargoes rather than accept this low price.

Toledo, Ohio. Sept. 11, 1877.

Specially reported by Messrs. GOSLINE & BARBOUR.

We report prices of coal on cars at Toledo as follows:

Table listing Toledo coal prices, including Hocking Valley, Massillon, etc.

Prices of hard coal on cars at Toledo are as follows:

Table listing Toledo hard coal prices, including Pittston, Wilkes-Barre, etc.

For retail delivery in city the prices are as follows: Stove and chestnut \$6.25; grate and egg, \$6.00 per ton; Lehigh, 75c per ton additional.

Prices soft coal f. o. b. vessel for Lake shipments will be from 15 to 20c. per ton more than prices on cars.

Rates of Transportation on Anthracite Coal to Tide Ports.

Table listing transportation rates for Lehigh and Wyoming coals to various tide ports.

From Mauch Chunk to New York (121 miles), (towing limits and Jersey City) via Lehigh Valley RR. \$1.25

From Mauch Chunk to Philadelphia (93 m) via L. V. and L. and S. RR. and North Penn. RR. \$1.25

From Mauch Chunk to Philadelphia (92 m) via L. V. and Perkiomen RR. \$1.40

For way points between Mauch Chunk and Philadelphia on the New Jersey Railroads. \$1.00

From Phillipsburg, N. J., to Hoboken (84 m) for shipment via Delaware, Lackawanna & Western RR., Morris and Essex Division. 65

From Phillipsburg, N. J., to Newark (75 m) via Delaware, Lackawanna & Western RR. 66

* Rates on line coal from Hazleton are 10c. per ton above these figures.

† The cost of unloading is to be added to these rates. No charge less than 40c. per ton will be made for any distance. Tolls from Mauch Chunk to Phillipsburg for way points will be \$1.00 per ton.

‡ On coal received by canal at Jersey City, a charge additional to the freight, of twenty cents per ton, will be made for transferring it from boat to boat, and thirty cents per ton for placing the same on the wharves and reshipping.

§ The distances in the above table are computed from Mauch Chunk. From Ashley to Mauch Chunk the distance is 51 miles and from Upper Lehigh, 33 miles. From Hazleton 24 miles and from Penn Haven 3 miles.

¶ From Wilkes-Barre to Perth Amboy via the Lehigh Valley Railroad Company, the distance is 161 miles, and from Mauch Chunk it amounts to 106 miles.

Schuylkill Coals. per ton of 2240 lb.

Table listing coal prices from various locations like Pine Grove, Tamaqua, Schuylkill Haven, and Port Clinton. Includes destinations like Port Richmond, Harrisburg, Allentown, etc.

From Tamaqua to Catawissa, McAuley, Mainville, Rupert, and Danville, via Catawissa and Williamsport Branch Railroad.

Coal sent to points on the Catawissa and Williamsport branch will be charged one and one-half cent per ton per mile, and two cents per ton additional to Tamaqua.

For shipment via Main Road or Schuylkill Canal, one and one-half cent per ton per mile, and two cents per ton additional to Schuylkill Haven, Pine Grove, Tamaqua, or Port Clinton, for Canal, as the case may be.

No charge will be made for weighing or making returns of coal shipped, and the latter will be furnished free of charge, upon application to the Weighmaster.

Lake Freights on Coal.

Table showing freight rates for coal from Buffalo to Chicago, Milwaukee, Duluth, Toledo, Sandusky, and other locations.

Rates of Toll

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

Towing.

For rates of towing we refer to our issue of Aug. 4. Freights on Bituminous Coals from the Mines to Tide Water Shipping Ports.

From the Mines to Piedmont, Cumberland or State Line, 4c. per ton of 2,240 lb. per mile on distances less than 4 miles, and 3 cents per ton per mile on distances over 4 miles, and 2 cents per ton per mile on distances over 100 miles.

From Oncoala to South Amboy, N.J. (317 miles), per 2,000 lb., \$4.02, less drawback, \$1.28; net rate per ton of 2,000 lb., \$2.75; net rate per ton of 2,240 lb., \$3.08; transshipment charges 20 cen additional.

Freights

Representing the latest actual charters up to Sept. 13. Per ton of 2240 lb.

Table of freight rates to various ports including Philadelphia, Baltimore, Georgetown, and others. Lists destinations like Augusta, Me., Albany, Alexandria, Va., etc.

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

IRON MARKET REVIEW.

New York. FRIDAY EVENING, Sept. 14, 1877.

American Pig.—We are reported sales of 4,000 tons of Thomas iron on private terms, and about 1,000 tons of various brands at our quotations. There is a better feeling, and it exists more generally than at any time since the panic in 1873.

Scotch Pig.—There has not been any important business done in this article, although the dealers report an improved inquiry. We quote Eglinton at \$24; Glengarnock \$25; and Coltness \$26.50.

Rails.—We only note a sale of 4,000 tons of steel for Western delivery on private terms. The outlook is better than a month ago. We quote iron rails at mills at \$33@38, and steel \$43@45.

Old Rails.—We are reported a sale of 1,200 tons at \$18, and quote \$18@19.

Scrap.—We learn of no business and quote nominally at \$22@23.

Baltimore, Md. Sept. 10, 1877.

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

During the past week we have had more inquiry for good grades white iron, while prices remain unchanged and extremely low.

Table of iron prices in Baltimore: Baltimore Charcoal, Virginia Charcoal, Anthracite No. 1, etc.

Boston. Sept. 8, 1877.

We note a slight improvement in the general condition of the market, and the outlook is a little better than last year at this time.

Pig continues dull, with prices no firmer: BAR.—There has been a slight improvement. We quote \$43@45 for refined, and \$35@36 for common.

Buffalo. Sept. 10, 1877.

Specially reported by PALEN & BURNS.

Although the prospects for trade are better at present than they have been, there has been but little change in the state of the iron trade.

Table of iron prices in Buffalo: No. 1 Ex Foundry, No. 2, Gray forge, etc.

Of course parties with cash ready can always get good concessions, also those who purchase in round lots

Chattanooga, Tenn., Sept. 10, 1877.

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

Table of iron prices in Chattanooga: Tenn. Ala. and Ga. Charcoal, No. 1 Foundry, etc.

Cincinnati, O. Sept. 11, 1877.

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

Table of iron prices in Cincinnati: Hanging Rock No. 1 Foundry, No. 2, etc.

STONE COAL.

Table of stone coal prices: Ohio, No. 1 Foundry, No. 2, etc.

COKE.

Table of coke prices: Ohio & W. Va. No. 1 Foundry, No. 2, etc.

CAR-WHEEL.

Table of car-wheel prices: Hanging Rock, C. B., Hecla, Vesuvius, etc.

BLOOMS.

Table of bloom prices: Cast, Wrought, etc.

SCRAP IRON.

Louisville, Ky. Sept. 11, 1877. Specially reported by Messrs. GEORGE H. HULL & Co. There is a better feeling in the iron market than for some months.

FOUNDRY IRONS.

Table listing Foundry Irons with columns for item name and price. Items include Hanging Rock Charcoal, Southern Charcoal, Hanging Rock Stonecoal and Coke, Southern Stonecoal and Coke, American Scotch, and Silver Gray.

MILL IRONS.

Table listing Mill Irons with columns for item name and price. Items include Charcoal Cold-short and Neutral, Stonecoal and Coke Cold-short and Neutral, Missouri and Indiana Red-short, and White and Mottled Cold-short and Neutral.

CAR-WHEEL AND MALLEABLE IRON.

Table listing Car-wheel and Malleable Iron with columns for item name and price. Items include Hanging Rock and Cold Blast, Alabama and Georgia, and Kentucky Cold-blast.

Montreal. Sept. 4, 1877.

Pig iron is being more sought after, and the chances are, with freights on the upward move, that before long any coming here or in yard will be considerably reduced at fair price. We quote as follows:—Pig iron—Eglinton and Clyde, \$18.00 to \$18.50; American, \$20 to \$21; Summerlee, \$18.50 to \$19.00; 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

Milwaukee, Wis. Sept. 10, 1877.

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

Wholesale Price.

Table listing Wholesale Price for Charcoal Iron with columns for item name and price. Items include Lake Superior per gross ton and Anthracite Iron.

Stone Coal & Coke.

Table listing Stone Coal & Coke with columns for item name and price. Items include Warner's Am. Sc'th (Bk. Bend) per ton, Soft Silvery per ton, Lake Superior and Lake Champlain ores, and Sharpsville (Penn.) native ores.

Car Wheel.

Table listing Car Wheel with columns for item name and price. Item includes Lake Superior ores per ton.

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 Sept. 13, 1877.]

Pig IRON.—Most of the furnaces now in blast are selling about all they can turn out for immediate delivery, so refusing to name prices for any future delivery. Prices continue firm with an advancing tendency. Some favored brands are quoted higher, but the sales are light. There is talk of several furnaces blowing in. If this should occur it would unsteady the market, and the ground gained would be lost. We report sales of about 2,000 tons, and quote: \$18.50 to 20; No. 2 \$17.50; Grey Forge, \$16 to 18.

MANUFACTURED IRON.—The demand for bars continues as for some weeks exceeding dull, few sales being made. Why this is a source of wonderment, as there are more demands for plate and tank; in the former there is quite a number of inquiries if it should amount to business. Some mills will have work for some time to come. Skelp continues dull with few sales, and no new inquiries. We quote Bars 2@2.1c. per lb.; Plate and Tank 2½@7c. per lb.; Skelp 2¼@2.3c. per lb.

RAILS.—The iron rail mills are fairly busy on old and some new orders coming in from day to day; while the steel rail mills are dull; these works are working only on old orders, nothing new coming in. We quote Steel \$45@47; Iron \$33@36, all at mills.

OLD RAILS.—Are dull of sale at this time, as most mills using this stock are short of orders, as only A No. 1 iron finds sale at this time. We quote: \$18.50@19.50 for Philadelphia. Scrap continues dull and depressed, we quote Wrought \$20@25; Cast \$14@16. Old Wheels are quoted dull, in plentiful supply at \$18.50@20.

MUCK BARS.—Are quoted without sales, at \$34@36, Philadelphia.

Pittsburgh, Pa. Sept. 11, 1877.

Specially reported by A. H. CHILDS.

This market has been in a very unsettled condition during the past two weeks, and while some parties profess to hold at unchanged prices there has been a good deal of metal sold at a concession from the rates heretofore ruling. This is especially true of inferior grades of iron, although it is also asserted that the Western red shorts have declined fully 50c. to \$1 per ton. Foundry iron is extremely dull, and but little changing hands.

Table listing Foundry Irons with columns for item name and price. Items include F'dry, Mottled & White, Hot blast C'coal, and Cold Western.

Richmond, Va. Sept. 11, 1877.

Specially reported by ASA SNYDER, Esq.

Foundry pig iron has shown increased activity, probably over 400 tons have been bought by consumers the past week. Wheel irons continue dull. Prices have changed slightly.

Table listing Foundry Irons with columns for item name and price. Items include Virginia Cold Blast Charcoal Pig Iron, Warm, Anthracite, and Coke West Va.

San Francisco, Cal.

From the Commercial Herald of Sept. 6:

The market is heavily supplied with nearly all sorts, causing low prices and a dull trade for most descriptions. At auction on the 4th inst. there was an invoice of best quality plow steel offered on sixty days' credit, the assortment running thus, all in good order, and sold to close an account: 36 plates plow steel, 16x¼ in.; 6 plates do. 10½x¼ in.; 2 plates do. 6x5-16 in.; 3 plates do. 14x¼ in.; 32 plates do. 12x¼ in. 60 plates do. 11x¼ in.; 10 plates do. 16x¼ in.; 2 plates do. 6½x¼ in.; 1 plate do. 7x¼ in.; 16 plates do. 6x¼ in. The first lot sold at 5¼@5½c; the next three lots 6½@6¾@6¼c; and the balance withdrawn. The last sale of Sydney block tin was at 16½c. Tin plate is very plentiful and dull of sale at low prices. Pig iron is in large stock, and in the absence of reported sales the quotations are entirely nominal. The Granada carried to New York via Panama, 64,447 lb. of pig lead. The Earl Granville from Glasgow brought 200 tons pig iron. The Granada for Panama carried en route for New York 921,011 lb. base bullion.

St. Louis, Mo. Sept. 4, 1877.

Specially reported by Messrs. SPOONER & COLLINS, Commission Agents for all kinds of Iron.

COLD BLAST CHARCOAL—ALL NUMBERS.

Table listing Cold Blast Charcoal with columns for item name and price. Items include Hanging Rock, Tennessee, Kentucky, Missouri, Georgia, and Alabama.

Table listing Assorted Bar Iron \$2. rates with columns for item name and price. Items include Missouri stone coal, Tennessee charcoal, Tenn. coke very soft and strong, Hanging Rock charcoal, Alice Hanging Rock coke, and Quinnimount, W. Va., coke.

METALS.

NEW YORK, FRIDAY EVENING, Sep 14, 1877.

The week under review has shown more activity than for months past, and in some cases better prices are the result. Although prices are low, yet there is no denying that the business of the past six weeks has been a very good one, as compared with the corresponding periods of several years past. There is a much better feeling all around.

Gold Coin.—During the week under review the price of gold has ranged from 103½@103, and closed at 103.

Bullion.—A dispatch from San Francisco, dated yesterday, says: "The Nevada Bank to-day sold to the Government 1,500,000 ounces of fine silver, on a basis of 54¼ pence in London. One million ounces will be sent to Philadelphia, the balance to the San Francisco and Carson Mints." This is equal to 118 nett here. This has been the only feature to the market. The quotations are, in London, 54¼d.; in this city, 118¼@119, and in San Francisco, 8½ per cent. discount.

Daily Range of Silver in London and New York per oz

Table showing Daily Range of Silver in London and New York per oz with columns for Date, London, and New York prices.

BULLION SHIPMENTS.

We give below a statement showing the amount of the latest bullion shipments, in addition to those announced in our issue of Sept. 1:

Table showing Bullion Shipments with columns for Date, Mine, Location, and Amount.

† From Aug. 13 to Sept. 5. ‡ From Aug. 1 to Sept. 3. \$21,500 was shipped.

Arizona Gold and Silver Output.—The Stock Report says: "The present monthly shipments of gold and silver from Arizona amount to \$270,000, or at the rate of about \$1,250,000 for twelve months. This is the product of a few mines which, as yet, have been worked of the many that are known to be as rich as any that have been worked. Pima County ships in

silver bullion about \$40,000 monthly. Pinal contributes \$50,000, and Maricopa about \$20,000, chiefly from the Vulture mine. Yavapai and Mojave counties, together, furnish \$130,000; Yuma county about \$26,000."

Carson City Mint Coinage.—The following is a statement of the coinage executed at Carson Mint for the month of August, 1877:

Table showing Carson City Mint Coinage with columns for Pieces and Value. Items include Double eagles, Eagles, and Half eagles.

Table showing Total gold and silver with columns for Total gold and silver, Total gold and silver, and Dimes.

Total gold..... 24,012 \$316,720
Trade dollars..... 122,000 122,000
Dimes..... 95,000 95,000

Total silver..... 1,072,000 \$217,000
Total gold and silver..... 1,096,012 \$533,720

San Francisco Mint Coinage.—The coinage of the San Francisco Mint in August amounted to \$6,662,000, in 2,570,000 pieces. There were 253,000 double eagles, 1,329,000 trade dollars, and \$273,000 in subsidiary silver.

Copper.—We note sales of fully 1,000,000 lb. of Lake copper on spot and to arrive at 18 to 18½ for the former and 18¼ to 18½c. for the latter. The asking price at the close is generally 18½c. The sale of 5,000,000 lb. at 17½c. for export, mentioned in our last, is not yet an announced fact, although it is generally considered as good as consummated. This is what has given the existing strength to prices. The London quotations, according to the latest cable advices, were unchanged.

Tin.—We note a sale of 3,000 slabs of Straits and Malacca at 15c., since when the market has advanced and is now quite firm at 15½c. gold. Refined English has advanced to 15¼c., while L. & F. and Banca remain unchanged, the former at 14¾c. and the latter 17c., gold. Straits in London is quoted at £65 per ton, with upward tendency, and in Singapore \$19.20 per picul, with exchange at 4/.

Tin Plates.—There has been a liberal jobbing trade, although no large sales. We quote, in gold, per box, as follows: Charcoal tins, \$6.62½ to 6.75, and ternes, \$6.12½; coke tins, \$5.75 to 6, and ternes \$5.50 to 5.62½.

Messrs. Robert Crooks & Co., of Liverpool, under date of Sept. 10, say of tin and ternes plates: "Coke tin orders, makers find, are secured by present small reductions in price; but this is not their experience with charcoals, which continue in very small demand. For delivery over next two months, makers are quite prepared to accept to-day's rates, a pretty good index of their opinion of prospects in the immediate future."

Lead.—We note a sale of 100 tons of ordinary at 4¾c, and 150 tons at 4¾c. The market may be quoted at 4.80@4.75c. The trade was somewhat excited to-day by the rumor that 3,000 tons had been sold at 4¾c. This proved to be without foundation and was probably the outgrowth of a sale of about that number of pigs. Although the price of lead is suffering from an over-production of the article, yet the reports from Utah show that the production for August has only been exceeded twice in the history of the Territory. Advices from San Francisco bearing date of the 6th inst. announce shipments from that port to this city by the Granada of 64,447 lb. of lead and 921,011 lb. of base bullion.

Spelter and Zinc.—Spelter, owing to the resumption of operations at some of the works, is declining in prices under only a fair business. We quote 5¾@6c. according to quantity and quality. With a liberal trade we quote sheet zinc at 7¾@7½c.

Antimony is quoted at 11¾@11½c., gold.

Quicksilver.—The San Francisco Commercial Herald of Sept. 6 says: "Since our last weekly reference, when we made the announcement of purchases of 6,000 flasks in Hongkong for account of Flood & O'Brien, and the shipment of 1,000 flasks per Oceanic for this city, to be followed by other shipments to this coast, we have had rather an unsettled yet quiet market. It is currently reported that several small lots have been bought up, possibly aggregating 2,000 flasks, for the outgoing steamer of the 12th inst. for Hongkong, chiefly at 52½c., and at this writing this may be called the nominal price. The spot stock in first hands is very light, not to exceed 500 flasks. We present our readers with an interesting summary of the Hongkong market dated from July 25 up to Aug. 3, inclusive: July 25th, several hundred flasks sold at \$61@61.50 per picul; 26th, 1,000 to 2,000 flasks sold at \$62@64@65@66 per picul; 26th, evening price ran up to \$68 per picul; July 27th, about 3,000 flasks sold at \$70@72, up to \$77 per picul; July 28th, from 1,000 to 2,000 flasks sold at \$78@80, reaching \$82 per picul; July 30th, about 3,000 flasks sold at \$82@83.50; same day declined to \$81, same evening up again to \$83.50 per picul; July 31st, about 1,000 flasks sold at \$83, and

COAL TRANSPORTATION AND GENERAL MINING STOCKS.

Main table with columns: Name and Location of Company, Feet on Vein, Capital Stock, Shares (No., Par Val.), Assessments (Total levied to date, Date and amount per share of last), Dividends (Total paid to date, Last Dividend, Rate per Ann.), Highest and Lowest Quotations per Share in Currency (Sept. 8-14), and Sales.

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

Total Assessments levied to date. \$46,026,310
Total Mining Dividends disbursed to date. 123,486,584
Total Sales of Coal Stocks for the week. \$322,800 shares.
Total Sales of Mining Shares for the week. 49,535 "

in the afternoon down to \$81, in the evening up again to \$84 per picul; August 1st, about 2,000 flasks sold at \$84@85, advancing up to \$93 per picul; on the 2d, sales at \$94@95 per picul; 3d, very little sold; no sellers; price, \$96@97 per picul. The first buyer here in Hong-kong is the Charter Bank of India, London, and China; they bought about 5,000 flasks, costing them \$61@82 per picul; then Chinese and foreigners bought it on speculation, to turn over when they could make a profit; plenty changed hands. 'R' sold 500 flasks at \$63 per picul, bought back again 1,300 flasks at \$88 per picul.

The present stock of quicksilver is mostly in the hands of foreigners, little held by Chinese. The slightest news either from San Francisco or London starts up speculators to go around to stir up the price. Should the price rise one cent per pound in San Francisco the price here would rise \$2 per picul. If price rises two or three cents with you the price here is sure to rise \$4 to \$5 per picul. If 10-cent rise in San Francisco, it would rise here \$10 to \$20 per picul. Be sure China prices will follow yours either up or down. If a decline in San Francisco a fall in Hong-Kong would be sure to follow in the same proportion as the rise." In addition to the foregoing letter from Hong-Kong from an educated Chinese merchant, we add the following from another correspondent, a member of an eminent mercantile house. He says: "The market opened July 26th at \$62@64.50 per picul; 27th, sales at \$65@66, chiefly to foreigners. After this Chinese buyers run up the price to \$75. On the 28th, and on Sunday, the 29th, sales were made at \$87; on the 30th, at \$81@82; on the 31st, \$83@84, and up to \$85@86. August 1, \$85 per picul offered for future delivery; \$88.50 paid for 1,000 flasks; August 2d, \$92@96 paid; August 3d, large sales at \$97.50@100 for future delivery. Stock, 9,000 to 10,000 flasks." Our latest cablegram from Hong-Kong gives the price at \$80 per picul in London, £8 per bottle. At the close 50 flasks sold at 50 cents. Our quicksilver receipts since September 1st, 1,115 flasks.

Our monthly receipts of this article compare with 1876 as follows:

Month.	1876—Flasks.	1877—Flasks.
January.....	4,158	5,414
February.....	3,926	7,301
March.....	3,916	5,441
April.....	4,630	6,115
May.....	5,258	7,952
June.....	5,730	5,632
July.....	4,893	5,337
August.....	6,496	6,050
Totals.....	39,007	48,342
Increase this year.....		9,335

Our exports by sea for August, 1876-7, are as follows:

To	1876—Flasks.	1876—Value.	1877—Flasks.	1877—Value.
China.....	3,437	\$116,808	2,416	\$107,728
Mexico.....	425	14,555	715	32,742
South America....	350	12,052	100	4,016
Australia.....	60	2,043	50	2,182
Japan.....	20	689	...	...
New Zealand.....	...	...	31	1,423
Victoria.....	2	64	10	450
New York.....	349	12,725	...	...
Central America....	...	...	...	...
England.....	600	19,590	...	...
Chili.....	...	...	50	2,008
Totals.....	5,293	\$178,526	3,372	\$150,549

Our exports by sea for the eight months of 1876-7 were:

To	1876—Flasks.	1876—Value.	1877—Flasks.	1877—Value.
New York.....	2,634	\$112,502	608	\$19,608
Mexico.....	3,635	157,180	6,369	217,979
Chili.....	400	17,611	325	11,485
New Zealand.....	250	10,691	170	5,949
China.....	15,495	636,745	24,433	850,422
Japan.....	251	10,992	238	8,397
Central America....	177	6,999	32	1,166
Australia.....	563	23,948	1,210	42,260
Honolulu.....	...	...	1	38
British Columbia....	8	314	19	742
South America....	1,777	70,825	2,219	75,527
Calcutta.....	...	...	50	1,570
England.....	650	19,590	...	...
Totals.....	25,848	\$1,067,097	35,074	\$1,235,143

Salt Lake Ore and Metal Market.

SALT LAKE CITY, UTAH, Sept. 14, 1877.

Argentiferous Lead (Base Bullion).—\$50@52 per ton for lead; \$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 6th inst. says: "There is nothing new to report in the bullion market, and prices may be said to be unchanged. The falling off in the premium of gold may affect the price of silver that much. Our New York bullion is being largely shipped via San Francisco, owing to a lower freight rate through. The shipments of ore and bullion for the week ending Monday, Sept. 1, were as follows: Twelve cars bullion to Omaha, 20 cars bullion to Pittsburg, 3 cars bullion to St. Louis, 20 cars bullion to San Francisco, 1 car bullion to Chicago, 10 cars lead ore to Omaha, 5 cars lead ore to Pittsburg, 15 cars lead ore to Sacramento, 7 cars lead ore to Chicago; bullion, 1,070,274 pounds; lead, 759,450 pounds; total, 1,829,724 pounds. There

are no transactions, except one car bullion, \$50 for lead, and \$1.18 for silver, which is about the market."

Mr. J. B. Meader, under date of the 8th inst., reports the following:

Shipments of base bullion for August, 4,422,228 lb.
" " " " 7 months, 28,509,667 lb.

Total for 8 months..... 32,931,895 lb.
Ore shipments for August reduced to lead..... 586,253

Ore shipments for 7 months reduced to lead..... 4,570,085—5,156,338 lb.

Total shipments of lead for 8 months, 38,088,233 lb.

FINANCIAL.

New York Stocks.

NEW YORK, Friday Evening, Sept. 14, 1877.

The business in the coal shares has been quite liberal although De'aware, Lackawanna & Western registered a decline of 10 from the highest point of the week, Delaware & Hudson 9%, and New Jersey Central Railroad 2 1/2 per cent. When the decline began to attract attention the daily press announced as a cause that work was about to be resumed. This would have been fully in accord with late fluctuations, a receiver for an advance, and a dividend for a decline. The sales of Delaware, Lackawanna & Western have aggregated 207,891 shares at 58 1/2 to 48 1/2, closing at 49 1/2. Delaware & Hudson Canal Company has ranged from 56 1/2 to 47 3/8, closing at 48 1/2 with sales of 18,017 shares. New Jersey Central Railroad has been but sparingly dealt in, the sales aggregating 3,120 shares at 18 1/2 to 16 1/2, closing at 17 1/2. We also note a sale of 70 shares of Pennsylvania Coal Company at 157. The prices now quoted are not based upon real values, but are the result of speculative manipulation, and there is no knowing how soon a break may come—for come it must, unless the outlook for the companies takes a decided and unexpected change for the better.

Glenwood Coal Co.—The annual meeting of this company will be held at Scranton, Pa., on the 20th inst.

Miscellaneous Sales and Quotations.

Sales and quotations of the stocks and bonds dealt in here at Philadelphia, and Baltimore for the week ending the 14th inst. are given in the following tables. The Philadelphia quotations will have a * affixed. The Baltimore quotations are indicated thus †.

STOCKS.

	QUOTATIONS.			Sales Shares
	High est.	Low est.	Clos- ing.	
American Coal Co.....	—	—	25	—
*Cambria Iron Co.....	—	—	55	—
*Pennsylvania Salt Man'g Co.	—	—	65	—
*Westmoreland Coal Co.....	—	—	60	—
*Buck Mountain Coal Co.....	—	—	25	—
*Schuylkill Nav. Co.....	—	—	6	120
St. Louis, I. M. & S. RR. Co.	6 1/2	5 3/4	6	—
Spring Mountain Coal Co.....	—	—	30	—
†Balt. & Ohio RR. Co. pref.	102 1/2	101 1/2	102 1/2	48
†Balt. & Ohio RR. Co. com.	115	110	111	80
†Pittsburg & Connellsville RR.	—	—	22	—
†George's Creek Coal Co.....	—	—	9	—
†Santa Clara Mining Co.....	—	—	70	—
†Atlantic Coal Co.....	1.40	1.25	1.35	200

BONDS.

D. L. & W. 7s. Conv't., 1892	J. & D.	—	—	104	—
" " " " " " " "	M. & S.	—	—	104	—
" " " " " " " "	F. & A.	100 1/2	100 1/2	109 1/2	14,000
N. J. C., 1st mtg. conv't., new	Q.	69 1/2	69 1/2	68	10,000
" " " " " " " "	M. & N.	63 1/2	62 1/2	63	19,000
L. & W. B. Coal Co., cons.	Q.	37	36 1/2	37	28,000
Am. Dock & Imp. 7s.	J. & J.	—	—	45	—
D. & H. C. Co., 1st mtg., 1884	J. & J.	99 1/2	—	98 1/2	2,000
" " " " " " " "	J. & J.	100	99 1/2	99 1/2	9,000
" " " " " " " "	J. & J.	—	—	102 1/2	—
" " " " " " " "	A. & O.	—	—	100 1/2	—
" " " " " " " "	A. & O.	108 1/2	—	100	4,000
St. L. I. M. & S., 1st mtg., 1892	F. & A.	96	95	95	13,000
Ches. & Ohio, 1st mtg., 1899	—	—	—	22	—
*L. V. RR., con. m. 6s., 1893	J. & D.	94	93 1/2	93	2,000
" " " " " " " "	M. & S.	—	—	110 1/2	—
" " " " " " " "	J. & D.	—	—	—	—
" " " " " " " "	J. & D.	—	—	—	—
" " " " " " " "	J. & D.	—	—	—	—
*P. RR., 1st mtg., 1880	J. & J.	104 1/2	—	104 1/2	5,000
" " " " " " " "	A. & O.	—	—	108	—
" " " " " " " "	J. & D.	91 1/2	—	91 1/2	20,000
" " " " " " " "	Q.	—	—	—	—
" " " " " " " "	J. & J.	106 1/2	106	106	5,000
" " " " " " " "	J. & D.	—	—	—	—
*P. & R. RR., 7s., 1893	A. & O.	—	—	—	—
" " " " " " " "	J. & D.	102	101 1/2	101 1/2	11,000
" " " " " " " "	J. & J.	—	—	42	—
" " " " " " " "	J. & J.	55	54	55	7,200
" " " " " " " "	J. & D.	—	—	101	—
" " " " " " " "	J. & D.	—	—	—	—
*P. & R. C. & I. Co., Deb. 7s.	M. & S.	50	—	—	1,000
*P. & R. C. & I. Co.....	—	—	—	—	—
*L. C. & N. Co. 6s., 1884	M. & Q.	104	—	104	4,800
" " " " " " " "	F. & Q.	104 1/2	103 1/2	—	4,900
" " " " " " " "	J. & D.	—	—	99	—
" " " " " " " "	J. & D.	88	87 1/2	87 1/2	9,300
*Schuylkill Nav., 6s., 1897	M. & Q.	—	—	—	—
*Pa. and N. Y. Canal, 7s.	J. & D.	—	—	—	—
*Pa. Canal Co.....	J. & J.	—	—	—	—
*Susquehanna Coal Co. 6s.	—	—	—	—	4,000
*Ches. & Ohio 1st m. 6s.	M. & N.	—	—	—	—
*Balt. & Ohio 6s., 1880.....	J. & J.	—	—	107 1/2	—
" " " " " " " "	A. & O.	—	—	106 1/2	—

Total transactions for the week.....\$173,400

Philadelphia Stocks.

PHILADELPHIA, FRIDAY EVENING, Sept. 14, 1877.

A comparatively limited business has been done in the coal shares dealt in on this market during the past week, and quotations in nearly all instances are lower. The largest decline is in the stock of the Pennsylvania Railroad Company, which is about 4 per cent. below the quotation of a week ago. Reading Railroad stock closes at 16 1/2, a falling off of just one point from our last. Lehigh Valley Railroad stock is unchanged, and but little dealt in. Lehigh Coal Navigation Company's stock has declined about 2 per cent. The total transactions aggregate about 93,000 shares.

Pennsylvania Salt Manufacturing Co.—100 shares of the stock of this company were sold at auction during the week at from \$67 1/2@68 per share.

Schuylkill Navigation Co.—\$1,000 of the third mortgage 6 per cent. loan bonds, due in 1895, of this company, were sold at auction during the week at 57 1/2 per cent.

The Lehigh Valley Railroad Co. announces a quarterly dividend of 1 per cent., or fifty cents per share, payable October 15. This last dividend makes the amount divided for the four quarters of the current year 5 1/2 per cent. It was expected at the last quarterly period to make the October quarterly dividend 1 1/2 per cent., the same as that made in April, which would have made the annual interest 6 per cent.

Copper Stocks.

We are without our usual review, this week, of the Boston Copper Stock market.

The Allowez Copper Mining Co. will hold a special meeting of the stockholders October 19, 1877, for the purpose of considering the expediency of making a mortgage on the company's mine works, real estate or franchises, or some part of the same, under the laws of the United States or of the State of Michigan.

Gold and Silver Stocks.

NEW YORK, Friday Evening, Sept. 14, 1877.

About 50,000 shares comprises the sales of mining stocks on this market during the past week, over one-third of this business was in shares of the Moose Silver Mining Company, the remaining transactions, about 34,000 shares, being distributed throughout a list of over sixty companies. The stock of the Eureka Consolidated, has materially advanced during the week, and closes at \$53 1/4 per share, equal to about \$49, gold, on the San Francisco market. Bertha & Edith has slightly declined under large sales the total amounting to 7,200 shares, with the exceptions noted, the market has presented but little of interest during the week, and from appearances we must wait a little longer for the rising tide in mining shares.

Ontario Silver Mining Co.—This company has furnished to the New York Stock Exchange, under date of July 31, the following statement covering its operations for six months: Receipts—From February 8, 1877, to July 31, 1877, 481 bars bullion; Nos. 493 to 973 inclusive; Assay value \$865,770.88, sold at 84-10 av. dis=\$792,414.72. Disbursements—Operating expenses, mining, milling, and development: From February 1, 1877, to July 31, 1877, inclusive, \$237,925.27. Dividends paid: No. 1, March 10, \$50,000; No. 2, April 10, 50,000; No. 3, May 10, 50,000; No. 4, June 15, 50,000; No. 5, July 15, 50,000; No. 6, July 15, 50,000; extra; No. 7, July 15, 50,000; total, 350,000; aggregate, 587,925.27; gold balance, 204,489.45. The production of this company for August was 105,535.73 (which equals \$370,025.18), out of which three dividends (Nos. 8, 9, and 10) of 50,000 each were declared, equal to 150,000. Gold balance Sept. 1, 1877, 220,025.18. The product of this company for six days in September (from the 3d to the 8th inclusive) was 24 bars of bullion, (of an assay value of 50,340.33.

The Savage Mining Company levied an assessment of \$1 per share on the 13th inst. This company is experiencing considerable trouble in its mine with the water, and it is probable that this assessment, which will aggregate \$112,000, is levied for the purpose of putting in heavier pumping machines.

MINING STOCK QUOTATIONS IN SAN FRANCISCO.

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

Alpha.....	12	Leopard.....	..
Belcher.....	7 1/2	Mexican.....	10
Best & Belcher.....	..	Northern Belle.....	..
Bullion.....	..	Ophir.....	17
Caledonia.....	4	Original Comstock.....	..
California.....	28 1/2	Overman.....	25
Chollar Potosi.....	35	Raymond & Ely.....	14 1/2
Cleveland.....	..	Santiago.....	..
Con. Imperial.....	1	Savage.....	8
Con. Virginia.....	..	Seg. Belcher.....	..
Confidence.....	..	Sierra Nevada.....	5 1/2
Crown Point.....	4 1/2	Silver City.....	..
Eureka.....	49	Silver Hill.....	..
Exchequer.....	49	South Comstock.....	3
Gould & Curry.....	9 1/2	South California.....	..
Hale & Norcross.....	7	Southern Star.....	..
Indian Queen.....	..	Trenton.....	..
Julia.....	2 1/2	Union Con.....	5
Justice.....	13	West Belcher.....	..
Kentuck.....	6	Yellow Jacket.....	10
Kosuth.....	..	Young America.....	..

The Commercial Herald of the 6th inst. says: "As a result of the very careful concentration mining stocks show a perceptible improvement as compared with the previous week—that is the general list participated to a greater extent in the advance, the aggregate sales showing a corresponding augmentation, although the output of stocks is very carefully managed, so as not to produce a glut and consequent stagnation in the

hopeful forward movement that we now take pleasure in recording. With reference to the theory of a possible widening of the Comstock belt as indicated by the developments in the Sutro Tunnel, the Stock Report of the 7th inst. says: "The Sutro Tunnel has already reached the regular Comstock vein formation. This is a very important fact. Developments in mines situated far to the eastward of what was formerly considered the east wall of the great lode have given rise to the reasonable theory that the Comstock proper is a much wider belt than has been generally supposed. The formation found in the Julia and in the Combination shaft of the Savage-Norcross-Chollar shaft are evidences that the ore-bearing zone is far wider than it has been hitherto understood to be. And now the indications in the face of the header of the Sutro Tunnel point to a still greater breadth. We look upon the results of the exploration by the tunnel as second to no discovery yet made upon the lode, not even excepting the many proofs that valuable ore deposits may be looked for at great depths. The early ideas of the greatness of the Comstock were far from being exaggerated. Almost every day fresh indications of expansion are presented."

The Empire Mining Company of Sierra County, Cal., has declared a dividend of \$2 per share, amounting to \$20,000.

Eureka (G. V.) Mining Company; this company has declared a dividend of \$2 per share, aggregating \$40,000.

The Excelsior Water and Mining Company of California has declared a dividend of 50c. per share, amounting to \$20,000.

Idaho Gold Mining Company of California.—This company has declared a dividend of \$7½ per share, amounting to \$23,250.

The Martin White Mining Company (Nev.) has levied its second assessment of \$2 per share amounting to \$20,000.

The Independence Mining Company of Elko County (Nev.) has levied an assessment of 15 cents per share.

The Lone Star and Eclipse Mining Co. of Inyo County, Cal., has levied an assessment of 10 cents per share.

The Utah Mining Company of Nevada has levied an assessment of \$2 per share amounting to \$40,000, this makes the 17th assessment levied by this company.

The De Free's Silver Mining Company of Nevada has levied its second assessment of 25c. per share, aggregating \$12,500. The main shaft of this mine is down 200 feet from the surface. The winze is down a total depth of 40 feet. Work on this winze and stopes has been discontinued, and the main shaft and new 215-foot level will be the only work prosecuted at present. We note recent quotations of this stock on the San Francisco Stock Board at \$1 per share.

The New Coso Silver Mining Company of Inyo Co., California, has levied its fifth assessment of 50c. per share, delinquent Oct. 24th.

The Grand Prize Silver Mine, located in the Tuscorora district, Nev., is turning out bullion at the rate

of about \$100,000 per month. Recent information from the mine says the east drift on third level is in 185 feet, and is connected with the east winze coming down from the second level, near the Argenta line. The west drift on the third level is in 184 feet. Both drifts continue to look splendid. The stopes are looking well and producing 60 tons of ore per day. This stock is quoted to-day, on the San Francisco market at \$17 per share. The company has also declared its first dividend of \$1 per share.

Raymond & Ely stock shows an advance over the quotation in our last. The Piche Record says of this mine: "Everything is looking well in the lower levels. In the 'black ore' the company have been engaged in cross-cutting for the purpose of getting at the width of the vein, and find it to be 25 feet. At the end of the main drift of the lower level there is a good body of ore, impregnated with native copper, which assays as high as \$188 in silver. This is distinct and a great way apart from the black ledge. The stopes on the 1,000-foot level shows no change. On the 6th level there is an improvement in the ore stopes, working in a vein of high grade ore. The mill at Bullionville has started to work crushing ore a week in advance of the time that was intended, owing to the ore-dumps being crowded with ore, over 800 tons being now on hand."

Gas Stocks.

NEW YORK, FRIDAY EVENING, Sept. 14, 1877.

We slightly advance the quotations of the stock of the New York Gas Company; otherwise there is no noteworthy change in our list as compared with the prices ruling a week ago. The transactions are unimportant.

Southwark and Moyamensing Gas Co.—We note a recent auction sale of 466 shares of the stock of this company in Philadelphia (par. \$10) at \$11 per share.

Cheap Light and Fuel.—East Liverpool, Ohio, is now supplied with natural gas. Wells are sunk and the gas comes up with great pressure. It is collected in a gasometer and distributed in the ordinary way. Houses are lighted and warmed with it, pottery furnaces are fueled with it, and cooking is done at the rate of \$1.50 per month. It is stated that the gas gives two and two-fifths greater light than the manufactured gas.

Utilization of Natural Gas in Kentucky.—The gas escaping from the wells is utilized at Warfield, Martha County, Ky., in lighting up the salt works.

Cambridge (Mass.) Gas Company.—We note a recent auction sale of 4 shares of the stock of this company at \$136.50 per share.

Boston (Mass.) Gas Company.—78 shares of the stock of this company were recently sold in Boston at \$77½ per share.

Haverhill (Mass.) Gas Company.—A recent published statement of the financial condition of this company is given as follows: Assets—real estate, \$40,000; machinery, \$35,000; cash and debts receivable, \$6,399; manufactures, \$3,797. Liabilities—Capital stock, \$75,000; profit and loss, \$10,197.

Gas in Trenton, N. J.—The city authorities of Trenton have concluded a contract for five years with the Trenton Gas-light Company to furnish the gas for the street lamps for 365 nights in the year, from half an hour after sunset until one hour before daylight, for \$29 per lamp per annum.

The Scranton (Pa.) Gas Company.—The Scranton Republican of the 12th inst. says: "The Gas-light Company is at present erecting machinery which, when completed, will give to gas consumers good light at much cheaper rates than heretofore."

The Louisville (Ky.) Gas Company, groaning under the continuous growling of people and press, has notified the Council Committee that it will reduce the price of gas to manufacturers from \$1.43 to \$1.18, and to private consumers from \$2.70 to \$2.38, if a guarantee will be given that the pipes of no other company will be allowed to be laid in Louisville.

The Citizens' Gas Light Company of Hamilton, Ohio, was organized on the 22d ult., with a capital stock of \$75,000. They propose to put in a bid on the 6th inst., for the supplying of gas in Hamilton, for a period of ten years, and if the contract is awarded to them they will immediately commence the erection of gas works a distance out of the city.

Carthage, Mo.—We note the statement that this place is to be lighted with gas.

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.

Table with columns: Companies in New York and vicinity, Capital Stock, Par., Rate per an., Am. of last, Date of last, Bid, As'd. Lists various gas companies like Mutual, N. Y., Gold Bonds, N. York, etc.

†Paid irregularly.

ADVERTISERS' INDEX.

Air Compressors:

- Clayton, James, Brooklyn, N.Y.
Norwalk Iron Wks. Co., S. Norwalk.
Assaying Tools and Chemicals:
Benjamin, E. B., New York.
Boulter's Superior Muffles, Phila.

Attorneys and Counselors:

- Bloss, John B., Washington, D. C.
Britton & Gray, Washington, D. C.
Mendenhall, W. K., Washington, D. C.
Morrison & White, Georgetown, Colo.

Bankers and Brokers:

- Tracy, Arnold & Co., New York.
Van Deventer & Patton, New York.
Blasting Powder:
Lafin & Rand Powder Co., New York.
Oliver, Paul A., Wilkes-Barre, Pa.

Blowers:

- Keystone Portable Forge Co., Phila., Pa.
Books and Periodicals:
Capital and Labour, London, Eng.
Colliery Guardian, London, Eng.

Engineers' Instruments:

- Edgerton, N. H., Philadelphia.
Gurley, W. & C. E., Troy, N. Y.
Heller & Brightly, Philadelphia.

Fire Brick:

- Colson, Chas. D., Chicago, Ill.
Evans & Howard, St. Louis, Mo.
Kreischer, B. & Son, New York.
Mauer, Henry, New York.

Gas Process:

- Mackenzie & Sayre Mfg. Co., New York.
Stevens, S. A. & Co. (Lowe Process), Philadelphia, Pa.

Hot Blast Stoves:

- Whitwell's, Philadelphia.

Coal and Ore Separators:

- Bradford, H., Philadelphia.
Fraser, Chalmers & Co., Chicago, Ill.
Krom, Stephen R., New York.
Wetmore, George C., New York.

Copper Works:

- Pope, Cole & Co., Baltimore, Md.

Engineers and Chemists:

- Courts, Wm. C., Wyandotte, Mich.
Degenhardt, G. C. Louis, New York.
Garbutt, Abbott Bros., & Woodward, Lake City, Colo.

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- Whitwell's, Philadelphia.

Hotels:

- Crawford House, Colorado Springs, Colo.
Teller House, Central City, Colo.
Victoria Hotel, South Pueblo, Colo.

Hydraulic Jacks and Punches:

- Dudgeon, Richard, New York.
Lyon, E., & Co., New York.

Injectors:

- Nathan & Dreyfus, New York.
Wilke, H. W., New York.

Locomotives:

- Burnham, Parry, Williams & Co., Phila.

Metal Brokers:

- White, Edward P., New York.

Mining Tools and Goods:

- Tritch, George, Denver, Colo.

Machinists' Tools and Machinery:

- Wood & Light Machine Co., Worcester.

Mineral Wool:

- Elbers, Alexander D., New York.

Mining, Crushing, Stamping, and Smelting Machinery:

- Adams, B. C., Denver, Colo.
Aitchison, B. & Co., Chicago, Ill.
Black Hawk Foundry & Mach. Wks., Colo.

Patents:

- Stetson, Thomas D., New York.
Lurmann, F., Germany.

Pumps:

- Carr, A., Selden Direct-Acting, N. Y.
Cameron, A. S., New York.
Clayton, James, Brooklyn.

Colorado Central RR.

- Denver & Rio Grande RR.
Denver, South Park & Pacific RR.
Pennsylvania RR.

Roofs, Girders, etc.:

- Scaife, Wm. B., & Sons, Pittsburg, Pa.

Rock Drills:

- Am. Diamond Rock Boring Co., N.Y.
Burleigh Rock Drill Co., New York.
Ingersoll Rock Drill Co., New York.

Rubber and Belting:

- Gutta Percha & Rubber Mfg. Co., N. Y.
N. Y. Belting & Packing Co., New York.

Safes and Scales:

- Marvin Safe and Scale Co., New York.

Smelting and Refining Works:

- Crooke Bros., New York.
Stetefeldt Furnace Co., San Francisco, Cal.
United Royal Smelting Works, N. Y.

Steam Engines:

- Wilde, R. W., New York.

Steam Regulators:

- National Iron Wks. N. Brunswick, N. J.

Steel Works:

- Crecent Steel Works, Pittsburg, Pa.
Edgar Thomson Steel Co., Pittsburg, Pa.
Park, Bro. & Co., Pittsburg.

Tubes and Pipes:

- Abendroth & Root Mfg. Co., New York.
National Tube Works, Boston, Mass.
Worthington, H. R., New York.

Ventilators:

- Keystone Portable Forge Co., Phila., Pa.
Murphy, Francis, Philadelphia.

Water Wheels:

- Stout, Mills & Temple, Dayton, O.

Wire Rope:

- Channon, H. & Co., Chicago, Ill.
Hazard Mfg. Co., Wilkes-Barre, Pa.
Mason John W. & Co., New York.
Roebling's Sons, John A., New York.

Miscellaneous:

- Baily, F. Brussels, Belgium.
First National Bank of Georgetown, Colo.
Lead and Silver Mine for Sale.

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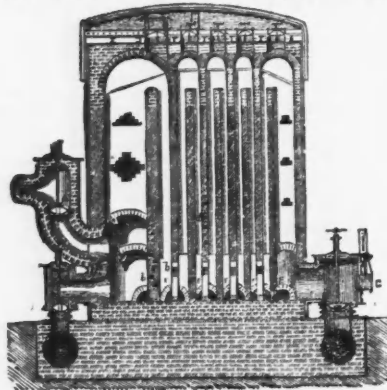
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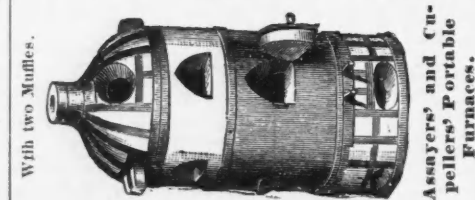
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