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CONTENTS.

THE TIN MINES OF DAKOTA.

The development of good tin mines, and the production and manufacture of the tin we use in this country, are consummations to be desired by every patriotic American, and notwithstanding the failure of the past, we confidently expect to be able to record these events before many years have gone by.

It is true that it is now nearly three years since the discovery of tin in Dakota was announced, and the yield so far has been but a few sample lots of ore, which have been concentrated here and smelted in the laboratory into tin ingots; some small parcels of concentrates and stream-tin shipped as samples to England; and the production of about seven tons of black tin in the few weeks' run of the Etta mill. In Dakota, hundreds of tin claims have been located in Custer, Pennington, and Laramie counties, and almost as many little holes have been made in the ground; considerable work has been done on the Etta claims, and some systematic developments in the Nigger Hill group of mines; but it can not be denied that the results have not been as encouraging as had been expected. Up to this time, not a single profitable or prolific mine has been found, although such a number of fair and even quite encouraging "prospects" have been discovered that we still confidently expect that a mine will yet crown with success the labors of the ever-hopeful prospector, and release this country from dependence on foreign sources for its supply of this useful metal.

It is to be regretted that such exaggerated reports were published on the first discovery of the Etta and other Dakota mines; for when it was found that fully 400 tons of ore—much of it selected ore—that were treated in the Etta mill produced only about seven tons of concentrates, the reaction was all the more severe, and certainly lessened confidence in the future of the district. This result was all the more disappointing when it was remembered that these few tons of ore and of concentrates were the outcome of about two years' development, where we were told the quantity of ore justified the building of a 200-ton concentrating mill.

Since this *fiasco*, the report has been circulated that the apparent failure of the Etta mine and the stoppage of the mill were merely "sharp" tricks, resorted to with the view of depreciating property in the Black Hills, and thus allowing the Harney's Peak Company to get control of it at low prices.

The parties who have circulated this report do not appear to recognize the discreditable character of such a transaction, and, though they boast of what some old-fashioned people would call their dishonor, we believe it is beyond doubt that the failure of the Etta to produce either the expected quantity or quality of ore was absolute and not assumed, and that this failure imposed upon the Harney's Peak Company the necessity of purchasing other prospects with the hope that some of them might develop into mines, and thus save the investment already made in the Etta.

We understand that the company has, among the great number of prospects it has purchased or bonded, some of them at what are considered exorbitant figures, some really promising "shows," and we trust that out of these some may eventually develop into profitable mines. The company has already expended a large sum of money, and, though this is probably out of proportion to the actual value of what is yet known of the properties purchased, yet the opening of a single good tin mine would quickly turn the balance of the account largely in the company's favor.

There are in the Black Hills two series of tin veins. That in the Southern Hills occurs in the selvage, as it were, of the slates (Lower Silurian or Huronian), where they lie up against the magnificent granite core that culminates in Harney's and its group of companion peaks. These slates as they sweep around, for a distance of over thirty miles, the eastern, northern, and western flanks of the granite range, are fissured by great granite dikes, which follow their strike, but cut across their dip. They are so large, and stand out so prominently in places where they have resisted the influences that have swept away their inclosing slates, that they form conspicuous objects in the landscape. In places, the mineral constituents of the granite are associated, in others segregated, so that there are veins where quartz preponderates, and others where feldspar or mica composes the vein filling. But everywhere, almost without exception, crystals of cassiterite may, by diligent search, be found, and in spots tons of marvelously rich rock may be broken from the surface.

It is true, of course, that neither isolated crystals nor widely scattered bunches constitute a mine. And so far as our information enables us to form an opinion, it is, at least, doubtful whether any deposits of ore of such size and average grade as to be worked profitably have yet been opened. In the Southern Hills, water and wood are abundant, and the conditions are therefore most favorable for the prosecution of a successful undertaking, when the mine shall have been opened.

The other tin field lies on Nigger Hill, in an isolated patch of granite, about twenty miles to the west of Deadwood, on the Wyoming line. The American Tin Company has sunk several shafts on the tin veins and washed stream-tin out of the gulches, and, it is understood, proposes to unite its mines with the nearest water by fifteen miles of railroad.

Two powerful organizations are therefore at work in the tin fields, working with money and energy. The Black Hills are now reached by the Fremont, Elkhorn & Missouri Valley Railroad, and are therefore relieved from the incubus of prohibitory freights. If, therefore, there be mines of tin concealed in these recesses, we may reasonably expect that their

products will soon reach the market. It would be well, however, should such a happy consummation be reached, that their owners recollect that the uses for tin, and therefore its consumption, though large, are limited, and that consequently the throwing of a large quantity of tin on the market, or the circulation of exaggerated reports of what will be thrown on the market, is sure seriously to depress it. They will do well to take warning from the fate of the copper miners, who, by striving to become rich too fast, have made themselves poor.

THE DUTY ON IRON ORES.

The recent decision of the Treasury Department, that the duty on imported iron ore should be levied upon the net instead of the gross weight, that is, upon the weight of the ore after deducting the moisture (as determined by drying samples at 212 degrees Fahrenheit), has attracted much attention and called forth from the Western Iron Ore Association, of Cleveland, a vigorous protest and request for a re-hearing of the case. This Association represents the great iron ore interests of Lake Superior; but the amount of duty involved (which may average 5 cents per ton) can scarcely be considered an important matter as protection to the Lake Superior Bessemer ores. The question turns on the legal meaning of the term "a ton of iron ore," and it has been decided, thus far, on the basis of the usage of importers. In the sale of domestic ores, there is no such general usage. It is not common to pay for such ores according to sample analyses. The general practice is, that an ore is sold at so much per ton—not so much per unit of iron. Often there is a guarantee of some minimum percentage of iron or of phosphorus.

What is the practice in the purchase of foreign ores will clearly appear from the following statement addressed to the Secretary of the Treasury by Messrs. COOPER, HEWITT & Co., of this city. These gentlemen, who have kindly furnished, at our request, a copy for publication, assure us that the forms of contract and bill described in the statement are both taken from actual recent transactions:

TO THE HONORABLE SECRETARY OF THE TREASURY, Washington, D. C.:

DEAR SIR: On the 23d of September, 1886, a statement was signed by a considerable number of importers of iron ore, declaring certain facts as to the manner of paying for such ore, and expressing an opinion based on these facts as to the meaning of the term "iron ore" in commerce.

A copy of this statement is hereto appended.

This firm, through one of its members, signed the statement referred to, which it would not have done upon more careful consideration; first, because the firm is not an importer of foreign ore, but only a large purchaser thereof; secondly, because it seems preferable to make a simple statement of the facts, leaving the duty of drawing inferences to the officers of the government, to whom it belongs.

The following particulars, taken from a wide experience in the purchase of foreign ores, are therefore submitted. They explain more in detail the general declaration of the importers, above mentioned.

In purchase of foreign ores, payment is based, as a rule, upon the actual quantity of iron contained in the ore. This is ascertained by chemical analysis of the ore, dried at 212 degrees Fahrenheit. This drying removes the water which may be present as moisture, but it does not remove the water which exists in many ores in chemical combination, as part of the mineral itself.

Thus, for instance, Porman ore imported from Carthagena, Spain, may contain, after drying at 212 degrees Fahrenheit, as much as 9 or 10 per cent of "combined water." Mata ore from Santander, Spain, was found to contain, after similar drying, over 12 per cent combined water. This water is considered an ingredient of the ore.

A common form of contract fixes the price at so many cents per unit of metallic iron per ton of 2240 pounds of ore dried at 212 degrees Fahrenheit. In settlement of such contracts, the bill rendered by the importer states, first, the gross weight of the cargo returned by the United States Custom-House weigher; from this is deducted the amount of moisture, as determined by the chemist in drying the samples. The remainder is considered the quantity of ore to be paid for, at so much per unit (that is, for each unit per cent) of metallic iron contained in it.

Another form of contract fixes the price at so much per unit of iron, as determined by analysis, in the material actually delivered. In this case, as in the former, the chemist is obliged to dry his sample at 212 degrees Fahrenheit, before analysis; and the result of his analysis shows the percentage of iron in the dried ore; but he then recalculates the percentage upon the wet ore as a basis; and the bill is rendered accordingly.

Thus, to take a simple example, a cargo of 1000 tons, containing 10 per cent moisture, that is, 900 tons of dried ore and 100 tons of water not chemically combined, is sold at 10 cents per unit of metallic iron. The chemical analysis of the dried ore gives 60 per cent as the contents of iron. Under the first form of contract above described, the bill would be rendered for 900 tons of ore at 10 cents per unit, or $6 a ton, amounting to $5400; under the second form of contract, the chemist would report that the ore lost 10 per cent in drying, that the dried ore contained 60 per cent of iron, and that this (being 60 per cent of 90 per cent) was equivalent to 54 per cent of the total weight of the cargo. In this case, the bill would be rendered for 1000 tons at 10 cents per unit, or $5.40 per ton, amounting to $5400, as before. It is evident that, under all circumstances, the two forms of contract give the same result as to price, and secure the purchaser as against variations due to the accidental absorption of more or less water by the ore. These variations may be very large by reason of season, weather, etc., and if they were not eliminated by the methods of sale described, no foreign ore could gain a reputation which would serve as a guarantee of its value, and justify the making of contracts for future delivery.

The amount of water chemically combined in a given ore is, on the contrary, practically constant for that ore, and hence can be taken into account by purchasers in considering the metallurgical value of the ore, of which it is as much a part as the silica, oxygen, or other ingredients. This water, as has been observed above, is not removed by heating at 212 degrees Fahrenheit.

It is not intended to express here any opinion upon the legal bearing of the above facts; but it is deemed proper to point out, as an additional fact, that, if the gross weight of the cargo of foreign ore, including its uncombined moisture, be taken as the actual weight of ore subject to duty, the result is a levy of very different duties at different times upon the same ore; and since the additional moisture is no benefit, but an injury, to the metallurgical value of the ore (though, as has been explained, it is not paid for by the purchaser), the highest duty will thus be laid on the ore which is in the worst condition. Yours very respectfully,

NEW YORK, Oct. 21, 1886. COOPER, HEWITT & Co.

NORTH CAROLINA FIRE-CLAYS.

Correspondence of the Engineering and Mining Journal.

Not long ago, I had the opportunity of examining certain clays from Harnett County, N. C., and the results of chemical analysis and of fire-tests applied were so good that I have thought it might be of interest to some of your readers to know of it. The clays came from a point about two miles east of Spout Spring, a station on the Cape Fear & Yadkin Valley Railroad, and about the same distance from the railroad. They were reported as occurring in very considerable quantities, but I have made no examination of them *in situ*. They were all of a light gray color, except one that was of a cream color, and all were homogeneous in texture and free from grit. They were labeled respectively, Walker, Cameron, McNeill and Sprunt. Analyses as follows. We annex the analysis of Dowlais, a famous English fire-clay, for comparison:

	Walker. Per cent.	Cameron. Per cent.	McNeill. Per cent.	Sprunt. Per cent.	Dowlais. Per cent.
Silica (SiO_2)	70·60	75·34	69·70	74·51	67·12
Alumina (Al_2O_3)	20·46	17·06	21·80	10·85	21·18
Ferric oxide (Fe_2O_3)	1·82	1·94	1·21	....	1·85
Lime, magnesia, etc	1·85	2·56	2·74	.....	3·64
Lime and oxide of iron	.....	.....	.....	2·56	.....
Water	5·27	3·10	4·55	11·12	6·21
	100·00	100·00	100·00	99·04	100·00
Ratio alumina to silica	1 : 3·45	1 : 4·41	1 : 3·2	1 : 6·86	1 : 3·17

A small hand sample of the Sprunt clay stood the fire-tests applied by the Baltimore Fire-Brick and Retort Company very well indeed, burning to a beautiful flesh-color, and exhibiting no sign of fusion even upon the sharpest edges.

These clays are very near the composition of some of the most famous fire-clays in the world, as, for instance, the best Stourbridge, Dowlais, Boulogne (Pas-de-Calais), Hayanges (Moselle), the Loshayu clay near Meissen, the Gottveith clay from near Krems, in Austria, etc.

Take, for instance, a clay from Dowlais, South Wales, largely used for cast-steel pots. The composition is given by Percy, *Fuel*, page 99. This is very near the composition of the McNeill clay. It is, of course, useless to quote other analyses of famous clays. The composition of a good clay for fire-bricks, seggars, or glass-pots is well known. I direct attention to these clays for the reason that they have not been noticed before, and because the conditions there are favorable for a profitable business in manufacturing fire-proof materials on the spot. Fuel is cheap, pine wood being from 50 cents to $1 a cord. Labor is cheap; from 50 cents to $1 a day. The climate is mild and pleasant, and work can go on all the year round. The country is flat and sandy, but not unhealthy. The place is about two miles from rail. At Spout Spring, one can ship either north by way of Sanford and Greensboro', or Sanford-Raleigh-Weldon; or south by way of Fayetteville-Shoe Heel and the Carolina Central, or Fayetteville and the Cape Fear River to Wilmington.

There is no good reason why these clays should not be used on the spot for the Southern market. Transportation of the clays to the North is perhaps out of the question, owing to the proximity of the Jersey clays to the markets there.

I have no financial interest in the matter, as the land belongs to Alexander Sprunt & Son, of Wilmington, North Carolina, for whom I made the analyses.

W. B. PHILLIPS.

CHAPEL HILL, N. C., Nov. 1.

Capacity of European Locomotive Shops.—European countries range as follows in respect to their yearly productive capacity in locomotives: Great Britain, 2200; Germany, 2000; France, 1000; Belgium, 500; Austria-Hungary, 400; Switzerland, 120; Italy, 70; Sweden, 50; Russia, 40; Holland, 20; total, 6400. The greatest locomotive-works in the world, the Baldwin Works at Philadelphia, can produce 600 locomotives annually, while the Borsig Works in Berlin had a capacity of 300.

Co-operative Pumping.—Strenuous efforts are making to bring about united action for the drainage of the Westphalian collieries. There is much water in this coal-field, and the cost of drainage by individual action constitutes a heavy tax on the coal raised. It is now stated on good authority that the existing machinery is sufficient effectively to drain the whole of the collieries open for one tenth of the present cost, if placed under the direction of a central committee of management.

How the United States Pays its Debt.—A little more than twenty-one years ago, August 31st, 1865, the debt of the United States, less cash in the Treasury, was $2,756,431,571. The reduction in the twenty-one years is $1,522,310,116 or an average reduction of nearly 72½ million dollars a year. In 1865, the debt amounted to $78 25 *per capita* of the population, and the annual interest charge was $4.29 *per capita*. Last year, the debt was only $24.14 *per capita*, and the annual interest charge only 83 cents.

Silesian Zinc and Lead Prices.—*Kuhlow's* says that steps are taking for the reduction of the production of zinc, after prices have fallen so low that they no longer bear proper proportion to the cost of production. In the lead branch, a reduction had taken place in the blast-furnace lead smelted as a by-product. Prices have lately run as follows: Ia raw zinc, 28 marks; "W. H." brand (von Giesche's Erben), 27·60 marks; ordinary zinc, from 26·80 to 26·60 marks; other kinds, up to 27 marks; well-refined lead, from 23·50 to 24·50 marks; inferior, 23 marks, and under.

Production of German Smelting-Works.—In metric tons:

	August. 1886	August. 1885.
Puddling, pig, and spiegel-iron	149,373	172,705
Bessemer pig	35,780	41,411
Thomas pig	60,350	60,214
Foundry pig and cast goods I. (estimate)	30,299	29,626
Estimate for works that have not sent in returns	3,100	.....

The total production of the eight months, January to August, 1886, was 2,248,417 tons; of 1885, 2,497,079 tons.

THE ELIZABETH COPPER MINE, VERMONT.

Written for the Engineering and Mining Journal by Henry M. Howe.

The owners of the Elizabeth copper mine have preserved such silence about their property that the world is practically ignorant of its existence, though it contains one of the very largest bodies of copper sulphurets now known to exist on this continent. In Mr. A. F. Wendt's elaborate paper on the Copper Deposits of the Alleghanies, its name does not even appear in the index, nor have I met with any reference to it in his text. In Mr. Wheeler's paper on the Copper Deposits of Vermont, it is passed over very briefly. It may not be inopportune to supplement the information that Messrs. Wendt and Wheeler have so lately given the public about our Eastern sulphide copper mines by here placing on record some facts concerning the Elizabeth mine.

The accompanying table gives some of the more important features of this and other important American deposits of pyrites and of pyrrhotite, compiled from more or less trustworthy sources:

DIMENSIONS AND RICHNESS OF CERTAIN DEPOSITS OF CUPREOUS SULPHIDES.

Locality.	Length. Feet.	Thickness. Feet.	Percentage of copper.	Ore.
Ore Knob, N. C. ...	over 2800	8 to 16, ave. 10	3·9 to 4·6	Chalcopyrite and pyrrhotite.
Carroll Co., Va. ...	.....	20 to 70	2·5	
Stone Hill, Ala...	1000	.....	5·5 to 6·1	Pyrite.
Isabella, Ducktown, Tenn. ...	.....	400 or more	.....	Chalcopyrite and pyrrhotite.
Arminius, Louisa Co., Va ...	.....	60	little or none	Pyrite.
Vershire, Vt ...	100	20	6	Pyrrhotite and chalcopyrite.
Union and Corinth, Vt	max. 150	maximum 10	9·5	" "
Davis, Mass.....	600	9 to 25	1·41	Pyrite
Milan, N. H.... ...	... .	14 to 40	.....	"
Betts Cove, Newfoundland ...	.....	4 to 12, max. 60	... .	
Crown Mine, Capleton, Que., Can...	up to 300	max. 55	5	"
Elizabeth Mine, Vt.	250±	max. 64	4 to 6	Pyrrhotite and chalcopyrite.

While I have not perfect confidence in certain of the above figures, they suffice to show that the Elizabeth mine stands among the most important of the sulphide copper mines of this country.

Situated near South Strafford, Orange County, Vermont, at a distance of some ten miles from the Passumpsic Railroad at Pompanoosuc, and some eight miles from the Vermont Central Railroad at Sharon station, the Elizabeth mine in its general features resembles those of Ely, Ducktown, and Ore Knob, and less closely those of Capelton, Milan, N. H., Charlemont, Mass., and Louisa County, Va. It appears to be a colossal lens of pyrrhotite and chalcopyrite, mixed with labradorite and a little mica (phlogopite?). The foot-wall of the ore-body dips about 70 degrees, while what appears to be its major axis, or the axis of its greatest extension, instead of being approximately perpendicular to its outcrop, as in so many similar deposits, pitches very flatly, making an angle of only some 12 degrees with the horizon. Its shape and position, then, are those of an indefinitely prolonged flattened sausage, whose length makes an angle of 12 degrees with the horizon, the whole sausage reposing on a plane that dips 70 degrees.

From the table given, we see that its size is gigantic. (The thickness, 64 feet, is from my own measure.) This and other conditions, such as solidity of roof, dryness, etc., favor mining at a very low cost, and on a very extensive scale. One thing is clear here, we have an ore-body. For sufficient reasons, the workings at present show what, for a deposit of this size, is but a trifling quantity of ore in sight, say from 80,000 to 90,000 tons, which would be a formidable quantity for a smaller mine. But they are of such a shape that a few thousand dollars spent in drifting would probably increase the visible ore supply to some 200,000 tons.

Owing to the somewhat tentative methods employed in the past, it is not easy to arrive at exactly what the tenor of the ore has been. From very careful study of the existing data, I believe that, dividing all the material broken into two equal portions, the richer will probably carry about 5·5 per cent of copper and the leaner about 1·75 per cent.

The richer material is admirably adapted both to smelting and to Bessemerizing. The presence of a considerable amount of alkali in the feldspar and mica, with the existing silica and the iron oxide formed by heap-roasting, give an exceedingly fusible, self-fluxing ore; the slag, often without any extraneous fluxing matter, being admirable in every respect, light and thin, so that shots of matte separate readily. Even with the small furnaces heretofore used, the actual monthly averages show a fuel consumption of not over 1 to 7.

The quantity of iron sulphide in the ore admirably fits it for Bessemerizing; and for this purpose, water-power, said to be ample during the greater part of the year, is at hand. The leaner half of the ore appears well suited to leaching, since, when roasted in heaps, a large proportion of the iron and copper is converted into sulphates.

The quality of the copper, of which a considerable quantity has been refined by the Orford Copper and Sulphur Company, is altogether exceptionally fine, and it should considerably enhance its selling price.

The ore is said to contain a considerable amount of gold and silver, but in this respect our information is rather scanty.

Compared with certain other deposits, the Elizabeth stands at a disadvantage in that its ore is pyrrhotite, which is unsuited to sulphuric acid manufacture, while the ore of certain of its competitors is pyrite, from which a large amount of sulphur is recovered as sulphuric acid, with great profit. A second disadvantage under which the mine labors is, that the proportion of low-grade to smelting ore is unusually high. Weighing against these disadvantages its enormous size, its exceptional facilities for mining cheaply and on a large scale, the superiority of its copper, and the unusually low cost of smelting and further treatment, I believe that, while it can not compete with the Calumet & Hecla and some other Lake Superior mines, or with the Orford Company's Crown mine, yet there are few other important mines in this country whose cost of production is not necessarily greater than that of the Elizabeth mine under judicious management.

Boston, Oct. 28.

THE IRREGULARITIES OF THE BLAST-FURNACE PROCESS, AND A PRACTICAL WAY TO AVOID THEM.*

By Edward Walsh, Jr., St. Louis, Mo.

(*Concluded from page* 314)

In order to answer the second objection satisfactorily, it will be necessary to call attention to a well-known law of physics, and to its practical application in the materials to be treated in the shaft of the blast-furnace. In the selection of iron ores to be used, preference (other things being equal) is always given to porous or open-grained ores, as they are said to work free in the furnace, while it is known that they require less fuel for smelting.

As the iron ores are either porous when first introduced into the furnace, or at least become so very soon afterward, when subjected to the heat, to the reducing influences, and to the action of carbon impregnation, the law for capillary transpiration of the gases through the pores of the ores will apply. It is thus announced by Watts:

"The rate of transpiration for the same gas increases, *cæteris paribus*, directly as the pressure; in other words, equal volumes of air, at different densities, require times proportioned to the densities. For example, a pint of air of double the density of the atmosphere will pass through the capillary tube in half the time that would be required for a pint of air of the natural density, under equal propulsive force.

"The same uniformity in the results was obtained whether the tubes were of copper or of glass, or whether a porous mass of stucco was employed, provided the length of the tubes exceeded their diameter in the ratio above mentioned.

Though Mr. Bell has not called attention to the fact, this law will account in a very satisfactory manner for the marked difference of the results obtained in a series of his experiments, in which he subjected like specimens of Cleveland ironstone, under the same conditions of time and temperature, to the influence of pure carbonic oxide gas.

"The samples" (Cleveland ironstone), says Mr. Bell,† "submitted to the action of pure carbonic oxide had been calcined to different degrees of hardness, as a ready means of obtaining variations in physical structure. The same quantities (2 grams of each specimen) were placed simultaneously in an iron vessel immersed in melted lead, and a pretty uniform temperature, namely, 770 degrees Fahr. (410 degrees C.), was maintained for six hours. During this time, 65 liters of the gas were passed through the apparatus in the first experiment, and 213 liters in the second.

"The specimens are distinguished by the letters of the alphabet, '*a*' being the least calcined and '*f*' the most calcined."

	SLOW CURRENT.			QUICK CURRENT.		
	Oxygen removed Grams.	Carbon deposited. Grams.	Ratio of carbon deposited to oxygen removed.	Oxygen removed Grams.	Carbon deposited. Grams.	Ratio of carbon deposited to oxygen removed.
a	·047	·160	3·40	·091	·572	6·28
b	·018	·354	3·28	·148	1·005	6·79
c	·104	·326	3·13	·121	1·562	12·89
d	·061	·211	3·46	·201	2·868	14·24
e	·063	·131	2·09	·200	1·125	5·62
f	·025	·106	·13	·104	·659	6·33
Total,	·468	1·118	2·58	Total,	·865	7·791	8·69

"It is not, of course, to be wondered at that the amount of reduction and weight of carbon deposited should be more marked in the rapid than in the slower current of the carbonic oxide; but it happens that not only do the 213 liters of resulting gas contain more CO_2 than the 65 liters, but the former was found to contain more CO_2 than the latter per unit of volume. The composition of resulting gases by volume was as follows:

"When 65 liters were passed over samples, in six hours,

$$4{\cdot}29\ CO_2 + 95{\cdot}71\ CO = 100 \text{ vols.}$$

"When 213 liters were passed over samples, in six hours,

$$8\ 22\ CO_2 + 91{\cdot}78\ CO = 100 \text{ vols.}$$

"Other trials afforded similar results as regards the much larger amount of oxygen removed and carbon deposited the way described; although it did not always happen that the carbonic acid (CO_2) in the rapid current was so much in excess of that in the slow current.

"On the whole," continues Mr. Bell, "I am inclined to the belief that some slight elevation of temperature accompanies the rapid passage of the gas, owing to a more energetic action than takes place with the slower current, and that this rise of temperature in its turn has promoted chemical action."

It will be apparent that, in order to induce the passage over the specimens within a given time of the rapid current or greater volume, a relatively greater density of gas was required for the rapid than for the slower current.

Now, regarding the practical application of this law to the materials contained in the blast-furnace shaft, which is generally considered a mere receptacle to hold a quantity of materials in preparation, if it is sufficiently capacious and has considerable hight, it is supposed to answer the purpose without regard to form. But, as will be seen, the lines of the shaft above the zone of fusion will affect the results.

The amount of gas passing through a unit of area of a given zone of the shaft per unit of time (assuming that uniform action is taking place in the lower parts) will depend on the horizontal sectional area of that zone, and the density or pressure of the gases will be affected in a direct ratio with this sectional area. Hence we may conclude that the more narrow, within practical limits, the furnace-shaft is constructed, the more thorough and the more energetic the actions of reduction and carbon impregnation will be; consequently, the better the materials will be prepared to be received in the zone of fusion.

In the above qualification, "within practical limits" means that the requirements of the process should not be interfered with in any way, namely, that the materials should be held in the shaft in sufficient quantity and for the proper time to intercept useful heat and to gain as full effect as can be practically obtained from the gases; also, that the diameters should never be reduced to where they will cause the blowing engine too much labor.

* A paper read at the Meeting of the American Institute of Mining Engineers, St. Louis, October, 1886.

† *Principles of the Manufacture of Iron and Steel*, London, 1884, p. 190.

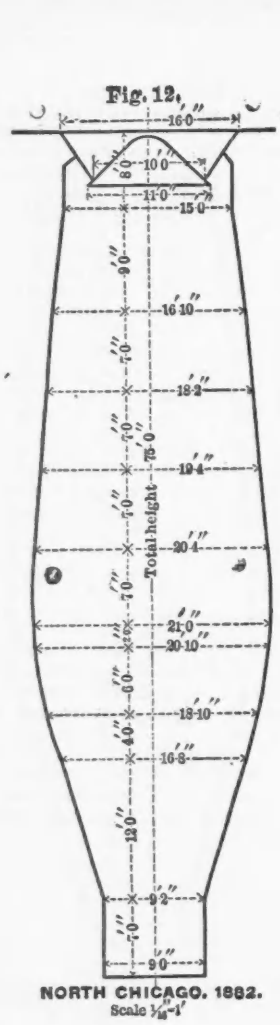


Fig. 12.
NORTH CHICAGO. 1882.
Scale 1/16"-1'

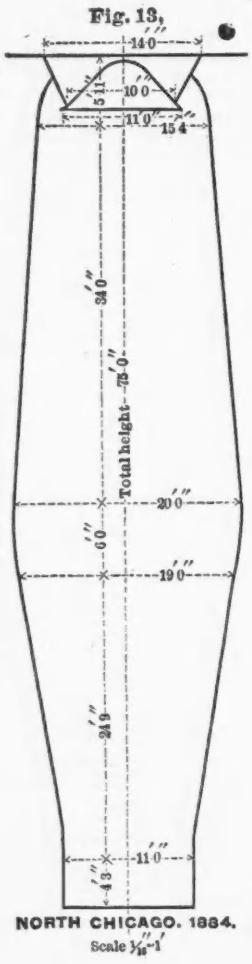


Fig. 13.
NORTH CHICAGO. 1884.
Scale 1/16"-1'

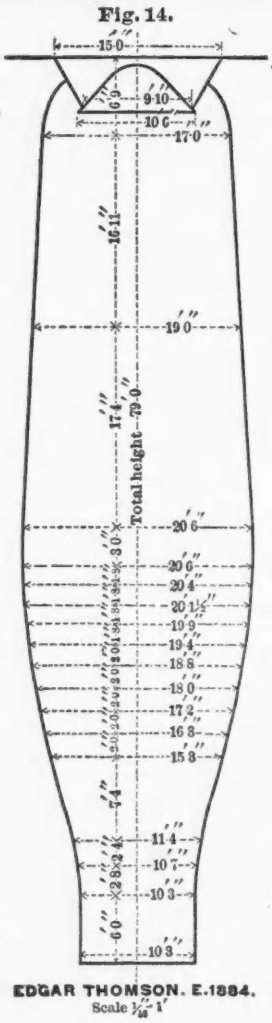


Fig. 14.
EDGAR THOMSON. E.1884.
Scale 1/16"-1'

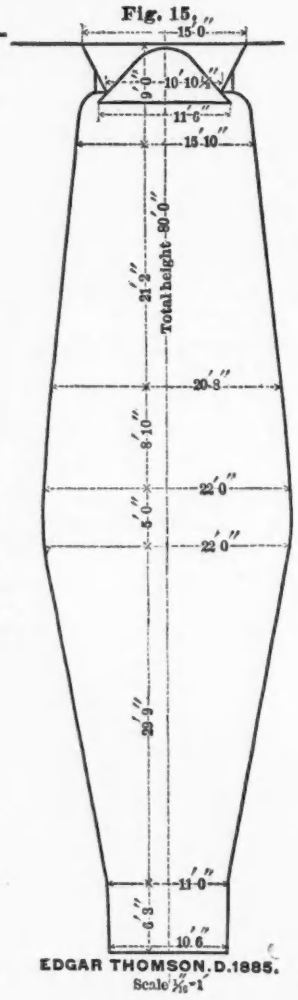


Fig. 15.
EDGAR THOMSON.D.1885.
Scale 1/16"-1'

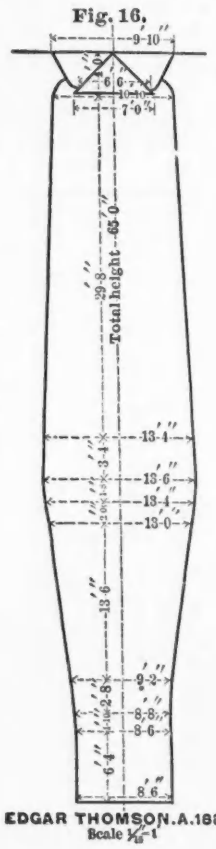


Fig. 16.
EDGAR THOMSON.A.1885.
Scale 1/16"-1'

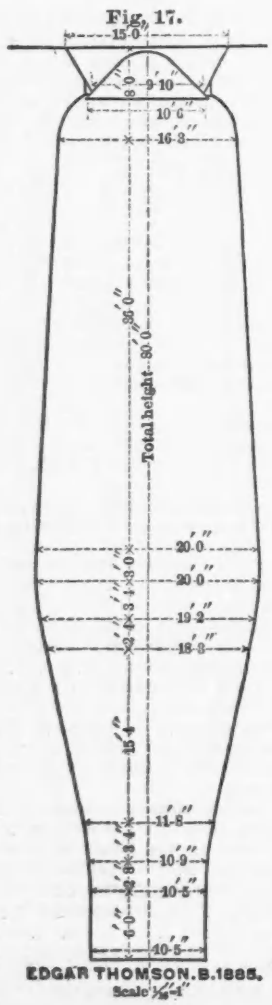


Fig. 17.
EDGAR THOMSON.B.1885.
Scale 1/16"-1'

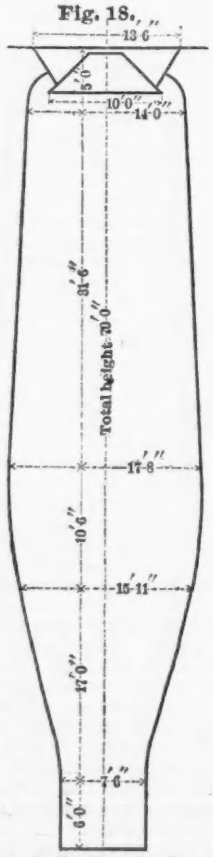


Fig. 18.
WEST CUMBERLAND.NO. 2.
Scale 1/16"-1'

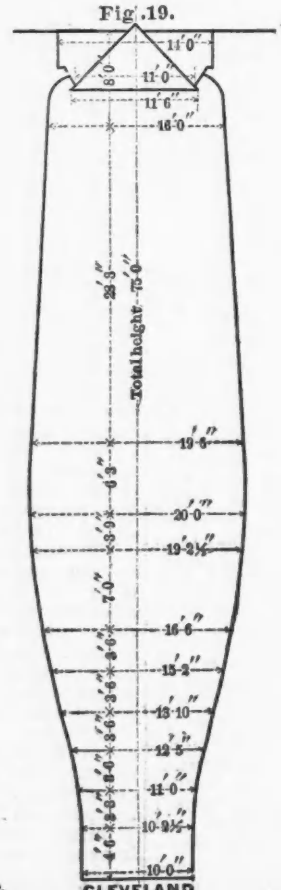


Fig. 19.
CLEVELAND.
Scale 1/16"-1'

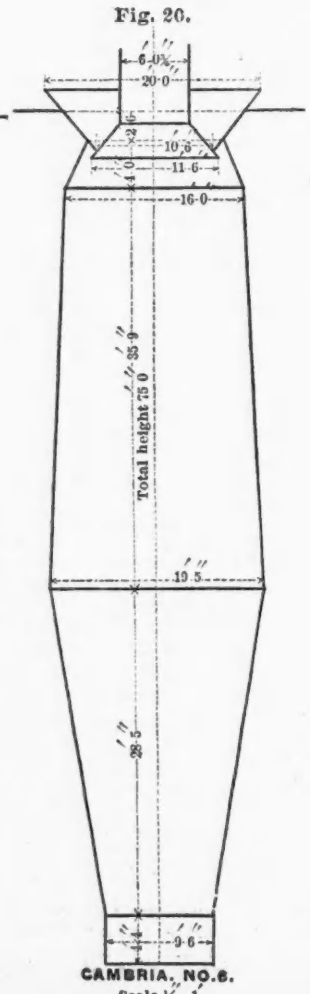


Fig. 20.
CAMBRIA. NO.6.
Scale 1/16"-1'

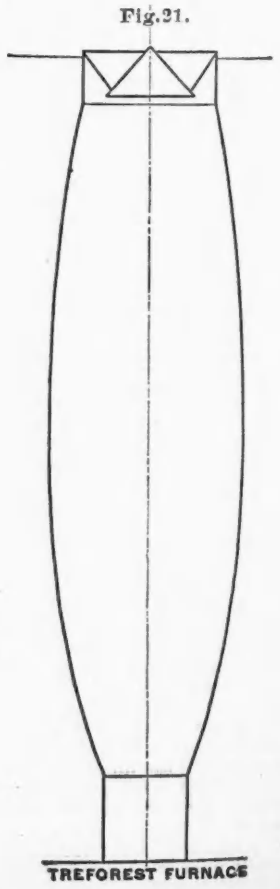


Fig. 21.
TREFOREST FURNACE

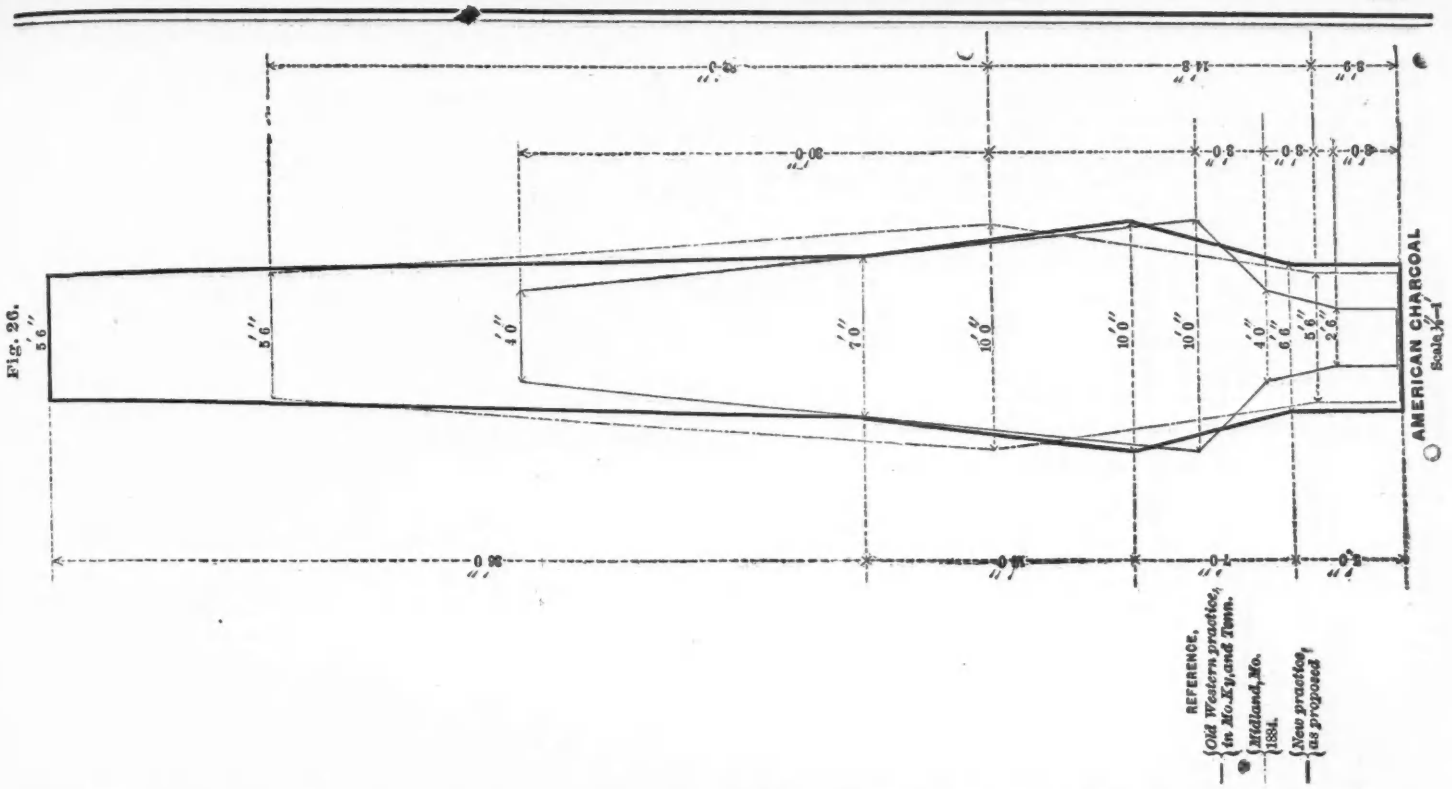


Fig. 26.

Again, in view of what has been said by various authorities concerning the more rapid descent of a central column of materials; the manner of the solids being wedged on the boshes by compression from the total weight of the materials in the shaft; the occurrence of adhesions of semi-fused, sticky, and pasty matter to the walls by which the furnace delivers the charges through a vortex limited in sectional area by the size of the adhesions; and the retention of great quantities of the stock alongside of the furnace walls, it is impossible to calculate what the actual working capacity of the furnace may be. That portion of the furnace occupied by scaffolds, by dust, or by inert stock is worse than useless; for besides giving rise to distressing irregularities, these frequently afford an upward passage, through which a considerable portion of the gases are conducted to the tunnel-head without useful effect.

It can not therefore be said that the furnace design shown in Fig. 1 is too limited in cubical capacity; for all the materials contained in the furnace from wall to wall will be in active work under more energetic chemical action, while, as will be seen, the cubical capacity thus usefully employed will largely exceed that of many other furnaces.

To establish the latter point, comparisons have been instituted at random, with several successful forms: thus, in Fig. 23, one of the North Chicago furnaces is compared with the new design, to show the application to the American coke practice. In Fig. 24, Ormesby No. 1 and one of the Clarence furnaces are compared with it, to illustrate the English coke practice. In Fig. 25, it is compared with the Warwick, to show its application to anthracite practice; in Fig. 26, Midland furnace, Mo, is used for the American charcoal practice; and in Fig. 27, the Wrbna furnace is employed for the continental charcoal practice.

Fig. 23 shows the new design, the lines of the North Chicago furnace as originally constructed, and the lines after having been used two and a half years, making nearly 100,000 tons of pig-metal in this time. From the tracing, the difference in the lines will be readily appreciated. It will be noticed that the original lines are cut away in the lower part of the furnace, and, as far as the top of the bosh in the new design, they very nearly conform with it. It will also be observed that, where the original North Chicago lines and those of the new design intersect each other, the furnace has not suffered as much wear as it has immediately above or just below that level, showing that at that level the walls have been more or less protected by the adhesions that were doubtless formed there. Above the intersection, the new lines remain inside of the original construction, and, in view of what has been explained, it will be seen that they cut off from the furnace that portion in which would be contained the slowly moving stock or the inert stock held in position by wedged stock or scaffolds. In other words, that portion of the furnace usually occupied by scaffolds and materials at rest is cut off by setting in its stead a permanent and firmly laid fire-brick scaffold that will remain in position and will not constantly threaten the process with disaster.

In Fig. 24, are shown the lines of one of the medium-sized Ormesby furnaces and one of the Clarence (considered by Mr. Bell to have reached the economic limit of cubical capacity), and, as before, the new design. I regret that sections of these furnaces after having been in use are not available, as a more intelligible comparison could then be made. However, the Clarence furnace of 12,000 cubic feet capacity records results equal if not superior to the Ormesby of 83,000, in spite of the Ormesby being fifteen feet higher than the Clarence, and also in spite of the Ormesby employing more highly superheated air for the blast. Now, if the only difference between these furnaces (both are in the Cleveland District, using the same ores, fluxes, etc.) were that of cubical capacity, it is plain that the Ormesby furnace is 2·75 larger in cubical content than is required.

The new lines intersect the Ormesby and Clarence lines nearly at the same points, and, leaving the Ormesby out of the question, as the best performer is taken for comparison, they take from the Clarence furnace 2000 cubic feet, which she can well spare, if this space is to be occupied by a *fire-brick scaffold*, as I have above explained.

In Fig. 25, the Warwick furnace is taken for comparison. This furnace is unusually low, and deserves great credit for taking the lead from her taller sisters of the anthracite region. The new design would enlarge the hearth (by an unintentional coincidence) to the dimensions actually reached by use, and follows the bosh where it has been cut away by two years' use. If I remember correctly, the best six months' work in the previous history of this furnace was performed on these very lines. From the top of the bosh, it enters the worn furnace, and cuts off that portion that has doubtless given Mr. Cook so much annoyance in the shape of "dirt troubles."

In Fig. 26, the new design has been applied to the charcoal practice of the West. Midland furnace is used for comparison, and the old furnace used immediately after the war is also shown. About the time that Midland was erected, the coke furnaces in the vicinity of Pittsburg commenced to increase their yield largely; and the projector of Midland, somewhat in conformity to the then successful coke practice, introduced the steep boshes and nearly cylindrical shaft. About this same time (1871), several charcoal furnaces were built in the West on the same design. All of them, including the Midland, worked very unsatisfactorily, as they required from 125 to 150 bushels of charcoal to produce a ton of iron. If my memory does not fail me, Midland was the first to return to the rapidly tapering cone for shaft. Immediately on adopting this form of shaft, and for several years thereafter, Midland led the American charcoal practice with a daily production of from 35 to 45 tons of gray metal, requiring from 85 to 95 bushels of charcoal per ton. The other furnaces followed this example with similarly if not equally good results.

Mr. Lee, President of the Midland Company, informs me that his furnace has worked well since that time, and that it runs uniformly, excepting an occasional fall of dust, which, of course, causes irregular work for a long or short period, according to the extent of the fall. In the comparison shown by Fig. 26, it is plainly to be seen where these accumulations lodge. If the boshes were lowered into the zone of complete fusion, as in the new design, such accumulations could not occur.

Fig. 27 is the last comparison that will be made. I have taken the diagram of the Wrbna from Mr. Bell's work, from which I learn that the furnace is only 37½ feet high, employs blast heated not in excess of 800 degrees Fahr., and yet produces a ton of iron on 70 per cent fuel (1585 pounds charcoal), which is very nearly as low as any of record.

The new lines have been applied, using the same diameters of hearth and throat, with the astonishing result to be readily seen on inspection of the tracing.

These comparisons show conclusively that the furnace represented in the new design has passed the experimental stage. The Warwick furnace, from January, 1880, to June, 1880, performed better work on these very lines than ever before in her previous history; North Chicago, a short time before being blown out, must have worked on them; and probably the best work of the blast was performed then. The Styrian and Midland furnaces, except for too great hight of the bosh from tuyere, are surprisingly similar.

In this connection, attention may be called to the lines of the old Wulf oven, and those of the type of charcoal furnace prevailing thirty or forty years ago in the Noric Alps. Diagrams may be found in the well-known works of Percy and Overman. It will be seen that of all forms of furnaces this type, derived from the old Wulf oven, has followed the march of improvement with fewer alterations than any other form that has been adopted. It can be seen in the old and new Austrian practices; it has been revived in the American charcoal practice, as represented in Elk Rapids and Midland; it was lost sight of for years in the coke practice; but within a few years has again been used, as represented in the English practice in Clarence, and Edgar Thomson "A"* in the American; the Anthracite practice had discarded it; but Warwick approaches a revival of the old form.

Though this form of furnace has always been more economical of fuel

* For this furnace, in 1879, see Transactions, viii., 349, and xiii., 499. Fig. 16, in this paper, shows its form in 1885.

than other forms under like conditions, the adoption of it has been attended with nearly the same irregularities as if other forms had been used, for the reason, as will be readily perceived from inspection of the diagrams, that in the old practice the bosh was too wide to have its full surface in the zone of complete fusion; and in the newer adaptation of it, the bosh is too high to be entirely included in this zone. There is, therefore, a ledge of the bosh thus unexposed to the heating influences of the zone of fusion; and this portion of the bosh will invariably afford a lodgment for semi-fused matter, a place for the arrest of solids wedged together by compression, a shelf on which scaffolds may securely repose, and, behind these accumulations, an upward passage for the gases through materials at rest.

In the new design, however, scaffolds can not occur. There will, therefore, be a constant supply of fuel before the tuyeres. All the materials to be treated will be exposed to more energetic chemical action in the shaft; in consequence, the elements of uncertainty arising from the internal configuration of the blast-furnace are thus removed.

RESULTS OF COAL COMBINATION IN GERMANY.

Mr. George G. André, in the *Colliery Guardian*, says: At the meeting of mining engineers at Düsseldorf in September, Herr Nonne gave some interesting particulars concerning the cost of getting coal. He states that in the Westphalian collieries—and probably in all others—the efficiency of the miners—that is, the annual output of coal per man—rises with the total output of the mine. Taking the mine with the smallest output, he finds that the efficiency is 173 tons, and that from this value it rises constantly with the production up to 320 tons for the mine with the largest output. From this he argues that economy of production requires that, instead of multiplying the working-places, we should endeavor to work each to its utmost capacity. Herr Nonne further remarks that, without any increase in the number or extent of the existing working-places in the mines of Westphalia, and also without any addition to the power of the existing machinery, at least twice the present output of coal could be reached. As this augmentation or intensifying of the work of coal-getting would materially diminish the cost of production, the mine-owners are encouraged in their efforts to extend their dealings at present prices. The proposal opens up a prospect of creating a margin for profit without having recourse to a reduction of wages.

The Westphalian convention for restricting the production of coal has, by reducing the output of the mines below their full capacity, or below its previous value in amount, increased the cost of production and frustrated the purpose for which it was formed. Those companies that remained outside the syndicate took advantage of the opportunity, and pressed their production to the utmost and thereby cheapened the produce. This fact is now recognized, and hence arises the reluctance to prolong the syndicate. I have before mentioned a confession made by the manager of an important Westphalian colliery that sends large quantities of coal to Hamburg at a price that leaves no profit. He said, "We sell this coal at cost price because the larger output occasioned thereby enables us to make a small profit on what we sell at home; for the larger the output from any given mine, the less is the average cost per ton." All of which sounds very familiar to the student of the history of coal combinations.

HOW FRENCH COAL IS PREPARED FOR MARKET.

Nearly all the collieries in the north of France are now provided with screens for sorting the coal. Some of these installations are remarkable for their completeness. As many as twelve and even, in some cases, sixteen sorts of coal may be separated to suit the requirements of all consumers. It has been said that this adapting the quality of the produce to every need has spoiled customers by making them too exacting. But whatever opinions may be on this head, the fact remains that rival producers endeavor to outdo one another in this particular; and these efforts of the native coal raisers seem to have borne the fruit desired: for they have succeeded, even beyond their expectations, in making headway against foreign competition. Another matter to which they are giving attention is the mixing of coal. The fat flaming sorts are mixed with the *demi-gras* or non-caking varieties, to form a quality suitable to the requirements of some of their customers. It is by means like these that they endeavor to extend their business in the face of keen competition.

THE MANUFACTURE AND COST OF COKE.

Written for the Engineering and Mining Journal by John Fulton.

In the issue of the ENGINEERING AND MINING JOURNAL of October 23d, an article under the above caption appears, by F. Koerner, E.M., which, as it is reinforced by the editor of this usually careful and reliable JOURNAL, is liable to mislead some of its readers outside of the Connellsville coke region.

The author of this article indicates that his special mission is to arrest "the enormous waste in our present way of producing the fuel." As the Connellsville region alone is mentioned, it is assumed that this criticism has exclusive reference to its mining and coking methods.

The opening charge is, that "we mine the coal, leaving from 30 to 40 per cent of the seam in the mine as pillars and waste."

The fact is, that since 1883 the chief mines in the Connellsville region have been worked on the panel plan, withdrawing pillars and making exhaustive mining. The loss of coal by waste in these mines will not exceed from 5 to 10 per cent.

It is further alleged that the "coke-ovens are bad, cheap copies of the ovens in use in Europe thirty or forty years ago." The waste of fixed carbon is given at "15 per cent or more." Now, the actual loss of fixed carbon, in coking in the Connellsville bee-hive coke-ovens, under careful management, is 6·08 per cent!

Connellsville coal affords 59·61 per cent of fixed carbon, and its coke 89·57 per cent of fixed carbon.

Taking $1\frac{6}{10}$ tons of coal to make 1 ton of coke, then $1\frac{6}{10}$ times 59·61 = 95·376, less actual carbon in coke 89·57, exhibiting a loss in coking of 6·08 per cent, as above.

The oven plants in the Connellsville region are placed in blocks of 100 coke-ovens, 700 feet long. They are not stretched out 1400 feet long, as stated.

The European plant of coke-ovens, which is presented as the model of economy in saving labor, carbon, and reducing ash, is evidently some member of the Belgian oven family.

Rigid tests made in England last year, by I. Lowthian Bell, F.R.S., of the relative values of bee-hive and Simon-Carvès ovens coke for blast-furnace use, show that, while the latter produces a larger percentage of coke, yet the less product of the former affords equal if not greater calorific energy in the blast-furnace. In other words, what is gained in the Belgian oven is lost in the blast-furnace work.* This result is explained when these two typical methods of coking are considered. In the bee-hive oven, the heat is applied inside the oven and in contact with the coking mass, producing the most thorough fusion and the hardest bodied coke possible from the coal used.

In the Belgian oven, the heat is applied through fire-brick walls, affording a less intense heat than the bee-hive, and producing a softer quality of coke.

The thoroughly fused and hard-bodied coke of the bee-hive oven resists solution in the upper region of the blast-furnace by carbonic acid, while the softer coke of the Belgian family of ovens is much more easily attacked by this acid, and a greater percentage of it dissolved before reaching the zone of its place of useful combustion.

The small extra ash in bee-hive oven coke, in furnaces running on the "dry" iron ores of the Northwest, goes over to the formation of slag, and is not altogether useless.

The relative economy in the work of bee-hive and Belgian coke-ovens is yet an unsettled matter. When the factors of original cost, relative output, labor, repairs, etc., are considered, it will be found that the difference in economy, if any, leans to the side of the bee-hive oven.

The Connellsville coke manufacturers when making a coke that, in blast-furnace use produces in a single stack from 1300 to 1500 tons of pig-iron per week, with 1958 pounds of coke to 1 ton Bessemer pig iron, feel assured that the quality of their coke is beyond question excellent. They are also intelligently aware of the value of the ancient bee-hive coke-oven for the production of the best metallurgical fuel.

The alarming estimates of the losses of fixed carbon, labor, etc., indulged in by the writer of the article under review have all disappeared, like the gaseous products of the coke-ovens.

We can only agree with the writer on one point, that it is "about time to call a halt" in arresting the "enormous waste" of estimated losses that have no foundation in fact.

JOHNSTOWN, PA., Nov. 2.

Air and Water.—The Westinghouse Air-Brake Company, Pittsburg, Pa., on the 3d inst. sent to its stockholders checks for a cash dividend of 50 per cent on the old capital stock of $600,000, thereby distributing $300,000 among the fortunate owners of shares. Accompanying each check was a circular announcing a dividend of 400 per cent in stock, in accordance with the recent action of the company increasing it from $600,000 to $3,000,000, in order the more nearly to represent the value of the plant and property.

Economy of Electric Lighting in Mines.—Speaking at the recent meeting of the Montana Company, Mr. John Bayliss said, referring to the introduction of the electric light, that the total cost of the installation had been $3665, and that the cost per month for working, including maintenance and interest on the capital, was $250. The old system of lighting cost $500 a month, so there has been a saving on this item of $3000 a year on an expenditure of $3665. Beyond that, there was the untold saving arising from the comparative immunity from fire by the electric light, compared with the position under the old system of oil and candles. It was intended to extend the installation to the new 60-stamp mill, but the cost would not exceed $1200.

Coal in Hongay.—An English syndicate, says the *Indian Engineer*, has been formed in Hong Kong to negotiate with the Annamese government for the purchase of the island of Hongay, which is the name of a strip of land on the southeast coast of Tonkin, which is joined to the main-land at low water, but which, at high water, is completely surrounded with water. There is a deep channel around the greater part of the island, where vessels of the largest tonnage may anchor. Its area is about ten miles long by five or six miles broad. The island is a carboniferous limestone formation, with large beds of coal, superior in many points to the Nagaski coal, being heavy and much more oily. It was found also that the coal lay almost ready to be dug out. No shafts would require to be sunk. All that had to be done was to run a gallery right through. The coal was seen to be in layers running north and south, resting at an angle of from 20 to 40 degrees and once the outer crust was cleared away, immense mines extending over an area of from 15 to 20 square miles might be started.

The Iron Ore Tariff Decision.—A dispatch from the Western Iron Ore Association, October 30th, was sent to the United States Treasury Department relative to the recent decision concerning the duty on iron ore. The dispatch declares that the iron ore of commerce is never bought and sold dried at a temperature of 212 degrees Fahrenheit: that universally and everywhere it is sold by the ton with whatever moisture may be in it when it comes to market. The effect of the proposed construction of the law would largely reduce the rate of duty on foreign ores, and operate most injuriously on the vast amount of American capital and the hundreds of thousands of American laborers engaged in American ore production. Having had no intimation of such an application for a virtually large reduction of the duty, the association asks for a suspension of the decision of the department upon this subject, and for opportunity for a hearing. November 2d, Assistant-Secretary Fairchild informed the Western Iron Ore Association that the department will consider any evidence in the shape of affidavits and other authenticated documents that may be submitted in regard to the commercial designation of imported iron ore. Similar notices have been sent to other persons who are dissatisfied with the ruling.

* See *Journal of British Iron and Steel Institute*, No. 1, 1885, page 57.

Fig. 22.

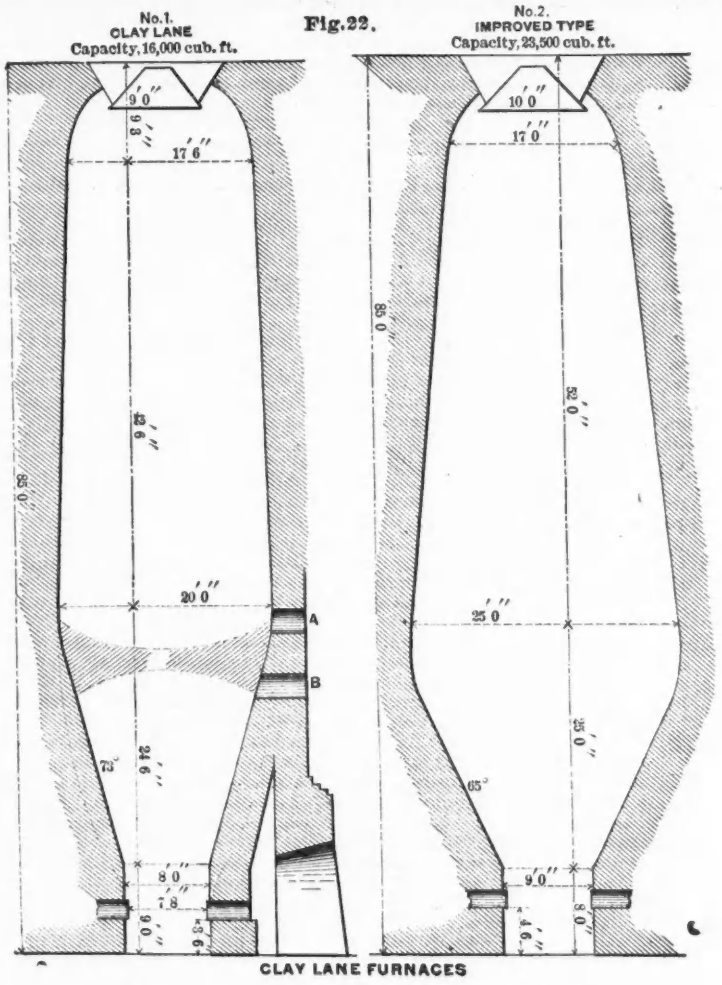


Fig. 25.

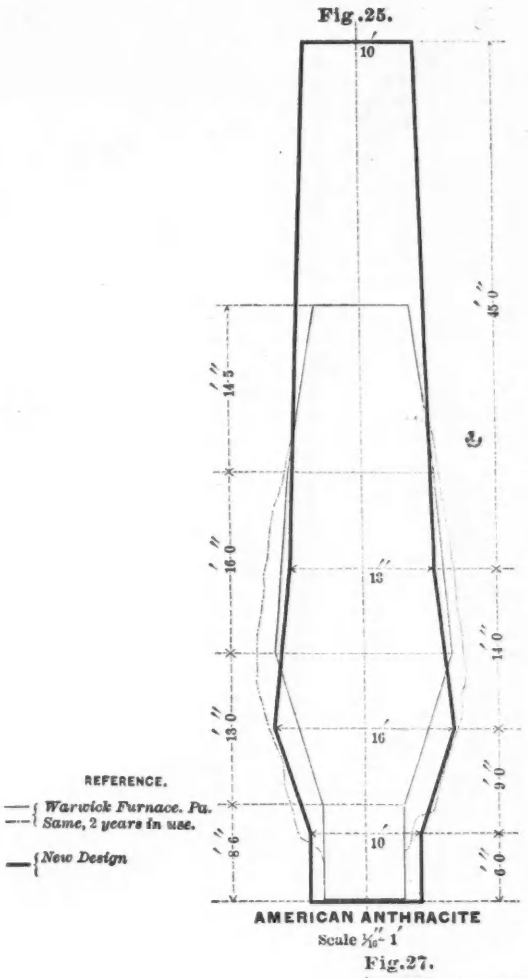


Fig. 23.

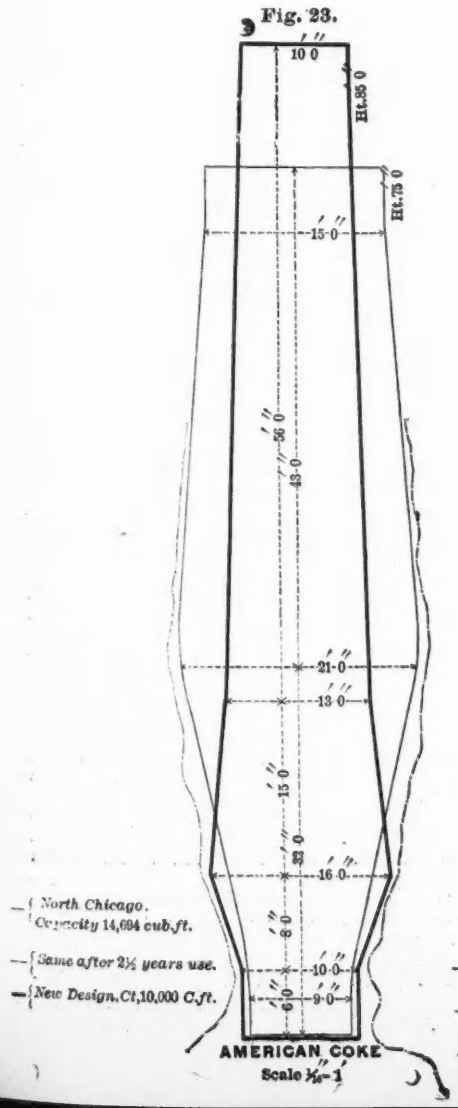


Fig. 24.

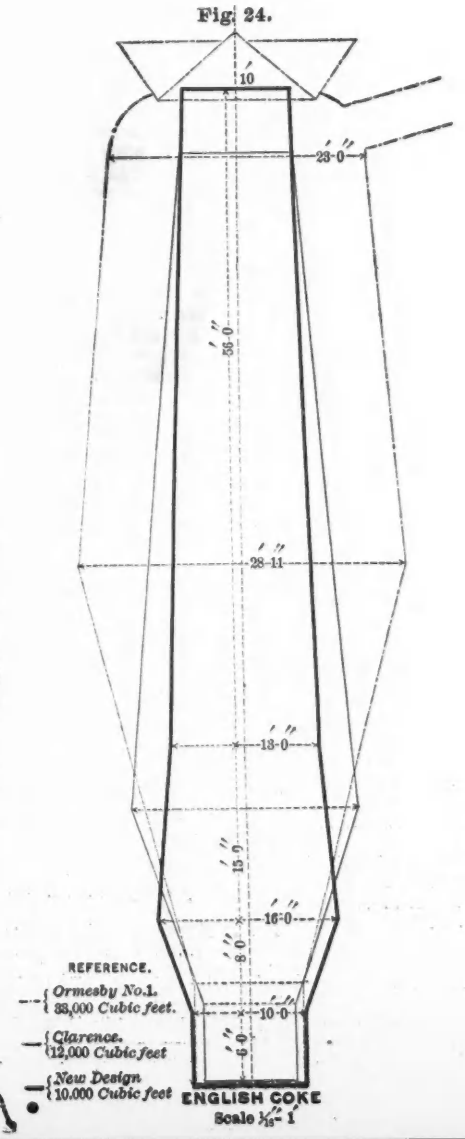
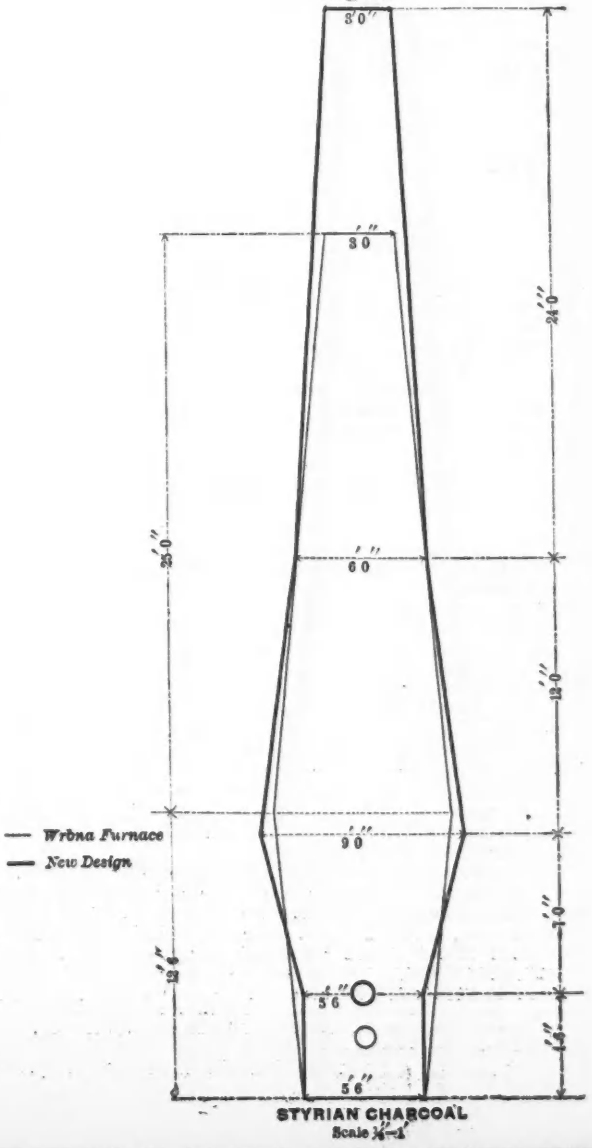


Fig. 27.



GEOLOGIC DISTRIBUTION OF NATURAL GAS IN THE UNITED STATES.*

By Charles A. Ashburner, Geologist in Charge Pennsylvania Survey.

Although natural gas springs are to be found in almost every State in the Union, and in many States gas has been obtained in wells sunk either for water, oil, gas, or as solid mineral prospecting-holes, yet the occurrence of natural gas is not dependent upon mere chance, as is popularly supposed, but is, as is now beginning to be recognized by both professional and practical men, a result of special geological phenomena.

The desire among our leading manufacturers to emulate Pittsburg has led to the sinking of many wells in many localities in search of natural gas; some of these wells being located and drilled under the direction of professional experts, but many more being located by persons who are ignorant of the conditions under which gas has already been found, and by "quack" explorers, who often depend upon spiritualistic communications or the divining-rod.

The literature on the subject of the geographical occurrence of gas, except in areas contiguous to the Pennsylvania oil regions, is very meager, and scarcely any thing has been published on the geology of natural gas except that contained in the reports of the Pennsylvania Survey, of which Mr. Carll has been the leading author. In considering the geologic distribution of gas in the United States, I have not sufficient facts at present in my possession to make a paper on the subject complete or exhaustive.

The practical application of natural gas, in various forms, in Western Pennsylvania, has opened up a new era in fuel economy and the development of heat and mechanical power, and it becomes a practical necessity for every community where there is the slightest possibility of finding natural gas to make a thorough and intelligent exploration for it; and for all other communities, in which, from the geological conditions of the underground structure of their region, it is impossible for the rocks to contain gas in commercial quantities, to plan to manufacture a fuel gas. There is no doubt in my mind but that the greatest advance to be made in the practical arts and sciences during the next two decades is to result from a practical consideration of the question of the manufacture and utilization of gaseous fuels, and the adaptation of plant and machinery to the new fuel relations that I believe we are bound for economy's sake to establish.

It is difficult to prescribe any fixed limits in the geological scale to the occurrence of natural gas and petroleum. Every known rock, with the exception of the eruptive rocks, is known to contain the remains of organic matter (vegetable and animal); and since the leading geologists agree in the opinion that both oil and gas result from the decomposition of organic remains, it is quite possible to find gas and oil in rocks of any geological age, in some rocks in commercial quantities, and in other rocks in quantities so small as be only of scientific interest to the geologist and mineralogist.

Next to the necessity of having a sedimentary rock in which animal or vegetable remains of past geological ages have been buried, the presence of gas is dependent upon the existence of a porous or cavernous rock to serve as a reservoir to hold the gas, and an overlying impervious rock roof to confine the gas. The other necessary conditions for the occurrence of gas are more dependent upon the forces to which the strata have been subjected, and the resulting geological structure, than upon the age of the rocks themselves.

The tendency among practical oil and gas well drillers and operators to discover, in a new district where a well may be drilled, the same section of rocks as is found in an old district, makes it important that both drillers and operators should realize the fact, as proved by geological investigation, that no two wells can be put down, distant from one another but five miles, more or less, where the same section of rocks may be found in both wells.

All the oil and gas horizons in Pennsylvania are located in sandstones and shales, from the Portage up to and including the Coal Measures. In Ohio, the oil and gas horizons are included in the Paleozoic strata from the Upper Coal Measures down into the Trenton Limestone. In New York, where natural gas is more generally distributed, as indicated by gas springs, than in either Pennsylvania or Ohio, but where much less has been found in commercial quantities, the gas horizons are found in the formations from the Chemung down to the Hudson River Shales, inclusive, with the possibility that some may be found in the Trenton Limestone.

On account of the intimate connection existing between oil and gas, it is reasonable to suspect the existence of natural gas in all sandstones producing oil.

The amount of gas that is at present flowing from the explored sands in Pennsylvania is probably two or three times greater than is required to meet all present demands. With an appreciation of this fact, and of the possibility of extending the gas pools and developing new ones, very little alarm should be entertained as to the exhaustion of the gas-sands of Pennsylvania and the prostration of the manufacturing interests that become dependent upon its use. It becomes, however, a question of vital importance to the commonwealth of Pennsylvania and to every citizen interested in the industrial concerns of the State, that the extravagant waste of gas that is now going on everywhere throughout the oil and gas region should be stopped. The action of the Philadelphia Company, which is now one of the largest natural gas companies in Pennsylvania, in shutting in the wells all the surplus gas that is not needed, should be emulated by every individual who has pecuniary interests in gas wells, and it is a question that should be settled by our State Legislature, by compelling all gas well drillers and operators to shut in the gas that is not needed.

The discovery of natural gas in Ohio is the dawn of a most important era to the manufacturing and industrial interests of that State. This statement is worthy of special reference here. Any comparison as to the amount of gas that Pennsylvania and Ohio respectively will be able to produce in the future would be invidious, and in fact we have not sufficient evidence upon which to base any reliable conclusion. That there is sufficient gas in Ohio, as well as in Pennsylvania, to meet the demands of manufacturers for a number of years, and sufficient in many localities to warrant the erection of new plants, there is no doubt; but still it is well to bear in mind that our gas supply is exhaustible, and that in the main all the gas that we can hope to obtain in the future now exists in a gaseous form confined in our rock reservoirs. When these reservoirs are emptied, our supply will have ceased.

* Abstract of a paper read at the St. Louis Meeting of the American Institute of Mining Engineers, October 12th, 1886.

THE MINES OF GUANAJUATO, MEXICO.

Written for the Engineering and Mining Journal by A. F. Foote.

These mines, the most celebrated in Mexico, and perhaps at the present time the richest on the continent, are readily reached by the comfortable cars of the Mexican Central Railroad. Leaving the grand central plateau near Silao, we wind up a valley becoming more and more steep until at last, 23 kilometers (about 10 miles) from the main line, we reach the little town of Marfil. Here, the grade is too steep to be ascended profitably, and, taking the horse-cars, we wind among the adobe (sun-dried brick) yards that line the stream on each side. Seeing how thoroughly the sewage and horse manure of a city of 100,000 inhabitants is worked into the dwellings of the common people, one wonders that typhus fever and similar endemic diseases do not carry off *over* twenty per cent of the population annually. Certainly, nothing but the finest climate in the world prevents the complete depopulation of these towns. The road has in many places been blasted out of the mountain sides, plainly revealing the character of the geological formations. The principal rock is a porphyry, rising in gigantic masses like ruins, and precipitous escarpments of from 1000 to 1500 feet in hight. One of these, opposite and almost overhanging the charming new plaza, is called the Bufa, and is even more striking than a similar formation at Zacatecas. Enormous concentric balls of the porphyry are sometimes seen resting on isolated points.

The principal building-stone is very beautiful and peculiar. It is a fine striped, often wavy porphyritic (?) tufa or porphyritic (?) sandstone. It overlies the red conglomerate that surrounds the city, and is especially abundant on the southeast slopes above the water-marks at the head of the ravine in which the city lies. Humboldt calls this "agglomerate feldspathetique." It is composed of fragments of quartz and slate, with perfect crystals of feldspar. Brown quartz porphyry, often broken up into conglomerate diorite, and slate are very common. The latter seems to be the oldest rock of the region. It sometimes passes into talcose and chloritic schists, and is seen resting on the granite at Zacatecas. The porphyries contain glassy feldspars (Valencianites). They have the same direction as the slate, northwest to southeast, and dip from 45 to 50 degrees to the southwest. This is especially true of the great Veta Madre, or mother vein. This vein has been traced over nine miles, and is forty-five yards wide. There are about twenty-five mines on it, most of which have been very productive. It had, up to the year 1800, produced over $300,000,000, and has been steadily producing with greater or less activity ever since. The gangue is quartz, calcite, pearl-spar, feldspar, apophyllite, gypsum, etc. The principal silver minerals are pyrargyrite, or dark ruby silver, polybasite, stephanite, and sulphide of silver, including not only argentite or sectile silver, but acanthite also. These minerals are crystallized in the most beautiful specimens found in any part of the world, so that Guanajuato has been called the Andreasberg of America; and the analogy is increased by the fact that this is the only other locality where fine pink apophyllites are found. The twins of calcite also are marvelous for size, beauty, and variety.

The most famous mine is the Valenciana, where $1,700,000 were spent in sinking three pits, one of which is 20 feet wide, to a depth of 500 feet. Its stone lining is perfect. This, with Rayos Mellado and other mines, employing over 10,000 miners, is owned by Don Miguel Ral. It is sometimes said that these mines are so deep that they can no longer be worked; but the introduction of cheaper coal by the Mexican Central Railroad, and the piercing of the mountains by long tunnels, as is customary in the Hartz and the Rocky Mountains, will give wonderfully large returns.

The only mine that is in rich bonanza at the present time is the San Cayetano, where a wealthy English company has for years been driving an enormous tunnel.

HOW SILVER ORES ARE SOLD IN MEXICO.

Early one morning, by invitation of Don Miguel Ral, we mounted horse, and, in company with Señor Glennie and others, rode over the mountain to attend a *Resgnata*. This was in old times the sole Mexican way of disposing of the ore. It might be called a blind auction. On reaching the fine buildings of the mine, we found the large stone-walled yard filled with conical piles of ore, varying from three to seven feet in hight. The ruby silver sparkled in the sun, stimulating the "haciendados" and their servants to active exertions before the sale began. As no person had been allowed to test the heaps until a couple of hours before the sale, there was no time for assays. The servants took average samples from the heaps, crushed them, and then estimated the value of panning. About ten o'clock, the sale began. The auctioneer announced pile No. 1. Each man who wished to bid went and whispered in his ear the amount he would give. After waiting awhile with all the quiet of a Quaker meeting, the auctioneer calls out, "Is there any one who will give more?" No one responding, he announces the name of the highest bidder, together with his bid. Some piles not over five feet high realized $3000, the total amount of the sale being $27,000. This was ore produced in one week that could not be reduced in the hacienda attached to the mine. This is the only English company in Guanajuato, and there are no American companies. We did not meet an American in our several weeks' stay. The value of the mines has always been so well recognized by the Mexicans that they did not care to sell. Nearly all the gold and silver is extracted by the *patio* process, which has not been improved for over a century.

The Parkman family, whose father came from Ohio many years ago, owns the most improved hacienda or reduction-works in Guanajuato, and has several very valuable mines.

Those wishing more complete statistics in regard to the working of the mines may consult a valuable report made in 1884 by Señor Ibarguengoita.

New Zealand Volcanoes.—Intelligence has been received at Auckland, New Zealand, that on September 30th seven native villages were destroyed by a volcanic eruption on the island of Niafu, in the Tonga group of the Friendly Islands. The whole island has been devastated by volcanic deposits. White Island, in the Bay of Plenty, is in a state of active eruption, a vast column of smoke ascending from the island to the hight of 1000 feet.

Telephony Extraordinary.—There has been recently quoted an account of some remarkable experiments, which are alleged to have proved that a person in a mesmeric trance is capable of interpreting a telephonic message by mere contact with the line wire. The *Journal d'Hygiène* is now authority for the statement that a young lady, employed in a telephone exchange, who happened to be in a highly nervous condition, found that she was able to understand a conversation without lifting the receiver to her ears, by merely holding it in her hand.

Experiments on the Electro-Conductivity of Gases and Vapors — *Comptes Rendus:* Jean (probably Giovanni) Luvini: The author's experiments lead to the conclusion that gases and vapors, under whatever pressure and at whatever temperature, are perfect insulators, and that they can not be electrized by friction either among themselves or with solids or liquids. All theories relating to the electricity of machines of the air, or of clouds, must be rejected as erroneous if it is admitted in them that moist air is a conductor, or that gases and vapors may become electrized by friction.

Primitive Man.—The Liége *savants*, MM Marcel de Puydt and Maximilian Lohest, have announced a recent discovery that may be of scientific importance. In a cave at Spy, a few miles from Namur, known as the Bicheaux Roches, they found in the sandstone two human skulls of extraordinary thickness, resembling the celebrated skull found in the Neanderthal, near Elberfeld. They have the same very projecting eyebrows, and the same low sloping forehead of a decidedly simian character. The finders suggest that these are types of the skulls of the primitive race who dwelt on the Sambre. Other things were discovered in the cave by MM. de Puydt and Lohest, among them some thousands of flints very carefully dressed on one side: also some specimens of jasper and agate, minerals not found anywhere in the neighborhood, ivory breastpins, several red ear-pendants, and some necklets of pearls of curious designs. It was noticed that there were no representations of animals. All were found in the sandstone, three layers of which were plainly discernible. It was visible that the remains of flints, etc., deposited in each layer indicated different stages of skill in workmanship. The lowest stratum was by far the poorest in the number of the objects found and in the quality of their workmanship. But it was here that the skulls were found, so that from a scientific point of view it is most important. A drawing has been carefully made of the geological section of the cave, so as to mark precisely the point where the skulls were found.

Modern Kinetics and the Dynamism of the Future.—*Comptes Rendus* for September 20th says that in a recent work bearing the above title G. A. Hirn presents in an accessible form all the arguments that render henceforth untenable the kinetic theory of gases that refers the greater number of the properties of these bodies to molecular movements. Among the arguments brought forward there are, says M. Hirn, at least three of such a kind that we shall one day be astonished how physicists have been, for a single instant, able to accep the kinetic theory of gases. The kinetics of gases might be correct without its following that light, radiant heat, electricity, magnetic attractions and repulsions, and gravitation are due to movements of ponderable matter, and still less that our thought is merely a molecular movement. But the converse is not true, and with the kinetic theory of gases fall the kinetic theories in general, which profess to explain all the possible phenomena of the universe by the invisible movements of matter. Two grand propositions confront each other in absolute antagonism. According to one, the movement of matter can arise only from another anterior movement and by immediate contact; according to the other, motion never arises directly by the immediate contact of matter and matter. The author contends that these two propositions, mutually exclusive, repose not upon metaphysical considerations, but upon the principles of applied and elementary mechanics; the demonstration of the one to the exclusion of the other is not to be banished to the land of dreams and chimeras, but is within the reach of all who occupy themselves with the reality of phenomena rather than with their *à priori* interpretation. The first proposition, and consequently all possible kinetic theories of which it is the starting-point, fall with the kinetic theory of gases.

BOOKS RECEIVED.

[In sending books for notice, will publishers, for their own sake and for that of book-buyers, give the retail price!]

The Theory and Practice of Surveying. Designed for the Use of Surveyors and Engineers Generally, but Especially for the Use of Students in Engineering. By J. B. Johnson, C.E., Professor of Civil Engineering in Washington University, St Louis, Mo. New York: John Wiley & Sons. 1886. 8vo, pages xxiii+623. (*Not the first line of an Index.*) $3.50.

In the ENGINEERING AND MINING JOURNAL for December 19th, 1885, page 418, under BOOKS RECEIVED, in introducing the *Journal of the Association of Engineering Societies*, which was an index number, we made this caption, "A Special Number Worthy of Special Mention," and quoted from the work the following: "All matter to be here indexed should be sent to J. B. JOHNSON, Manager Index Department, Washington University, St. Louis, Mo.," adding the exhortation to each of our readers: "GO THOU AND DO LIKEWISE." We did not suspect that this very Professor J. B. JOHNSON would himself, in presenting his own work to the public, furnish so amusing an illustration of the irony of things. Yet here he is, in handsome octavo, without his index. Although this sin of omission may be a special fact "worthy of special mention," we by no means say of it, as we did in the former case, "Go thou and do likewise," but to Professor J. B. Johnson, as an altogether peculiar and conspicuous sinner, we do say, "Oh! reform it altogether," and prove thy faith by thy works.

Theory of Magnetic Measurements, with an Appendix on the Method of Least Squares. By Francis E. Nipher, A.M., Professor of Physics in Washington University, President of the St. Louis Academy of Science. New York: D. Van Nostrand. 1886. 12mo, pages 94. (*No Index.*)

The First Annual Report of the Commissioner of Labor, March, 1886. *Industrial Depressions.* Washington: Government Printing-Office. 1886. 8vo, pages 496 (including Index).

Letter of transmittal. Introduction. Chapter I. Modern Industrial Depressions: Great Britain, 1837–86; France, 1837–86; Belgium, 1837–86; Germany, 1837–86; the United States, 1837–86. II. The Industrial Depression in the United States, 1882–86: The extent of the depression; Alleged causes of the present depression; Falling prices; Machinery and overproduction; The variation in the cost of production; The variation in the rates of wages; Speculative railroad building; Crippled consuming power, or underconsumption; Tariff inequalities; Miscellaneous. III. The Manufacturing Nations Considered as a Group in Relation to the Present Depression. IV. Suggested Remedies for Depressions: The restriction of land grants to corporations; The restriction of immigration; The enactment of laws to stop speculation; The establishment of boards of arbitration to settle industrial difficulties; The contraction of credit; A sound currency; Commercial and mercantile conditions; The distribution of products; Profit-sharing; The organization of workmen; of employers. V. Summary: Contemporaneousness and severity of depressions; Causes; Remedies. Appendix A. Occupations, with number and wages of employés, by industries. Appendix B. Earnings and expenses of wage receivers in Europe. Appendix C. Synopsis of labor legislation in the United States.

Mr. Carroll D. Wright, in his letter of transmittal to Secretary of the Interior Lamar, says: "The Bureau of Labor was established by act of Congress, approved June 27th, 1884, which provided for the appointment of a Commissioner of Labor by the President. . . . I assumed the duties of the office January 31st [1885]. March 11th, I submitted for your approval an outline of the first year's work of the Bureau. This outline related to the collection of information relative to industrial depressions, the investigation comprehending a study of their character and alleged causes, whether contemporaneous in the great producing countries of the world, and whether, as to duration, severity, and periodicity, they have been similar in such countries. The outline also comprehended the collection of data relating to the variation of wages in different countries and in different parts of this country, in the cost of living in the same localities, and the cost of production, and, in fact, all such alleged causes of industrial depressions as might offer opportunity for illustration through classified facts. The suggested remedies for such depressions were also comprehended in the outline. March 17th, a year ago to-day [1886], you did me the honor to approve this outline of work, when I entered at once upon preparations for carrying it out. . . . The difficulties attending an investigation of the magnitude of the one projected are great indeed. In fact, a line of work more difficult than that selected could hardly have been adopted. The statistical illustrations of the various features of industrial depressions as presented herein, unless otherwise stated, are the results of original inquiry, and these statistical illustrations, taken in connection with others, which are all from most trustworthy sources and from highest authorities, constitute a grouping of facts relative to conditions claiming the fullest attention, which, so far as I am aware, is novel not only in the grouping, but in the extent of their influence." In the Introduction, Mr. Wright says: "No more important and no more vital question could have been selected for the first work of the Bureau of Labor; for the labor question, in a primary sense, stands for the contest between the two elements of production, labor and capital, relative to the share of the profits of production to be allotted to each. Any occurrence, whether of a commercial, financial, or industrial nature, resulting either in a decrease of profits to either labor or capital, or in causing serious fluctuation or inequality in the distribution of such profits, becomes in the largest sense one of the most important features of the labor question."

Under Restriction of Land Grants to Corporations, Mr. Wright says: "Three fifths of the public domain have been exhausted or taken up, either by settlers or by grants to corporations, but to a very large extent by the latter, and the remaining two fifths are made up largely of undesirable lands. These being the facts, a halt should be made in freely granting lands to corporations: for, however valuable such grants may be to the public interest in developing great lines of railroads, the result is, that the lands constitute a basis, to a greater or less extent, for speculative purposes. Had a halt been made at an earlier period in our history, it would have been well for the country."

PATENTS GRANTED BY THE UNITED STATES PATENT-OFFICE.

The following is a list of the patents relating to mining, metallurgy, and kindred subjects, issued by the United States Patent-Office.

GRANTED OCTOBER 19TH, 1886.

351,310. Rock-Drill. Horace J Clark, Westfield, N Y.
351,321. Ore-Pulverizer Edwin C Griffin, Brooklyn, New York.
351,349. Mining-Machine. William A. Wright, Centertown, New Jersey, Assignor to William M. Stewart, trustee, Philadelphia, Pa.

GRANTED OCTOBER 26TH 1886.

351,382. Manufacture of Drawn Bars. Milton Kirker, Pittsburg, Pa., Assignor of one half to Joseph D Long, same place.
351,390. Device for the Consumption of Liquid Fuel Charles L. Mitchell, Covington, Ky.
351,391. Device for the Conduction of Liquid Fuel. Charles L. Mitchell, Cincinnati, Ohio.
351,397. Device for Tapping Mains. Walter S. Payne, Fostoria, Ohio, Assignor to Walter S. Payne & Co., same place.
351,412. Process of Obtaining Ammonia and Illuminating Gas from Tank Waters. Joseph Van Ruymbeke, Chicago, Ill., Assignor of one half to William F. Jenkins, same place.
351,430. Machine for Rolling Car-Wheels. Hervey W. Fowler, Chicago, Ill.
351,431. Cast-Steel Car-Wheel. Hervey W. Fowler, Chicago, Ill.
351,464 Asbestos Packing. Rufus N. Pratt, Hartford, Conn.
351,479. Manufacture of Bent Metal Tubes. Alvin Taplin, Forestville, Assignor to the Bristol Brass and Clock Company, Bristol, Conn.
351,490. Machine for Folding Sheet-Metal. Charles Brombacher, Tarrytown, New York.
351,563. Ore-Roasting Furnace. John Applegarth, East Oakland, and William Applegarth, Fresno County, Cal.
351,564. Adjustable Rock Drill Frame. Albert Ball, Claremont, N. H., Assignor to the Sullivan Machine Company, same place.
351,566. Rock Boring Machine. Albert Ball, Claremont, N. H., Assignor to the Sullivan Machine Company, same place.
351,567. Dry-Press-Brick Machine. Henry C. Barker, St. Joseph, Mo., Assignor of three fourths to Rufus K. Allen, Nathan D. Goff and Isaac W. Hayden, all of same place.
351,576. Process of Extracting Gold, etc., from Ores. Henry R. Cassel, London, County of Middlesex, England, Assignor to the Cassel Gold Extracting Company (Limited), Glasgow, Scotland.
351,580. Amalgamator. Henry Cook, Philadelphia, Pa.
351,608. Rolling-Mill. William J. Lewis, Pittsburg, Pa.
351,613 Clay Reducer and Pulverizer James C. Anderson, Highland Park, Ill.
351,616. Machine for Disintegrating Clay, Clay-Shale, etc. James C. Anderson, Highland Park, Ill.
351,617. Machine for Disintegrating Clay, Clay-Shale, etc. James C. Anderson, Highland Park, Ill.
351,632. Combined Spear and Socket for Oil-Wells John Gill, Knapp's Creek, New York.
351,642. Governor for Gas. George E. Lockwood, Philadelphia, Pa., Assignor to the Standard Heat and Light Company.
351,665. Cylinder for Air and Gas Compressors. August Snyder, Alleghany, Pa.
351,675. Wire-Rod-Rolling Mill. Benjamin Weaver, Pittsburg, Pa.
351,723. Apparatus for Mining and Amalgamating Gold. Casper Zimmerman, Tomah, Wis.

PERSONALS.

Mr. Robert E. Booraem, who has been connected with the Evening and Morning Star mining companies of Leadville for the past six years, is now at Butte, Montana, to manage the Bluebird mine and mill.

Charles Moore, the well-known manager of the Robinson Consolidated Mining Company's mines, died of paralysis at Leadville, Colo., October 9th, aged thirty.

The office of Mr. E. Gilpin, the efficient Inspector of Mines, of Nova Scotia, has been amalgamated with that of the Deputy Commissioner of Works and Mines. Mr. Gilpin will therefore succeed Mr. Kelly as deputy head of the department. This promotion meets with general favor in Nova Scotia, and will be received with satisfaction by the profession generally.

Mr. Frederick Sloss, the manager of the Sloss Furnace Company, Birmingham, Alabama, is one of the young generation of iron-masters who unite science and practice in the running of an iron-works. As a very young man, he took charge of the Sloss furnace after the more or less complete failures of so-called "practical" foundry men, imported from districts where the stock and conditions of work were different from those at Birmingham, and he has proved himself one of the most skillful and successful furnace men in the South. Practical experience, guided by scientific knowledge, is alone needed to lengthen the blasts of Albama furnaces and to attain an economy of production that can not be reached elsewhere in this country. This young generation, of which Mr. Sloss is a worthy example promises to furnish these essentials to success, and the result can not be doubtful.

FURNACE, MILL, AND FACTORY.

The Atlas Works, Pittsburg, Pa., will be sold at public sale on the 10th inst.

The works of the Marshall Foundry and Construction Company, Pittsburg, Pa., were damaged by fire on the 31st ult.

It is stated that Northern capitalists contemplate the erection of works at Birmingham, Ala., to make wire of basic steel, using the Reese patents.

The Hartman Steel Company, Beaver Falls, Pa., is building an addition to its steel-wire picket fence factory.

The Crozier Works, Roanoke, Va., will double the capacity of their furnace, which is now 110 tons a day.

West Point Foundry, at Cold Spring, N. Y., was sold at auction on the 4th inst. to William J. Paulding, President of the Foundry Association, for $150,000.

The Lookout Iron Company, Chattanooga, Tenn., was to begin the manufacture of wrought pipe, the first that will have been made in the South. This event is looked forward to with much interest.

The Roane Iron Company, Chattanooga, Tenn., is pushing its steel plant forward rapidly, but it will be about the first of the coming year before it will get fairly started.

A company was organized on the 4th inst. in Chattanooga, Tenn., with a paid-up capital of $200,000, to begin at once the erection of a 100-ton blast-furnace in that city.

Four new double puddling-furnaces are building at the Republic Iron-Works, South Side, Pittsburg, Pa. They will largely increase the capacity of the mill, which has now 20 puddling and 6 scrap furnaces.

Mr. Jacob Reese has authorized the use of his patents in Jefferson County, heretofore let only to the Pratt Coal and Iron Company and to the Sloss Furnace Company, which already had them secured for the adjoining counties of Blount and St. Clair.

The Union Powder Company is establishing works at Granite, Lake County, Colo., for the manufacture of blasting-powder. The enterprise is supported by Leadville people. Only high explosives suitable for mine blasting will be made.

Six out of the twenty-eight new puddling-furnaces at the National Rolling-Mill, McKeesport, Pa., were to be put in operation this week. The remaining furnaces will not be started until some new machinery is erected.

The Titusville Chemical Works, Titusville, Pa., were damaged by fire on the 31st ult., to the extent of $20,000 or $30,000, the cupola and sulphur-house being destroyed. The main building, office, sheds, etc., were saved. The fire originated in the cupola from an overheated cylinder.

The Ashland Iron and Steel Company, of Ashland, Wis., to which we referred in our issue of October 23d, has made contracts for excavating the foundations, and with the Bayfield Brown Stone Company for stone to be delivered immediately. A number of other contracts have also been let.

The Dickson Manufacturing Company, Scranton, Pa., has found it necessary to establish a separate plant for the exclusive manufacture of the Boies, formerly the Dickson, steel wheel. This is due to the increase of business in this line and in the locomotive department.

The Decatur Charcoal Chemical Works, Decatur, Ala., which have been incorporated with a capital of $150,000, will begin the erection of charcoal-works at that place. The process of Dr. Pierce for manufacturing the by-products from wood will be used. An iron furnace is contemplated with it.

It is said that a steel plant will be erected at Sharon, Pa., at an early day, the Board of Trade having accepted the offer of several local and foreign capitalists to erect Bessemer works of large dimensions, provided the sum of $5000 and five acres of ground were given by the citizens of the borough to the projectors of the enterprise.

The Farmer Rolling-Mill Company, Detroit, Mich., organized two years ago at Grand Rapids, has filed a mortgage for $21,000 to secure Romer W. Butterfield for indorsements. The company has closed its shops, and, it is said, is contemplating going out of business. The creditors, it is asserted, will be paid in full. The troubles are attributed to dull business.

The works of the Western Chemical Works Company, near Denver, Colo., have been greatly enlarged since they were purchased by the present owners about a year ago. They can now manufacture every thing usually made at such works. They have, besides other works, two sulphuric acid chambers of a daily capacity of 5000 pounds.

The Weymouth Iron Company, Weymouth, Mass., has voluntarily gone into insolvency. The assets consist of a foundry at East Weymouth, tenements, stock, and bills receivable from several firms, making a total of $82,584. The liabilities, chiefly bills payable on several firms and corporations, are of the same amount.

The extensive property of the Abbott Iron Company, at Canton, Md., is having its machinery taken out preparatory to a sale of the remaining plant and buildings and ground at public sale. Much of the machinery has been sold to parties in Pittsburg. These works, which during the civil war had a wide reputation for their iron boiler plates and other iron products, had an active existence for many years, but they have been shut down for several years. These forges, it is said, were first started by Peter Cooper in 1828. In 1836, Horace Abbott came from Massachusetts and purchased the works. The works have the credit of having made the first very large steamboat shaft ever forged in this country for the Russian frigate Kamchatka. These works made the armor for the original Monitor, which stood so well the hammering of the Merrimac in Hampton Roads. Various other government vessels were armored by the same establishment. The Abbott Works have succumbed, as other iron establishments have done, because they did not keep up with the changed order of things. Strong efforts were made five or six years ago to induce the stockholders to put in steel plant, but they were not successful.

LABOR AND WAGES.

The miners at the Excelsior Colliery, Mount Carmel, Pa., struck on the 4th inst. for a 10 per cent advance in wages.

The Columbia Rolling-Mill, Lancaster, Pa., where the employés have been on strike for over three months for Philadelphia prices, has partially resumed work with a new force at the old prices.

The puddlers at the Naomi Rolling-Mill, near Reading, Pa., struck on the 4th inst. They were getting $3.75 per ton, and wanted $3.80. The other departments in the mill are working.

The striking miners held a mass-meeting at Shamokin, Pa., on the 1st inst., and decided to resume work. The officials of the coal companies have promised an advance, if they find upon examination of their books that their business will warrant it.

The men who struck at Bailey's iron-works, at Harrisburg, Pa., on August 24th, resumed work on the 1st inst., a compromise having been effected. The men had demanded $4 a ton, but resumed work at $3.85. Work has also been resumed in the Central Iron-Works at the same place.

The Knights of Labor of Western Pennsylvania on the 4th inst. formally espoused the cause of the twenty-one Washington County miners who have been remanded by the decision of the State Supreme Court to the County Workhouse to serve nine months for violating the conspiracy laws. Five thousand petitions praying the Pardon Board to release the miners have been sent out. At the next meeting of the Legislature, an effort will be made to have the conspiracy laws amended.

COAL TRADE NOTES.

PENNSYLVANIA.

ANTHRACITE.

The slope at the Philadelphia & Reading Company's colliery, at Ashland, caved in on the 3d inst., causing a suspension that will probably last several months.

BITUMINOUS.

The Barclay Coal Company reports $5943 income from rent of railroad and royalty on coal for the month of October.

The Standard coal mines, at Mount Pleasant, Pa., owned by the H. C. Frick Coke Company, caught fire from furnace sparks on the 30th ult. In less than an hour, the tipple-shaft and engine-house were destroyed, and the mine then ignited and burned fiercely. It has been flooded. This will cause a suspension of the entire works for several months at least. The daily output of the shaft was 1500 tons, and the closing down will result, it is said, in the closing down of 500 coke-ovens, or one twentieth of the whole Connellsville region.

The property known as the Eclipse Mines, in Peters township, Washington County, near Anderson station, on the Baltimore & Ohio Railroad, containing about 169 acres and 100 perches, and four acres, more or less, of the surface, is to be sold by the assignee of John Carlin & Co., Joseph F. Mimick, Pittsburg. On the property is erected a large tipple, sidings, tracks, and all the improvements of a first-class mining plant. The property is in first-class condition and repair, and purchasers can begin operations at once.

COKE.

The Port Royal Coal and Coke Company, operating at Fitz Henry, Westmoreland County, on the Youghiogheny River, near the line of the Baltimore & Ohio Railroad, is building 60 coke-ovens, and will build 60 more in the spring. The coal has been thoroughly tested for coking. The company will put in the iron mining machines, which will be the first introduced on the Baltimore & Ohio road. It is intended to have the first 60 ovens in full blast by December 15th.

MARYLAND.

The Atlantic Coal Company reports that, since the stoppage of the last dividend, it has purchased property on the line of the West Virginia Central Railroad Company, fourteen miles west of Piedmont, West Va., and opened it at a cost of $80,000. The capacity of the mine is 800 tons a day, and it has been working since January last. The lawsuit of the Maryland Coal Company, instituted in 1879 against this company for $100,000 damages, arising out of alleged trespasses, has been settled amicably. The company is working, in connection with the new property, the old mine at Pekin, Alleghany County.

GAS AND OIL NOTES.

Exports of refined, crude, and naphtha from the following ports, from January 1st to October 30th:

	1886. Gallons.	1885. Gallons.
From Boston	4,736,632	7,267,455
Philadelphia	126,104,472	127,903,295
Baltimore	13,384,229	9,504,819
Perth Amboy	4,850,046	
New York	323,913,866	315,312,457
Total exports	472,989,245	459,988,026

COLORADO.

In prospecting for coal with the diamond drill, in Coal Basin, Garfield County, natural gas was encountered in the bituminous shale that overlies the coal. This promises quantities of fire-damp in the coal mines.

ILLINOIS.

Drilling at the natural gas well at Kokomo has been suspended at a depth of 950 feet, the flow of gas being deemed sufficient. The well will be immediately piped for use. The same company has contracted for a new well a half-mile west of the present well. The South Kokomo Gas and Oil Company has the machinery on the ground for a new well in South Kokomo, and the work of drilling on these two wells will begin as soon as the derricks are completed.

NEW YORK.

James A. Burden, proprietor of the Burden Iron-Works at Troy, will, it is said, soon begin prospecting for gas in the neighborhood of his works

PENNSYLVANIA.

It is stated that there are about 125 wells in the Murrysville District, owned by the Philadelphia, People's, Chartiers, Hites, and Manufacturers' and Washington companies. Of this number, the Philadelphia Company has 60, and has eight now drilling. These range in depth from 1400 to 2200 feet, but the average is 1800 feet. The pressure varies from 250 to 1100 pounds. This company has 336 miles of pipe. Fifty thousand feet are 24 inches in diameter, and 37,000 feet 20 inches. Experiences in Murrysville show that one well does not exhaust the others. The new well struck in this district last week by the People's Natural Gas Company at a depth of 1600 feet, is estimated to have a pressure of 1500 pounds to the square inch.

The Chartiers Valley Gas Company has just brought in two of the largest gas wells ever struck in Washington County. They are on the company's property in the Hickory District, contiguous to the pipe lines connecting that field with Pittsburg, and attachments have already been made, so that little gas is wasted.

B. F. Rafferty, General Manager of the Pennsylvania Natural Gas Company, has resigned his position and will retire from the company. J. W. Brown, of Hussey, Howe & Co., formerly vice-president of the company, has been appointed chief executive officer in Pittsburg. Charles B. Hurley, formerly secretary, has been appointed manager and engineer.

GENERAL MINING NEWS.

The total shipments of ore from Ashland during the season of 1886, up to and including the week ended October 27th, were as follows:

GOGEBIC DISTRICT.

Ashland	58,368	East Norrie	8 918
Aurora	77 392	Nimikon	2.941
Iron Chief	9,030	Odanah	9,946
Bessemer	4 726	Paust	17,677
Brotherton	9,900	Puritan	13 206
Colby	225,409	Sunday Lake	8,957
Iron Chief No. 2	530	Superior	2,021
Iron King	20,396	Trimble	10,537
Ironton	16 336	Pewabic	55
Germania	18 345	Valley	1,840
Kakagon	17,034		
Montreal	12,227	Total ore from Ashland	653,294
Norrie	108,502		

CALIFORNIA.

MONO COUNTY—BODIE DISTRICT.

Reports for week ended October 25th:

BULWER.—They are crushing 55 tons daily. The average pulp assay is $29.65.

MONO.—Rich ore is taken out below the 700 level.

STANDARD.—During the week, there were shipped to the mill 324 tons of ore. The ore-bodies are looking well. The Bulwer-Standard and Standard mills are running steadily.

SHASTA COUNTY.

Robert Skinner and Capt. George H. Atkins have purchased the right for this county, and will immediately put up a Russell furnace of 10 tons capacity at Redding for custom work. There is a vast amount of base ores in that vicinity, and this will give owners a first-class chance to test their mines. Messrs. Skinner and Atkins propose to roast and work the ore and make returns to mine-owners.

SIERRA COUNTY.

SIERRA BUTTES GOLD MINING COMPANY, LIMITED.—The thirty-third general meeting of this company was held in London on the 14th ult. The working of the Buttes mine for the past half-year is reported as being very satisfactory. The average yield of ore in the mill was $7.23 per ton, as against an average for the seven preceding half-years of $6.85. The working expenses were likewise less, amounting to $3.98 per ton, as against an average for the seven preceding half-years of $4.33. The number of tons milled was 24,778, against an average of 21,452. In explaining the results of working the different parts of the mine, he stated that the month of September was one of the worst they had had for a long time, the profit being only $4000; but in the present month they were doing better, the latest advices stating that a body of first-class ore was worked. As to finance, he stated that the company was £15,000 better off than it was twelve months ago, and it had paid a dividend of 6¼ per cent. The chlorination of the sulphurets, which average £38 10s. per ton, is said to be a great success. The cost of chlorination is stated to be £5 15s., say $28 a ton. At the Plumas-Eureka mine, the average yield of the ore was $5.56 a ton, as against $7.31. The working expenses had also increased. For the twelve months, they were able to pay a dividend of 3¾ per cent, and to put by £2000.

COLORADO.

LAKE COUNTY.

From the Leadville *Herald-Democrat*, we condense the following:

Sixty prospecting-shafts are sinking to great depth at Leadville, and promise to result in the opening of great mines.

ARGENTINE.—A deep shaft is sinking on the western portion of this company's property, on the north side of Iron Hill. The shaft is of sufficient dimensions to permit its sinking to great depth, despite a heavy flow of water.

BEST FRIEND.—Work has been suspended on this mine, at the head of Big Evans Gulch. The property was under lease but not satisfactorily worked, consequently little or no profit.

BREECE.—The shipments of iron ore from this mine to the works of the Colorado Coal and Iron Company, Pueblo, continue at the rate of about fifty tons a day.

CHRYSOLITE.—Nearly all the old workings have been leased to Mr. George Metzger, an old employé of the company. The lease, it is thought, will prove profitable to both company and lessee.

GREAT HOPES.—This company, which embraces the Hibernia, Surprise, May Queen, Amie, and Deer Lodge properties, is actively working all, and a great deal of important new exploration-work is in progress.

LEADVILLE CONSOLIDATED.—The earnings for October amounted to about $6500. Last week, a small pocket of very rich ore was discovered while driving a timber chute to connect the incline with the second contact shaft. The ore was found directly behind the cribbing of one of the old stopes, and yielded two or three tons of hard gray ore running over $1060 a ton, also a somewhat larger quantity of ocher that assays quite well.

LEADVILLE TUNNELING, MINING, AND DRAINING COMPANY.—This company is, it is stated, meeting with favor by those interested in the draining of the mines by means of a great tunnel, and it is thought that there will be no difficulty in placing the bonds necessary to carry on the work.

MARYLAND.—This lode on Canterbury Hill has been leased for two years at a royalty of 25 per cent and a bond for $15,000. The necessary machinery is to be erected at once.

OLGA.—The owners of this mine in Stray Horse Gulch are taking the proper steps to develop it. A new shaft-house has been erected and other surface improvements made. A good hoisting plant has also been put up, and preparations are complete for the sinking of a shaft to the depth of 400 feet.

WALCOTT.—Messrs. Moffat and Smith have taken a lease on the Lucy B. Hussy lode, composing a portion of the property of this company. The ground leased adjoins the Henriett mine on the west, and will be opened by a joint shaft following westward in the fault crevice.

SAN JUAN COUNTY.

LAURA FULLER.—A shaft is sinking on this property in Ross Basin. It is showing up well, and some high-grade mineral has been struck while sinking. The mine has been bonded to New York people.

DAKOTA.

LAWRENCE COUNTY.

CALEDONIA.—Official advices to us show that the ore produced during the week ended October 25th was 1408 tons. The bullion produced during the first half of last month amounted to about $9685.50.

IRON HILL.—Sufficient coke has arrived to warrant starting up the smelter, which was blown in on the 28th ult. The final clean-up at the mill for the past month makes the product slightly in excess of operating expenses, with the product of the smelter practically net.

PENNINGTON COUNTY.

AMERICAN TIN MINING COMPANY.—This company employs upward of thirty men, half of the number on the Cleveland, which property is rapidly developing. Complete hoisting-works will soon arrive from Chicago.

HARNEY PEAK TIN MINING, MILLING, AND MANUFACTURING COMPANY.—It is stated that there are about sixty men at work in various places on the company's property, and that development-work will be steadily pushed all winter. It is the intention of the company to get the mines on a paying basis as soon as possible.

MEXICO.

CUSIHUIRIACHIC.—It is stated, says the Mexican *Financier*, as a matter of fact, that this company is not, as has been reported, making extraordinary profits, but is only paying expenses and the interest on its bonds, although there is a confident expectation on the part of the managers of increasing their earnings. This statement is given in correction of recent reports which, coming apparently from a well-informed source, were entirely exaggerated.

MICHIGAN.

COPPER MINES.

KNOWLTON.—The tributers are reported to have come upon a deposit of copper that yields well in mass and barrel work.

RIDGE.—The tributers at this mine finished cleaning up their copper October 23d. The result of the four months' tribute was 62 barrels of copper and 53 masses, weighing over 55 tons. All of this has been shipped. Most of the tributers will return to their work again on the first of the month, and probably several additional men will go to work soon. The tribute take will last for the winter or until May 1st.

IRON MINES.

The following statement, given by the Marquette *Mining Journal*, shows the amount of iron ore shipped from the ports of the districts given below, for the season of 1886, up to and including Wednesday, October 27th:

	Tons.
Marquette—Marquette District	779,733
St. Ignace— " "	68,081
Escanaba— " "	565,273
Menominee District	774,747
Grand total of lake shipments	2,187,834

Shipments of Pig-Iron.

Pioneer furnace	5,080
Deer Lake furnace	1.505
Vulcan furnace	12,452
	19,037

The gain over the shipments from the above ports, during the same period in 1885, is 280,953 gross tons.

MINNESOTA.

ST. LOUIS COUNTY.

MINNESOTA IRON COMPANY.—During the season of 1886, including the week ended October 27th, there were shipped from Two Harbors 279,941 tons of ore from this company's mines.

MONTANA.

LEWIS & CLARKE COUNTY.

BOSTON & MONTANA.—At the annual meeting, held in New York City on the 1st inst., the following gentlemen were elected directors to serve for the ensuing year: Messrs. David J. Seligman, Henry Seligman, Theodore Seligman, Henry Stein, Henry E. Kavanagh, T. M. Lilienthal, J. W. Lilienthal, Albert Lilienthal, E. D. Betteus, Leo Speyer, all of New York City, and Messrs. E. F. Child, George Sampson, R. B. Denny, all of Boston.

PIEGAN.—Mr. David Sutton, who, it is said, has a bond of $200,000 on this lode, near the Gloster, has let a contract to push the tunnel on the property an additional 300 feet. This tunnel was in on the vein 306 feet when Mr. Sutton took hold of it, and it will be extended on the vein. Mr. Sutton is backed by San Francisco capitalists prominent in mining circles.

MADISON COUNTY.

MONTANA TIN MINING COMPANY.—It is stated that a New York company is examining this Montana company's properties, situated about 25 miles from Dillon, with the view of purchasing and making extensive development.

SILVER BOW COUNTY.

BLUEBIRD.—This mine is said to be one of the coming mines of Butte. It is stated that four shafts have been sunk on the vein, to demonstrate its continuity for a distance of 1300 feet along the surface of the property. For this entire distance, the ore body averages at least fifteen feet wide, and assays forty-five ounces in silver and from $3 to $4 in gold a ton. Two hundred feet southwest of the present main shaft, a three-compartment shaft is sinking, which will be the working-shaft of the mine. At 100 feet, a cross-cut was run toward the lode, but, before reaching it, a new and heretofore unknown vein of ore, twelve feet in width, and assaying 37½ ounces in silver, was struck on the 16th of July. The equipments of the mine consist of a double-geared engine and a complete hoisting and pumping apparatus, of sufficient power to sink 1000 feet upon the mine and to raise 500 tons of ore a day. A mill of seventy stamps, designed for dry crushing, chloridizing, and amalgamating, is in course of erection. The mine is owned by Van Zandt & Co.

NEVADA.

ELKO COUNTY.

NEVADA QUEEN.—This company has put a force of men at work, and will explore its ground through the North Belle Isle workings for the present. The drift will be extended to the Big Nine shaft, which will be sunk 100 feet deeper to reach the 150 level from the North Belle Isle. Through the courtesy of the North Belle Isle, work can be pushed at several points at once, and thus open up the mine more economically and expeditiously than would be the case were the company obliged to confine the operations to the shaft alone.

NORTH BELLE ISLE.—A three story ore-house has just been completed, and a trestle thirty feet high from the ore-house to the hoisting-works is building to sustain the track for the ore-cars. The trestle will be about 400 feet in length, and from its hight will afford ample dumping ground for waste rock for several years to come. The ore from the mine will be conveyed in cars along this trestle, and dumped into the upper story of the ore-house and there sorted, and then dropped into the chutes of the second story, where it will be loaded into wagons for transportation to the mill. Some time will yet elapse before ore from the mine will be sent to the mill, as it is the intention thoroughly to open the ground before milling begins, in order that the output of bullion may be uninterrupted. A large quantity of ore has accumulated in the drifts, in addition to several hundred tons deposited upon the surface. An ore-body of great richness has been struck in one of winzes below the 150-foot level.

EUREKA COUNTY.

NEW EUREKA MINING COMPANY, LIMITED.—This company has taken possession of its mines and machinery, has dispatched funds to it manager, Mr. Reuben Rickard, who has left for the mines, and work will now be vigorously pushed.

STOREY COUNTY—COMSTOCK LODE.

From the Virginia City *Chronicle*, we condense the following:

ANDES.—John Landers has been chosen to fill the vacancy in the Board occasioned by the death of Michael Landers, his brother, and subsequently elected President and the Nevada Bank Treasurer. This mine was originally owned and patented by him. The property adjoins the westerly side of the Consolidated Virginia and Ophir mines, and active and careful working of the mine may now be expected.

CHOLLAR.—Operations will soon be resumed through the old shaft. The 1100 level will be the first reopened.

CONSOLIDATED CALIFORNIA & VIRGINIA.—The official report by Superintendent Patton for the week ended October 23d shows that the explorations on the 1300 and 1400 levels in the old California ground show continued improvement, and there is good milling ore on both levels, the extent of which can only be ascertained by further explorations. During the week, 1042 tons of ore were shipped to the Morgan mill, and 1417 to the Eureka mill. The average value of the ore milled during this period, according to the assays from the battery samples, was $31.11 for that milled at the Morgan mill, and $20.55 for that crushed at the Eureka mill.

HALE & NORCROSS.—The old hoisting-works below D street are overhauling preparatory to the resumption of operations. It is probable that the 300 and 400-levels will be opened up immediately.

MARKETS.

NEW YORK, Friday Evening, Nov. 5.

Silver.

DATE.	London. Pence.	N. Y. Cents.	DATE.	London. Pence.	N. Y. Cents.
Oct. 30..	45⅞	99¼	Nov. 3	46	99¾
Nov. 1..	45⅞@6	99¼	4	46⅛	9 ⅞
2..	45⅞@6	99⅝	5	46⅛	99⅞

Continued inquiry from England and France for silver in larger amounts than have for some time been sought for has given the market a firm outlook.

Foreign Bank Statements.—The governors of the Bank of England, at their regular weekly meeting, made no change in the bank's minimum rate of discount, and it remains at 4 per cent. During the week, the bank lost £217,000 bullion; and the proportion of its reserve to its liabilities was reduced from 41½ to 38 11-16 per cent, against 38 13-16 per cent at the same time last year. The weekly statement of the Bank of France shows a loss of 17,675,000 francs gold and a loss of 950,000 francs silver.

Indian Imports of Silver.—During the last Indian fiscal year ended March 31st, the net import of silver by India in its trade with all countries was $56,287,311 at our coinage rate. At its gold price, it was (say) 25 per cent less, or $42,215,483. This was much beyond the average of the yearly absorptions of silver by India. During the current fiscal year, it will doubtless fall off, but there are no indications that it will go below the average. During April and May, it amounted to $6,625,830 at our coining rate, or to $4,969,373 at its gold price.

Tin.—This market has been quite steady during the week, and closes at about the same figures we quoted a week ago.

Cables to the Metal Exchange quote at the close to-day: Straits, £100 for spot, and £100 15s. for three months, while a report published in some of our morning papers to-day stated that the price had gone off in London to £98. Here, we quote 22·20@22·25c. for prompt shipment or November. Sales during the week have been about 200 tons at the Metal Exchange. On our editorial pages, we refer to the prospects of the Dakota tin mines.

Lead.—This market is in better spirits, and, though still somewhat hysterical, is in a more hopeful condition.

Sales are reported to us aggregating perhaps from 100 to 150 tons at 4½c., and it is said even 4·55c. has been paid; but, on the other hand, Chicago offers at a price that is equivalent to 4·45c. here. Manufacturers appear to be waiting, and not very firm believers in the maintenance of even the present price. But, "Sufficient unto the day is the evil thereof," and we are pleased to record a better feeling and higher prices. The course of prices is so dependent on manipulation that it would be unsafe to predict the future. We do not, however, anticipate much, if any, higher prices at present, and we hope they will not be lower.

Stocks in Western works, with a few exceptions, are reported as small, and the works well sold up for the next month or two.

From London, we get the quotation £12 17s. 6d., which is 5s. better than a week ago.

We give elsewhere the imports and stocks in bond.

The corroders are still in session as we write, and, if reports speaks truth, are having a parrot and monkey time of it in their endeavors to perpetuate or re-establish the combination. Nothing certain had been arrived at up to the hour of going to press.

Messrs. John Wahl & Co., of St. Louis, telegraph as follows to-day:

In sympathy with other markets, an increasing activity has characterized our lead market. Sellers of all brands have advanced their asking price to 4·25c., with best bid 4·27½c. Sales light so far, on account of boom being too young.

Messrs. Everett & Post, of Chicago, telegraphed yesterday as follows:

The market is rising, excited, and unsteady, and it is difficult to give exact quotations. Offerings are only moderate. There is a somewhat better feeling, due to growing inquiry. Some buyers, fearing an advance, are now coming to the front, and taking lead liberally wherever they can get it. Holders, anticipating better prices, have withdrawn from the market at present, and refuse to make sales for future delivery at present prices. The market opened Monday at 4c., under sales of some 250 tons advanced to 4·10c.; sales, 250 tons. Closes quiet, 4·15c. asked. Dispatches to-day state that the market is rising; bids, 4·15c., declined; 4·25c. asked.

Copper.—This market is extremely strong, and 12 cents is not only talked of as something in the future, but it has been paid for spot Lake. Other brands are still quoted 10½@11c., though higher prices are talked in these also. There is no indication of either Montana or Arizona mines going to work; indeed, there are signs that they will not resume for some time yet.

No one seems to be frightened by the announcement in our last issue of what the Boleo Company will do some day. Indeed, some of the smelters who have worked in our Western works ridicule the idea that £25 per ton will cover the cost of Boleo bars in England. Neither is any one alarmed at the "mountain of copper" near Sudbury, Ontario, the ore already shipped from which has been far below expectations in grade.

We give, on another page, a description of a little known though promising Vermont bonanza; but none of these latent possibilities can affect the market for a long time. The absence of stocks and the enormous consumption are the legitimate grounds on which the strength of our market rests, and which will, in all probability, bring the next sale of Lake, a week or two hence, up to 12 cents, and, when navigation closes, will make the price half a cent more.

The London market is still depressed, and Chili Bars are quoted to-day, £40 12s. 6d., and B. S., £45 15s., which is a decline of 5s. during the week.

Manufacturers have advanced the price of Sheet Copper, as is seen in the following table:

SHEET AND BOLT COPPER.

The following advanced price-list of Sheet and Bolt copper was adopted by the Association of Copper Manufacturers October 27th:

SHEET-COPPER.		Per square foot. 64 oz. and over.	32 oz. to 64 oz.	16 oz. to 32 oz.	14 oz. to 16 oz.	12 oz to 14 oz.	10 oz to 12 oz.	8 oz to 10 oz.	Lighter than 8 oz.
		Cents per pound.							
Not wider than 30 in..	not longer than 72 in	18	18	18	19	20	21	24	26
	longer than 72 in	18	18	18	19	21	23	27	..
30″ to 36″.	not longer than 96 in	18	18	18	20	22	26	29	..
	longer than 96 in.	18	18	19	21	23	27	31	..
36″ to 48″.	not longer than 96 in	18	18	20	22	24	28	..	..
	longer than 96 in	18	18	21	23	25	29	..	..
48″ to 60″.	not longer than 96 in.	18	18	23	25	30	..	..	..
	longer than 96 in	18	19	24	..	..	..	..	..
60″ to 84″.	not longer than 96 in	19	20	..	..	..	..	..	..
	longer than 96 in	20	21	..	..	..	..	..	..
Wider than 84 inches		21	23	..	..	..	..	..	..

All Bath-Tub Sheets, per pound, 16 ounces, 21 cents; 14 ounces, 23 cents; 12 ounces, 25 cents; 10 ounces, 28 cents.

Bolt Copper, ⅝ inch diameter and over, per pound, 18 cents.

Circles 60 inches diameter and less, 3 cents per pound advance over lowest prices of Sheet-Copper of the same thickness.

Circles over 60 inches diameter up to 96 inches diameter inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet-Copper of the same thickness.

Segment and Pattern Sheets, 3 cents per pound advance over price of Sheets required to cut them from.

Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.

Cold or Hard-Rolled Copper lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

Tinning.

Tinning Sheets on one side, 10, 12, and 14 × 48, each	8c.
Tinning Sheets on one side, 30 × 60, each	30c.
For Tinning Boiler sizes, 9 in. (Sheets, 14 in. × 60 in.), each	15c.
For Tinning Boiler Sizes, 8 in. (Sheets, 14 in. × 56 in.) each	12c.
For Tinning Boiler sizes, 7 in. (Sheets, 14 in × 52 in.) each	12c.
Tinning Sheets on one side, other sizes, per square foot	2½c.

For Tinning both sides, double the above prices.

Messrs. James Lewis & Son, in their copper report, dated Liverpool, October 16th, say :

We have had a very active demand for copper of all kinds during the past fortnight, though at the close it has toned down. The present lull is probably only temporary, as supplies from the United States have now practically ceased, and we may expect no more copper from that quarter for some time to come, except that made from Canadian sulphuret ores, upon which a rebate of duty is obtained when exported.

A quantity of Montana matte that has been lying here for some time past is reshipping to New York, and it seems quite possible that the whole of the American matte now here may be returned, as, owing to the stoppage of supplies from the Western mines, the Eastern smelters expect shortly to be obliged to cease smelting for want of material.

Ten cents and forty-four hundredths a pound, or £54 10s. a ton, with 2½ per cent discount, has been paid in New York for Lake Superior ingots for December delivery, when the closing of the canals entails an increased cost of ⅛ cent a pound, or £2 7s. 6d. a ton, on the transport.

The import from the United States for the past fortnight has been 307 tons, making 15,575 tons to date this year, against 27,352 tons during the same period of last year—a decrease of 11,777 tons.

The transactions in Chili Bars during the fortnight amount to about 10,000 tons.

As the advance came when smelters were unusually bare of stocks, they were very eager buyers of furnace material at very high prices, and secured all that was obtainable, paying 8s. 6d. per unit for 1000 tons of Anaconda matte, or only £2 10s. per ton below the parity of Best Selected copper on the day of purchase (whereas last year their contracts were £7 10s. below), and 8s. 6d. also for 390 tons Chili Regulus, cash bars at the time selling at £42 2s. 6d. to £42 10s. a ton.

A good business was also done in refined and manufactured copper, both for export and home consumption, and, had the advance continued, it would doubtless have been still larger. Fifty pounds was paid for India sheets—an advance of £6 from the lowest point touched—and Best Selected was not obtainable under £46 10s. to £47 for good brands.

The following dividends have been declared by the Spanish mining companies for the first six months of this year :

Rio Tinto Company, at the rate of 4 per cent per annum, against 5½ per cent for last year. Mason & Barry, at the rate of 3 per cent per annum, against 3¾ per cent for last year ; the average price of bars being £40 15s. and £44, respectively.

The Chili charters for the first half of the month are to-day advised as 900 tons, and the exchange is quoted at 25⅛ an advance of 1¼. Silver has advanced from 44⅝ to 45⅜ an ounce.

The advance in the Chili exchange from the lowest point touched—21½d. on August 31st—is about 18½ per cent, while that in the value of bar copper is only 6 per cent, the dollar price in Valparaiso being, respectively, $18.50 on August 31st and $16.35 on the 15th inst. Producers in Chili are therefore at present receiving the equivalent of £5 a ton less than when copper was at its lowest point here.

The arrivals in Liverpool and Swansea from Chili have been 1661 tons Fine, and from the United States 201 tons bars, 15 ingots, and 152 matte, equal to about 282 tons fine ; and in France 25 tons fine.

The visible supply has decreased 8300 tons during the past month, and is now 63,053 tons.

Spelter.—There is no change in this market. We quote 4·30@4·35c. for Western brands, and 6½@7c. for New Jersey. Silesian is quoted 4·80c. nominal.

New Jersey Zinc Oxide, 4@4½c., according to grade. Silesian Spelter in London is quoted at £14 5s., an advance again of 2s. 6d. during the week.

Antimony.—We quote Cookson's at 9@9½c. Hallett's has remained at from 7½@7¾c. It continues to be quoted in London at £30.

Nickel.—We quote 60@63c.

Bismuth—Is quoted at $2@$2.25 a pound.

Aluminium—Is quoted at $1 an ounce.

Quicksilver.—There is no change in the market. The price continues to rule at from 53@55c. per pound, according to quantity.

MOVEMENT OF BONDED METALS, PORT OF NEW YORK, OCTOBER 1886.

Metals.	Imports, Oct., 1886.	Withdrawn, Oct., 1886.	Exports, Sept., 1886.
Iron ore	6,616 tons	.....	.....
Pig-iron	4 506 "	165 tons	100 tons
Spiegel-iron	14,3 0 "	52 "	.....
Old rails	814 "	12,000 "	.....
Scrap-iron	283 "	2 7 "	.....
Scrap-steel	3,154 "	.....	.....
Steel blooms and billets	7,326 "	.....	.....
New steel rails	12 "	.....	122 "
New iron rails	350 "	.....	.....
Wire and nail rods	10,000 "	843 "	.....
Iron bars, etc	1,342 "	.....	70 "
Iron beams	175 "	.....	.....
Sheet iron	1,097 "	9 "	14 "
Steel sheets	56 "	.....	5 "
Cotton ties	100 "	.....	.....
Russia sheet-iron	.....	.....	.....
Steel tires and forgings	130 "	.....	.....
Steel hoops	.....	.....	.....
Steel bars, etc	701 "	2½ "	.....
Tin plates	97,757 bxs.	5,408 bxs.	.....
Taggers iron	600 "	.....	.....
Pig-tin	1,220 tons	.....	.....
Copper ore	.....	.....	1,201½ tons
Copper matte	.....	.....	
Ingot copper	.....	.....	1,949,581 lbs
Copper (old)	522 lbs.	.....	.....
Brass (old)	.....	.....	.....
Pig-lead	885 tons	306 tons	.....
Lead (old)	285 lbs.	.....	.....
Spelter	163 tons	56 "	4,862 lbs.
Sheet zinc	.....	.....	.....
Scrap zinc	43,683 lbs.	.....	.....
Reg. antimony	282 cks.	.....	.....
Nickel	20,500 lbs.	2,000 lbs.	.....
Type metal	91 tons	.....	.....

Metals.	Stocks. Jan. 1, 1886.	Nov. 1. 1886.
Iron ore	.....	.....
Pig-iron	739 tons	2,263 tons
Spiegel-iron	584 "	1 052 "
Old rails	3,010 "	2,580 "
Scrap-iron	206 "	2.6 9 "
Scrap-steel	176 "	695 "
Steel blooms and billets	17 "	.....
New steel rails	135 "	147 "
New iron rails	12 "	.....
Wire and nail rods	7 183 "	9,073 "
Iron bars, etc		
Iron beams	.....	.....
Sheet-iron	624 "	858 "
Steel sheets	*	.....
Cotton ties	967 "	554 "
Russia sheet-iron	855 "	619 "
Steel tires and forgings	97 "	62 "
Steel hoops	*	.....
Steel bars, etc	71 "	126 "
Tin plates	54,100 bxs.	50,455 bxs.
Taggers iron	*	.....
Pig tin	.....	.....
Copper ore	.....	.....
Copper matte	.....	.....
Ingot copper	.....	.....
Copper (old)	71,972 lbs.	66,800 lbs.
Brass (old)	7,000 "	11,561 "
Pig lead	215 tons	2,376 tons
Lead (old)	.....	468 lbs
Spelter	.....	67 tons
Sheet zinc	12 "	11 "
Scrap zinc	13,440 lbs.	13,400 lbs.
Reg. antimony	224 cks.	111 cks.
Nickel	5,882 lbs.	3,912 lbs.
Type-metal	.....	.....

* No record kept.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Nov. 5.

American Pig.—This market is strong and moderately active, with no nominal change in prices. The advances actually obtained in other markets and in actual sales here confirm the impression that $20 for No. 1 Foundry, standard brands, may be reached as the basis of next year's business. Our Pittsburg and Philadelphia letters show the strong and advancing conditions of these markets. We continue to quote Lehigh brands, tide-water delivery, as follows : No. 1 X, Foundry, $19@$19.50; No. 2 X Foundry, $18@$18.50 ; Gray Forge, $16.50@$17 ; while less popular brands sell 50 cents below these figures, and fancy brands sell at $20.50.

In Southern irons, we have to report sales of 1500 tons for next year's delivery, on the basis of $19 for No. 1 Foundry. Southern factories are well sold up, and are unwilling to contract ahead, hoping for higher prices.

Scotch Pig.—Prices here remain as a week ago, while in Glasgow they have slightly declined. Imports for October are given in another column. We quote : Coltness, $21.50@$22 ; Gartsherrie, $20.50 ; Summerlee, $20.75@$21 ; Dalmellington, $19.25@$19.50 ; Langloan, $20@$20.50 ; Clyde, $19.50@$19.75 ; Glengarnock, $19.50@$20 ; Eglinton, $18.50@$19. Cables to the Metal Exchange to-day quote : Coltness, 50s. 9d.; Langloan, 47s. 9d. ; Summerlee, 49s. 6d. ; Gartsherrie, 47s. 6d. ; Glengarnock, 44s. 6d. ; Dalmellington, 43s. 6d. ; Eglinton, 42s. 6d. : Warrants, 41s. 9d. ; Middlesboro', No. 3, 32s. 6d. ; Hematite Pig, 44s. 6d. Freights are 7s. 6d.@9s.

Bessemer Pig.—The demand for this grade of iron is still very good. We quote $18.75@$19.25 for Domestic and $19.50 nominal for Foreign.

Spiegeleisen.—Quite large sales are reported at a little below our quotations in some cases. We quote $26 for German ; $26@$27 for English 20 per cent. Domestic has been sold at $26.50 for 20 per cent.

Most of the mills are well filled up with orders, which amount now to perhaps nearly 700,000 tons for next year's delivery. This is about half the full capacity of our mills. We hear of a sale of 20,000 tons by a Western mill, and nearly 30,000 tons by an Eastern mill, at our quotations of $34 East, $37 West. Some Eastern mills have held firmly at $35, and few are willing to take further orders at present, owing to the probability of higher prices for Bessemer irons.

Cables to the Metal Exchange to-day quote Steel Rails, heavy sections, £3 15s.@£4 2s. 6d. f.o.b.

Structural Iron and Steel.—There is an excellent demand from bridge-builders and for building, although in the Northern States the building season is drawing to a close.

We quote Angles, 2@2¼c.; Tees, 2½c. ; Steel Angles, 2·35@2·50c. American Beams and Channels, 3c. base from dock.

Steel Blooms and Billets.—We quote Rail Blooms, $27@28 for foreign. We quote Billets, $28.50@29, according to size and quality.

Steel Plates.—We note a moderate amount of business at our quotations, and a strong feeling generally in the market. Tank, 2·60@2·70c. ; for Boiler and Ship Plates, 3@3¼c. ; for Flanges, 3⅛c. ; for Extra Flange and Fire-Box Plate, 4@4½c.

Merchant Steel.—Business has been fair, and our quotations remain as follows : American Tool Steel, 7½@10c. ; special qualities, 11@20c.; Crucible Machinery, 4@4·50c.; Bessemer and Open-Hearth Machinery, 2½c.

Plate Iron.—Common Tank, 2¼@2⅜c.; Refined, 2¼@2½c. ; Flange Iron, 3¼@3⅛c. ; Extra Flange, 4@4·25c.

Bar Iron.—The market is firm. We quote : Refined at 1·75@2c.; Common, 1·65@1·75c. Store prices are ·10@·20c. higher.

Rail Fastenings.—We quote Spikes, 2·15@2·25c. a pound ; Angle Fish-Bars, 1¾@2c. ; Bolts and Nuts, 2·50@3c.

Old Rails—Are quite firm. For Tees, $22 is asked, and $23@$24 for Double-Heads, but buyers' ideas are nearly $1 below these figures. We hear of offers of $25 delivered at Pittsburg. Old Tees are quoted by cable to-day, London, 50@52s., and Steel Crop-End 50@52s. 6d.

Scrap.—The market is firm. We quote $20 for Wrought Yard Scrap. English Wrought Scrap is quoted 50@52s. 6d. f.o.b.

The returns at Middlesborough, England, for October show the largest shipment of iron and steel since September, 1885. The shipments of pig-iron amounted to 84,322 tons, of which 46,000 tons went abroad. The shipments of manufactured iron amounted to 41,317 tons, of which 29,000 tons went abroad. Germany and Russia each took 13,000 tons of pig-iron. The customs receipts for the year ended March 31st show a decrease of £806,322.

Philadelphia. Nov. 6.

[From our Special Correspondent.]

During the past few days, we have had more urgency in the way of inquiry for pig-iron of all kinds. The actual business has been of slim proportions, partly due to election excitement, so they say. The bottom facts, according to brokers and rolling-mill men, are about these : That with a little disposition on the part of furnace interests to accommodate, a large amount of business will be done this week. One broker has had inquiries since Monday morning for between seven and eight thousand tons of Foundry and Forge iron. Two lots of one thousand tons each are wanted, and $16 was offered for one of the lots. More money is wanted ; $16.50@$17 are the bottom figures at which business can be done for good Gray Forge. An advance is more probable than a decline. Foundry iron is strong at $20 for three or four brands of No. 1.

A very big business could be done at $19.50 for a half-dozen or more easy makes. Inferior makes of No. 1 have been taken in rather small lots to-day and yesterday, at $18.50 and $18.75. No. 2 iron sold at $17.25 in fifty-ton lots. Several offers are in hand for foreign material, including Bessemer pig, steel rail blooms, and some little spiegeleisen. Prices are too high for immediate business.

Muck-Bars.—No business has been done in Muck-Bars of consequence, though there are offers at $31 that are permitted to go by.

Manufactured Iron.—Within the past week, interior mills booked orders for early deliveries of medium iron at $1.75, amounting in four mills to 500 tons in all. There is a great deal of small business offering at city and country mills, and Refined iron is worth $1.90. Common iron is likely to sell very freely during the next week or two. The strength of the market is due to the fact that all our Pennsylvania railroads are in the market for material of one kind or another.

Nails.—Nails have not been able to hold their own, and there are some offers on the market to-day that show that buyers are anxious to take advantage of the present dullness. Quotation, 2@2·10c.

Plate and Tank Iron.—The manufacturers of plate and tank iron all through the State report a continuance of a steady demand, and but little shading of prices. The lowest orders known of this week were at 2·10c.

Skelp-Iron.—No business has been spoken of, but quotations are 1·95c.

Wrought-Iron Pipes and Tubes.—Two or three very large orders have been booked for December delivery. Discounts are firm, and the highest prices are readily paid.

Structural Iron.—Various small orders were booked within six days, aggregating between six and seven hundred tons at three mills. Angles are 2·10@2·20c. The bridge-builders are preparing specifications, which we expect to have a look at next week.

Steel Rails.—It is rumored here to-day that four large orders are to be placed soon in Pennsylvania mills not doing business here. There is a great deal of business promised for December. The tendency in prices is upward, where deliveries are wanted within sixty days. For orders, of this kind $35 can be secured.

Old Rails.—Five or six spot lots of old rails were picked up this week at $22@$22.50. Prices are higher and firmer than a week ago. We have inquiries here to-day aggregating over four thousand tons, for interior shipment.

Pittsburg. Nov. 4.

[From our Special Correspondent.]

Most descriptions of iron have taken a fresh start, with a very firm feeling all around. The raw iron sales of the preceding week were the largest ever made in the history of the iron trade of this city. Our sales comprised twenty-eight thousand tons, without including several thousand tons of storage iron, the latter selling at shaded prices as compared with the former. The amount of storage iron, which was large, has been reduced to a little over twenty thousand tons, and the sooner the remainder is disposed of, the better it will be for all parties engaged in the iron business. All descriptions of raw iron are scarce. We know of several dealers who have been selling right along up to within a short time, and who have withdrawn from the market for the present. Others are disposed to wait and see what effect this movement will have on prices. Among city furnaces, we could name several that are not disposed to sell at this time. The fact is, they are waiting a further advance, and from present indications they will not have long to wait. Again, there are other furnaces out of blast that do not intend going into operation until after the first of the new year. What effect the present advance will have on their movements remains to be seen. On the whole, the position of the raw iron market is fully as good as it has been since the improvement set in. The advances before noted have been fully maintained, and prices certainly have an upward look. Most of the iron men fully understand the situation, that it would be better for all that further advances should be fractional ones. Certain sellers are undecided just what position to take. They could enter orders in abundance on the same terms as before; but they want an advance, and are undecided how much the market can safely stand; hence there is a disposition to defer naming quotations for large lots until it is seen what the developments will be at a later date.

Muck-Bar.—Very firm. The advance noted in our last, accompanied with transactions, has been maintained with sales made for Eastern delivery.

Old Rails.—Both iron and steel are very firm, with an active inquiry caused by light offerings.

Scrap Material.—Of all descriptions with large transactions at outside prices.

Pig-Iron.—Following are the current rates:

	$	$
Coke or bituminous:		
Foundry No. 1	18.50@19 00	
Foundry No. 2	17.50@18 00	
Gray F., No. 3	16 50@ 7.00	
" " No. 4	15.25@15.50	
White	15 50@15.75	
Mottled	15.50@15.75	
Silvery	16.5 @18.50	
Bessemer	19.00@19.50	
Charcoal:		
Foundry No. 1	21.50@23.00	
Foundry No. 2	20.00@21.00	
Cold-Blast	25.00@28.00	
Warm-Blast	21.00@24.00	
20 p. c. Spiegel	@28 50	
Muck-Bar		29.00@30.00
Steel Blooms		32.00@36.00
Steel Slabs		30.00@33 00
Steel Crop Ends		22.50@23.00
St'l Bl'm Ends		22 00@22.50
Old Iron Rails		24 50@25.00
Old Steel Rails		23.50@25.50
No. 1 W. Scrap		18.00@19.00
No. 2 W. Scrap		17.00@17.50
Steel Rails		36.00@36.50
" light sect's		37.00@40 00
Bar Iron		1.70@ 1.80
Iron Nails (60 days)		2 05@ 2.10
Steel Nails		2.10@ 2.15

SALES SINCE LAST REPORT.

Tons.			
1000	Bessemer, Coke Smelted Lake Ore	$19 25	cash.
500	No. 1 Mill " "	17.50	4 mo
200	Mill, all ore. " "	18.50	4 mo.
100	No. 1 Fo., all ore, " "	19 50	4 mo.
100	No. 1 Fo., all ore, " "	9 50	4 mo.
100	No. 1 Fo., all ore, " "	19 00	cash
400	Gray Forge Coke, Native Ore	17.25	cash.
300	G. F. at furnace, " "	16 50	cash.
200	Gray Forge Coke, " "	16 60	cash.
25	Silvery Coke, " "	18.25	cash.
25	Cold Blast Charcoal	29.00	cash.
750	Old Iron Rails	24.50	cash.
100	Muck Bar, Spot	30.00	cash.
150	Iron Car Axles, Scrap, November, gross	28.00	cash.
100	Steel Scrap, gross	22 00	30 day
100	Heavy Scrap Metal, gross	16 50	cash.
35	Steel Car Axles, Scrap, net	30 00	cash.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Nov. 5.

Statistics.

Production Anthracite Coal for week ended October 30th, and year from January 1st:

Tons of 2240 lbs.	1886 Week.	1886 Year.	1885 Week.	1885 Year.
P. & Read. RR. Co.	295,062	9,565,420	321,015	9 336,074
L. V. RR. Co.	161.627	5,163.160	189,413	4,978,457
D. L. & W. RR. Co	140.747	4,175.387	149,552	4,155,626
D., & H. Canal Co	119,76	3,048,695	116.147	2,781,976
Penna. RR.	55 820	2 545,507	73,042	2,635,820
Penna. Coal Co	41,193	1.150.845	50,226	1,159,434
Penna. Canal Co.	15,972	413,245	14,115	568,194
Total	830,183	26.062.862	913,510	25,316,081
Increase		746,781		
Decrease	83,327			

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

Production for corresponding period:

1881	22.541,225	1883	26,640,470
1882	24 399,908	1884	25,617 681

The Norfolk & Western Railroad Company reports the shipments of Pocahontas Flat-Top coal for the week ended October 30th, 1886, and year from January 1st, as follows, tons of 2000 pounds: 1886 week, 17,736; year, 706,125; 1885, week, 15,860; year, 482,519. Increase, 1886, week, 1876; increase, year, 223,606.

The report of the total output of coal from the mines on the line of the Chesapeake & Ohio Railroad for the week ended October 14th, 1886, and year from January 1st, is as follows: 1886, week, 29,625 tons; year, 967,000 tons; 1885, week, 28,280 tons; year, 869,418 tons. Increase, 1886, week, 1345; year, 97,582 tons.

Production Bituminous Coal for week ended October 30th, and year from January 1st:

Tons of 2000 pounds, unless otherwise designated.

EASTERN AND NORTHERN SHIPMENTS.

	1886 Week.	1886 Year.	1885 Week.	1885 Year.
Phila. & Erie RR.	39	7.987	26	26,075
*Cumberland, Md.	†	1,967,267	.....	2,243,479
Barclay, Pa.	3,229	154,898	4,058	195,942
*Broad Top, Pa.				
H. & Broad Top RR.	7,934	313,853	.....	128,070
East Broad Top	.....	.....	.....	.....
Clearfield Region, Pa.				
Snow Shoe	1,998	87.624	3,326	121,344
Karthaus (Keating)	3.755	115,279	3 299	106.435
Tyrone & Clearfield	59,625	1.782,181	51,633	2,390,617
Allegheny Region, Pa.				
Gallitzin & Mountain	15,848	563,851	11,252	440,010
Total	92,428	4,992,940	73,594	5,651,952

* Tons of 2240 lbs.
† Report not received.

WESTERN SHIPMENTS.

Pittsburg Region, Pa.				
West Penn RR.	6,223	266 619	4,780	183,528
SouthwestPenn.RR.	2.684	136 280	1,169	81,973
Pennsylvania RR.	5,439	228.251	8,704	192,209
Westmoreland Region, Pa.				
Pennsylvania RR.	41,783	1,017,769	29,200	934,062
Monongahela Region, Pa.				
Pennsylvania RR.	9,702	329,572	7,463	228,286
Total	65,831	1,978,491	51,316	1,620 058
Grand total	158.259	6,971,431	125,910	7,272,010

Production of Coke on line of Pennsylvania RR. for week ended October 30th, and year from January 1st:

Tons of 2000 pounds.

	1886 Week.	1886 Year.	1885 Week.	1885 Year.
Allegheny Region.	4.129	155,153	3,609	153,210
West Penn. RR.	3.232	89 514	2 660	44,691
Southwest Penn.RR	70.042	2,195,993	38,148	1,507,728
Penn. & W. Region	7.318	271,267	5.984	195,229
Monongahela	3,398	116,538	1,385	77,480
Pittsburg Region	80	9	.....	.....
Snow-Shoe	1,115	22,688	1,128	18,787
Total	89,314	2,851,248	52,914	1,997,125

Anthracite.

The most serious question in the coal trade, at present, is the mild weather. Its unusual mildness has greatly reduced both the demand and the consumption of domestic sizes. Stove coal is beginning to accumulate with a good many producers, and is weak. Individual operators are pretty generally making concessions on this size, while there is a suspicion that one or two of the companies are doing likewise. Chestnut coal is in much better demand, but is freely offered at a concession. It seems very doubtful now whether the conditions can be sufficiently improved before the middle of the month, when the general sales-agents will have their next meeting, to permit a further advance in circular prices. There is a demand sufficient to absorb all the coal mined, but unfortunately those companies best situated at present to supply it have not the orders, or are not in a position to reach the sections from which the greatest demand comes. The West is exceedingly short of coal; but only the Delaware, Lackawanna & Western Company is able to ship there in any quantity, and it can not begin to meet the demands made upon it. At tide-water, we find the Reading Company unable to supply coal to meet its old orders and constantly refusing new ones. In fact, this company was in the market this week to purchase a large daily supply of stove coal.

It is now plainly seen that the allotment committee made a mistake in increasing the October allotment 250,000 tons; but at the same time, when that action was taken, the trade was in a condition to have absorbed it, had the weather become cold, as might reasonably have been expected. Even now, it is believed that a few days of cold weather will again set things right.

We quote ordinary free-burning coals net f.o.b. as follows:

	Week ended Nov. 5.	Oct. 29.	Oct. 22.
Lump	$3 40	$3 40	$3.40
Steamboat	3.40	3 40	3.40
Broken	3.40	3.40	3.40
Egg	3 65	3 65	3 65
Stove	3.90@4.10	3.75@4.00	3.85@4.00
Chestnut	3 30@3.50	3.50	3.50
Pea	2 10	2.10@2.25	2.10@2 25
Buckwheat	1.50@1 60	1 60@1.75	1.55@1.75
Dust	1.25	1 25	1.30

Bituminous.

There are no new features to this branch of the coal trade. There is a much better feeling, but no better prices. Cars are scarce, and it is with difficulty that some concerns can meet the demands on old orders. There is but very little new business offering, but such as is offered is strongly competed for. Good coals are worth $3.10@$3.25 alongside, while inferior brands are quoted at least as low as $2.80.

On Tuesday next, there will be a meeting in Baltimore of the bituminous interests competing for the seaboard trade, for the purpose of discussing plans for a combination. The feeling is gaining ground that this movement will eventually result favorably, although it is not likely that a programme can be settled at the meeting mentioned. There are a great many interests to be brought into harmony, but there should be no reason why this is not as easy of accomplishment as handling the larger anthracite trade. A good basis to start from would be to pass a resolution to the effect that the first great object in operating a bituminous mine is to make money by honest means, and that to conduct the business for the mere purpose of controlling trade, and without profit, is very foolish.

Buffalo. Nov. 4.

[From our Special Correspondent.]

The trade in anthracite coal at this port and near-by places is moderately active; for no severe weather has been experienced as yet to call for any extra degree of warmth in the homes of our citizens. *Paterfamilias* has only used furnace fires three or four days thus far this season, and his doings are the doings of hundreds of householders in this section of New York State on the fuel question. Dealers complain of the

scarcity of cars, and shippers of the lack of fuel for freight by lake to Western points.

Speaking to a bituminous coal dealer this morning, he, in answer to my inquiry, spoke as follows: "No cars. Trade would be good if we had transportation facilities by railroad. There's h—ll to pay, and no pitch hot!"

Coke is steady, and with good trade.

"Applications for the use of natural gas for fuel are very slow in coming in," says an official, "for some reason or the other." The general public says: "Price too high; and expenses of connecting pipes and changing grates are considerable."

The coal traffic through the St. Mary's Falls Canal, Michigan, during the year 1885, was 894,991 net tons; thus far this year to September 31st, 724,589 net tons; leaving a shortage over 1885 of 170,402 net tons, to be made up by the October and November movement.

Lake freights are strong to Chicago and Milwaukee and 5 cents advance was obtained to Duluth, Toledo, Detroit, and some other points. Vessels were in good demand, and no trouble was experienced in securing full rates. A year since, on November 1st, 50 cents was the ruling figure to Chicago and Milwaukee, but in 1884 a dollar was paid. The market this morning closed strong; demand good, and with a fair stock of coal on the docks.

The coal shipments by lake, Westward, from October 28th to November 3d, both days inclusive, were 61,030 net tons; namely, 22,610 to Chicago, 17,710 to Milwaukee, 10,880 to Duluth, 1130 to Detroit, 3400 to Superior City, 1650 to Toledo, 230 to Sheboygan, 330 to Owen Sound, 600 to Green Bay, 4 0 to Windsor, 500 to Menominee, 100 to Bay City, 480 to Fort Brady, 1000 to Racine, 400 to Saginaw, and 180 to Dunnville; making a total for the season of 1,366,541 net tons (including vessels clearing from Tonawanda, but their destination not stated).

The engagements and rates reported were as follows: $1 to Chicago and Milwaukee; 70@75c. to Duluth; 70c. to Superior City; 75c. to Owen Sound; 90c. to Green Bay; $1.25 to Sheboygan; $1.15 to Racine; $2 to Portage; 20@25c. to Detroit; 30c. to Toledo; 30c. to Windsor; $1.20 to Menominee; 35c. to Bay City and Fort Brady; and 40c. to Dunnville.

The Lake Superior Transit Company announces that no freight for Lake Superior ports will be taken from Buffalo after next Saturday, the 6th. This statement caused a wintry chill to pervade the atmosphere surrounding the "black diamond" merchants hereabouts assembled; they were speedily warmed, however, by the expectation of large sales of fuel in the near future, when the snow begins to fly or the frosts to nip.

The receipts of coal by canal for the fourth of October at this port were 5907 net tons, and the shipments 1017 net tons.

The receipts of coal by lake at this port thus far this year are only 520 net tons. The shipments to Western and Lake Erie ports for the month of October, 218,470 net tons, as compared with 221,690 net tons in 1885, and 200,250 net tons in 1884; for the season to November 1st, 1,347,340 net tons, as compared with 1,291,570 net tons in 1885, and 1,270,180 net tons in 1884.

The principal points of distribution of the coal shipments from this port for the season of 1886 to October 28th, are as follows: 512,000 net tons to Chicago, 307,000 to Milwaukee, 43,000 to Toledo, 130,000 to Duluth, 22,500 to Racine, 7000 to Sandusky, 22,000 to Detroit, 22,000 to Green Bay, 11,500 to Sheboygan, 1500 to Bay City, 4000 to Ashland, 3800 to Windsor, 1500 to Evanston, 550 to Owen Sound, 58,000 to Superior City, 1700 to Muskegon, 10,300 to Washburn, 6000 to Kenosha, 7000 to Saginaw, 2800 to Kincardine, 3300 to Hancock, 1700 to Manitowoc, 12,500 to Marquette, 1900 to Fort William, 2500 to Port Huron, 2000 to St. Joseph, 2800 to Escanaba, 1350 to Houghton, 3350 to Port. Arthur, and 2100 to Menominee.

The receipts of coal at this port by canal for the month of October were 11,179 net tons; thus far this season, 72,666 net tons, as compared with 143,082 net tons in 1885, and 127,878 net tons in 1884. The shipments for the month of October, 3804 net tons: thus far this season, 17,572 net tons, as compared with 25,281 net tons in 1885, and 29,012 net tons in 1884. No statistics to hand of receipts and shipments by railroad.

The only coal charters reported during the past week were three loads of coal Buffalo to Syracuse, at 85c. per gross ton, free on and off. The nominal rates were $1.25 to Albany and Troy, and $1.75 to New York, net ton, free on and off.

Boston. Nov. 3.

[From our Special Correspondent.]

The market for anthracite coal has been drooping for more than a week, so that its effect is now distinctly noticeable. This is due to the weather and to the increased offerings of individual coal. After careful inquiry, I find no evidence that company agents are cutting prices. It is worthy of comment, however, how long the old orders hold out. Inability to ship is the excuse commonly given. Coal ordered three months ago is reported as not yet delivered in some cases. A very fair amount of coal is received at this port, but only a small proportion of it upon new orders. The weather is unusually mild and fine for every one but coal dealers. The retail trade is very slack for the season. Hence its light demands upon the wholesale trade, and hence the cutting of individual coal. This weakness is developed here on Stove almost entirely, quotations ranging from $3.95@$4.10 f.o.b. at New York. Broken and egg are held up to circular prices by all parties.

The only noticeable feature in the bituminous branch of the coal market at this port is the indisposition of agents on every hand to talk business or give prices for future delivery. For ordinary cargo lots, the low prices still remain, say $2.10 f.o.b. at Baltimore and Hampton Roads and $2.20 at Philadelphia. There is an undertone of decided strengtb, based on the hope of a pool to control next season's output.

The vessel-owners are maintaining freight rates very well. Only now and then are cut rates reported.

We quote rates exclusive of discharging:

New York, 80@90c.; Philadelphia, $1@$1.05; Baltimore, $1.10@$1.15; Newport News and Norfolk, $1.05@$1.10; Richmond, $1.10@$1.15; Cape Breton, $1.85@$2; Bay of Fundy, $1.60.

The efforts to advance the retail quotations have been shorn of all their power by the belated Indian summer and by the softness of the wholesale market. Therefore we quote delivered prices as before:

White ash, furnace and egg	$5 00@$5 25
" stove and nut	5 25@ 5.50
Lehigh furnace, egg and stove	5.50@ 5 75
" nut	5.50@ 6.00
Shamokin egg	5.50@ 6.00
" stove	5.75@ 6.00
Lorberry egg and stove	@ 6.50
Franklin egg and stove	@ 7 00

Wharf prices are from 50 to 75c. less than the above.

Pittsburg. Nov. 4.

[From our Special Correspondent.]

While prices in this market have undergone no large, there has been considerable movement in the Cincinnati and Louisville markets. All the coal afloat at both points has been sold, and is now in fewer hands. There is no coal for sale in either market except at retail, and prices have advanced to 14 cents a bushel. The amount of coal loaded and ready for departure first water will reach eighteen million bushels. Owing to the scarcity, Kanawha River coal commands the same price as Pittsburg. The prospect for water is favorable. It will take heavy and continued rains to make a sufficient stage, on account of the Ohio River being extremely low from head-waters to Cairo. Present rates: River, wholesale, f.o.b, 3¾@4¾c.; Railroad, 4¼@4¾c.

Connellsville Coke.—Demand active, without sufficient cars to do the business offered. Blast-Furnace, $1.50, f.o.b. cars at the ovens; Foundry, $1.75; Crushed, $2.25.

FINANCIAL.

Mining Stocks.

NEW YORK, Friday Evening, Nov. 5.

The mining market remains active and strong, and from present appearances it would seem as if this situation would continue for some time. Much interest is shown in the so-called better class of stocks, with an advancing tendency in prices. The total transactions for the week amounted to 71,070 shares.

Sutro Tunnel has again received the largest share of business, amounting to 16,600 shares; but the boom of last week has collapsed. The price was firm at from 13@15c. Consolidated California & Virginia stood at $7.25 at the beginning of the week, with little business; but toward the end, the attention shown last week was renewed, and the price advanced to $9.75. The developments on the 1400-foot level are followed with much interest, and if they prove still more satisfactory, an additional "jump" of the stock may be expected, with a reaction quickly to follow. Best & Belcher has been active, with higher prices, going from $2.30@$3; and Sierra Nevada from $1.25@$1.70. Hale & Norcross was quiet at from $1.55@$1 50. Ophir advanced from $3.75@$5. The Tuscarora stocks hold their own. North Belle Isle showed an upward movement, going from $6.50@$7.50; a strike in the mine is reported. Navajo was firm at 95@97c.; and Belle Isle was lower at from 45@38c. A few sales of Martin White, which but recently declared a dividend on the shares outstanding, advanced from 75c.@$1.05.

Little was done in Bulwer, which was steady at from $1.70@$1.80. Bodie, at from $2.55@$2.45. Mono stood at $2.60. Goodshaw appeared on the list with a sale of 1500 shares at 10c. a share. Quicksilver Preferred was quoted at from $23.50@$23.25. Taylor-Plumas sold at from 12@$13c.

Colorado stocks were entirely neglected, and sales were only made in Little Pittsburg at from 50@55c; Leadville, at from 43@40c.; and Lacrosse, at 8c. and 9c.

Activity was displayed in Homestake, which sold at from $17.25@$18.50. Deadwood-Terra declined from $2.20@2.05. Iron Hill was stationary at $1.60; and Father de Smet stood at 76c.

A lower movement is shown in Ontario, declining from $26@$24.50. Some months ago, the price was $30.

A sale of 200 shares of Silver King was made at $6 a share.

Central Arizona advanced from 6c., selling price of last week, to 7c.

Rappahannock holds it own at 10c.

Coal Stocks.

During the past week, very great confidence in higher prices for stocks has been developed in this country, although London appears to have construed the large vote for Henry George at Tuesday's elections as indicating prospective disturbances in this country, and has been a moderate seller. On Wednesday, 15 per cent was paid for money, and yesterday 9 per cent. This is supposed to be due to the usual changes of loans at the beginning of a month where there are liberal interest and dividends to be paid, and to a desire on the parts of the banks to make money temporarily dear, so that a number of time loans falling due might be favorably renewed. It is not thought, that stringency can last over this week. The low-priced or fancy stocks have been a feature of the market.

To-day, the market has been unfavorably affected by rumors of labor troubles at Chicago and Pittsburg.

Something of importance is promised in relation to Reading very soon, which will favorably influence that stock. Higher prices are predicted for Colorado Coal and Iron Company on improving general business of the company.

The dealings in Lackawanna aggregate 48,330 shares at $142¾@$140½, closing at $141. Reading was dealt in to the extent of 99,690 shares at $36@$37, closing at $36¾. Delaware & Hudson, with sales of 21,080 shares, at $108@$105¾, closed at $106. Jersey Central ranged between $49⅛ and $51¾, and closed at the latter figure, with transactions of 86,582 shares. Our predictions of higher prices for Maryland have been verified. The outlook is in favor of a much greater advance. The dealings for the week aggregate 5350 shares at $16⅞@$19, closing at $18⅛. New Central Coal ranged between $15½ and $17, and closed at $16, with sales of 3735 shares. The transactions in Colorado Coal amount to 27,108 shares at $32¼@$34¾, closing at $33½.

Meetings.

The annual and special meetings of the following companies will be held at the times mentioned:

Pennsylvania Tube-Works, Pittsburg, Pa., January 4th, 1887, at ten o'clock A.M., special meeting for the purpose of voting for or against an increase of th capital stock.

Dividends.

Bellevue Idaho Mining Company, of Idaho, has declared a dividend of ten cents a share, or $12,500, payable on and after October 30th, at Salt Lake City.

Silverton Mining Company, of Colorado, has declared dividend No. 19, of two cents a share, or $4000, payable on the 1st inst., at Pittsburg.

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par value	Assessments. Total levied to date.	Date and amount per share of last			Dividends. Total paid to date.	Date and amount per share of last.		
1	Adams, s. l.	Colo.	$1,500,000	150,000	$10	*	....	....	....	$502,500	Oct.	1886	.30
2	Alice, s. c.	Mont	10,000,000	400,000	25	*	....	....	....	750,000	Sept	1886	.06¼
3	Amie Con., s. l.	Colo.	5,000,000	500,000	10	*	....	....	....	330,000	Oct.	1883	.05
4	Amy & Silversmith, s.	Mon.	....	311,419	....	....	....	....	....	136,588	Oct	1886	.10
5	Atlantic, c.	Mich	1,000,000	40,000	25	$230,000	Apl.	1875	$1.00	320,000	Jan.	1886	$1.00
6	Argenta, s	Nev.	10,000,000	100,000	100	295,000	July	1885	.10	40,000	Feb	1880	.20
7	Barbee & Walker, s.	Utah	1,000,000	100,000	10	*	....	....	....	60,000	Nov	1880	.10
8	Bassick, g. s	Colo.	10,000,000	100,000	10	*	....	....	....	400,000	Mar.	1881	1.00
9	Belle Isle, s	Nev.	10,000,000	100,000	100	140,000	May	1886	.1	300,000	Dec	1879	.25
10	Belcher, g. s.	Nev.	10,400,000	104,000	100	2,217,335	Dec	1885	.30	15,397,000	Apl	1876	1.00
11	Bellevue Idaho, s. l.	Idah	1,250,000	125,000	10	26,250	Dec.	188	.10	137,500	Oct	1886	.10
12	Big Bend Hydraulic, g	Dak.	1,000,000	200,000	5	*	....	....	....	195,000	Oct.	1886	.03
13	Black Bear, g	Cal.	3,000,000	30,000	100	22,500	Dec	1884	.2	895,000	May	1883	.20
14	Bodie Con., g. s	Cal.	10,000,000	100,000	100	324,990	Jun.	1886	.50	1,602,572	Apl.	1885	.50
15	Bonanza Developm't	C & M	3,000,000	300,000	10	....	....	....	....	135,000	Oct.	1882	.15
16	Bonanza K'g, Cons. s	Cal.	1,000,000	100,000	10	*	....	....	....	185,000	Feb	1885	.10
17	Boston & Mont. g	Mont	2,500,000	250,000	10	*	....	....	....	520,000	Jun	1886	.15
18	Breece, s	Colo	5,000,000	200,000	25	*	....	....	....	2,000	Feb	1880	.01
19	Brooklyn Lead, l. s	Utah	500,000	50,000	10	....	....	....	....	102,000	Sept	1886	.05
20	Bulwer, g	Cal	1,000,000	100,000	100	40,000	Oct.	1885	.20	175,000	Jan.	1884	.10
21	Caledonia, g	Dak	1,000,000	100,000	100	505,000	May	1885	.15	40,000	Feb	1886	.10
22	Calumet & Hecla, c	Mich	2,500,000	100,000	25	1,200,000	....	....	....	27,850,000	Jun.	1886	5.00
23	Carbonate Hill, s. l.	Colo.	2,000,000	200,000	10	*	....	....	....	80,000	Apl.	1881	.05
24	Caribou Con., s.	Colo	1,500,000	150,000	10	*	....	....	....	50,000	Mch	1880	.10
25	Castle Creek, g	Idah.	100,000	100,000	1	....	....	....	....	51,000	Oct	1883	.03
26	Catalpa, s l	Colo	3,000,000	300,000	10	*	....	....	....	270,000	May.	1884	.10
27	Central, c	Mich	500,000	20,000	25	100,000	Sept	1861	.06	1,780,000	Jan.	1886	2.00
28	Christy, s.	Utah	10,000,000	100,000	100	....	....	....	....	10,000	Jun.	1881	.10
29	Chrysolite, s. l.	Colo	10,000,000	200,000	50	*	....	....	....	1,650,000	Dec	1884	.25
30	Colorado Central, s. l	Colo.	2,750,000	275,000	10	*	....	....	....	143,750	Oct.	1886	.05
31	Cons Cal & Va., g. s.	Nev.	21,600,000	216,000	100	108,000	Jan.	1885	.20	64,800	Feb	1886	.30
32	Con Gold Mining, g.	Ga.	500,000	100,000	5	*	....	....	....	108,000	Nov.	1883	.02
33	Contention, s	Ariz.	12,500,000	250,000	50	....	....	....	....	†2,587,500	Dec.	1884	.25
34	Crescent, s. l. g.	Utah	15,000,000	600,000	25	‡	....	....	....	210,000	Aug.	1886	.05
35	Crown Point, g. s	Nev.	10,000,000	100,000	100	2,675,000	Feb.	188	.25	11,588,000	Jan.	1875	2.00
36	Deadwood-Terra, g.	Dak.	5,000,000	200,000	25	*	....	....	....	§900,000	Jan.	1883	.10
37	Derbec B. Grav., g. s.	Cal.	10,000,000	100,000	100	90,000	Dec	1881	.10	140,000	Jun.	1886	.10
38	Dunkin, s. l.	Colo.	5,000,000	200,000	25	*	....	....	....	220,000	Sept	1884	.05
39	Elkhorn, g. s	Mont	1,000,000	100,000	10	50,000	July	1883	.50	140,000	Sept	1886	.50
40	Eureka Con., g. s. l.	Nev.	5,000,000	50,000	100	50,000	July	1886	1.00	4,817,500	July	1882	.25
41	Evening Star, s. l.	Colo	500,000	50,000	10	*	....	....	....	1,400,000	Nov	1883	.50
42	Excelsior g	Cal.	10,000,000	100,000	100	560,000	Sept	1885	1.00	875,000	Oct.	1880	.25
43	Father de Smet, g.	Dak.	10,000,000	100,000	100	200,000	Nov	1878	1.00	1,125,000	Dec	1885	.20
44	Franklin, c	Mich	1,000,000	40,000	25	220,000	Jun	1871	....	520,000	Jun.	1886	1.00
45	Freeland, g. s. c.	Colo	5,000,000	200,000	25	*	....	....	....	190,000	July	1886	.10
46	Fresno Enterprise, g	Cal.	5,000,000	100,000	50	....	Mch	1883	.10	110,000	July	1882	.10
47	Gould & Curry, g. s.	Nev	10,800,000	108,000	100	4,055,000	Sept	1886	.50	3,826,000	Oct	1870	10.00
48	Grand Central, s.	Ariz.	1,000,000	100,000	10	....	....	....	....	625,000	Dec	1882	.25
49	Grand Prize, s.	Nev.	10,000,000	100,000	100	570,000	Apl.	1886	.50	495,000	Mar.	188	.25
50	Granite, s.	Colo	125,000	25,000	1	....	....	....	....	6,250	May	1883	.01
51	Granite Mountain, s.	Mont	10,000,000	400,000	25	....	....	....	....	1,500,000	Oct.	1886	.25
52	Green Mountain, g.	Cal.	1,250,000	125,000	10	*	....	....	....	212,000	Nov.	1881	.07½
53	Hale & Norcross, g. s	Nev.	11,200,000	112,000	100	4,971,800	Oct.	1886	.40	1,598,000	Apl	1871	5.00
54	Hall-Anderson, g.	N. S.	150,000	150,000	1	....	....	....	....	7,000	Jan.	1882	.05
55	Hecla Con., s. g. l. c	Mont	1,500,000	30,000	50	....	....	....	....	1,032,000	July	1886	.50
56	Helena Mg & Red., g. s. l.	Mont	3,315,000	663,000	5	*	....	....	....	137,970	July	1886	.05
57	Holmes, s	Nev.	10,000,000	100,000	100	300,000	Sept	1885	.10	75,000	Apl	1886	.25
58	Holyoke, g	Idah.	200,000	200,000	1	....	....	....	....	27,000	Feb.	1885	.10
59	Homestake, g.	Dak	12,500,000	125,000	100	200,000	July	1878	1.00	3,618,750	Oct	1886	.40
60	Honorine, s. l.	Utah	500,000	250,000	2	25,000	Jun	1883	....	75,000	Sept	1886	.05
61	Hope, s.	Mont	400,000	8,000	50	*	....	....	....	158,252	Oct.	1884	1.50
62	Horn-Silver, s. l.	Utah	10,000,000	400,000	25	*	....	....	....	4,000,000	Nov	1884	.50
63	Idaho, g	Cal.	310,000	3,100	100	....	....	....	....	3,730,000	Jun.	1886	7.50
64	Ideal, s. l	Colo.	1,500,000	150,000	10	....	....	....	....	15,000	Oct.	1886	.05
65	Independence, s.	Nev.	10,000,000	100,000	100	340,000	Oct.	1886	.20	225,000	Sept	1879	.25
66	Indian Queen, s	Nev.	250,000	125,000	2	....	....	....	....	368,750	July	1883	.03
67	Inyo, g	Cal.	500,000	100,000	5	*	....	....	....	45,000	Apl.	1883	.05
68	Iron Hill, s	Dak.	2,500,000	250,000	50	82,500	Oct.	1885	....	112,500	Oct.	1886	.05
69	Iron-Silver, s. l	Colo	10,000,000	500,000	20	*	....	....	....	1,700,000	July	1886	.20
70	Jackson, g. s	Nev.	5,000,000	50,000	100	10,000	Nov.	1880	.20	45,000	Oct.	1885	.10
71	Jocuistita, s	Mex.	2,500,000	250,000	10	....	....	....	....	1,200,000	Feb.	1885	.50
72	Kentuck	Nev.	3,000,000	30,000	100	342,000	Nov	1881	.30	1,350,000	July	1884	.10
73	La Plata, s. l.	Colo.	2,000,000	200,000	10	*	....	....	....	610,000	Sept	1882	.30
74	Leadville Cons., s. l.	Colo	4,000,000	400,000	10	*	....	....	....	410,000	Oct	1886	.05
75	Lexington, g. s.	Mont	4,000,000	40,000	100	*	....	....	....	535,000	Jan	1885	2.00
76	Little Chief, s. l	Colo	10,000,000	200,000	50	*	....	....	....	780,000	Mch	1885	.10
77	Little Pittsburg, s. l	Colo.	20,000,000	200,000	100	*	....	....	....	1,050,000	Mch.	1880	.50
78	Manhattan, s	Nev.	5,000,000	50,000	100	150,000	July	1879	1.00	437,500	Feb	1886	.25
79	Marguerite, g.	Cal.	500,000	25,000	20	....	....	....	....	18,750	Oct.	1882	.25
80	Marion Bullion, g	N. C	500,000	....	....	....	....	....	....	15,000	Jan	1880	....
81	Martin White, s	Nev.	10,000,000	100,000	100	1,150,000	Mar.	1883	.25	115,000	Oct.	1886	.25
82	Minnesota, c	Mich	1,000,000	40,000	25	420,000	Apl	1886	1.00	1,820,000	Mar	1876	....
83	Mono, g	Colo.	5,000,000	50,000	100	56,000	Jun	1885	.50	12,500	Mar	1886	.25
84	Montana, Lt., g. s.	Mont	3,300,000	330,000	10	*	....	....	....	795,000	Oct.	1886	.62
85	Morning Star, s. l.	Colo.	1,000,000	100,000	10	....	....	....	....	650,000	Oct.	1886	.25
86	Moulton, s. g.	Mont	2,000,000	400,000	5	*	....	....	....	230,000	Aug	1886	.07½
87	Mount Pleasant, g.	Cal.	150,000	150,000	1	*	....	....	....	105,000	Mar.	1881	.10
88	Mt. Diablo, s	Nev	5,000,000	50,000	100	137,500	Jun	1880	2.00	80,000	July	1885	.20
89	Napa, q	Cal.	700,000	100,000	7	....	....	....	....	290,000	Jan.	1883	.10
90	Navajo, g. s	Nev.	10,000,000	100,000	100	395,000	Mar.	1886	.25	325,000	Feb	1885	.25
91	N. Hoover Hill, g. s.	N. C.	300,000	120,000	2½	*	....	....	....	30,000	Dec.	1885	.03½
92	New York Hill, g	Cal.	5,000,000	50,000	100	62,500	Oct	1885	.15	215,000	Aug	1882	.10
93	Northern Belle, s	Nev.	5,000,000	50,000	100	425,000	Jan	1884	8.00	2,400,000	Apl.	1885	.50
94	North Belle Isle, s.	Nev.	10,000,000	100,000	100	150,000	Mar	1886	.20	30,000	Aug.	1881	.15
95	Ontario, s. l.	Utah	15,000,000	150,000	100	....	....	....	....	7,775,000	Oct	1886	.50
96	Ophir, g. s	Nev.	10,000,000	100,000	100	3,957,800	Jun.	1886	.25	1,595,000	July	1882	1.00
97	Original, s. c.	Mont	1,500,000	60,000	25	*	....	....	....	114,000	Oct.	1884	.05
98	Osceola, c	Mich	1,250,000	50,000	25	480,000	Apl.	1876	1.60	972,500	Sept	1884	.25
99	Oxford, g	N. S.	125,000	125,000	1	*	....	....	....	33,500	Oct.	1885	.02
100	Paradise Valley, g. s	Nev.	10,000,000	100,000	100	47,000	Mar.	1882	.15	130,000	Sept	1886	.25
101	Pleasant Valley, g. s.	Cal.	10,000,000	100,000	100	40,000	Mar	1884	.10	30,000	Dec.	1882	.05
102	Plutus, g. s. c. l.	Colo.	2,000,000	200,000	10	*	....	....	....	20,000	Feb	1886	.10
103	Plymouth Con., g.	Cal.	5,000,000	100,000	50	*	....	....	....	1,800,000	Nov.	1883	.25
104	Prussian, s. l.	Colo	1,500,000	150,000	10	....	....	....	....	132,000	Jan	1883	.10
105	Quicksilver, pref., q	Cal.	4,300,000	43,000	100	....	....	....	....	785,150	Aug.	1886	1.25
106	" com., q	Cal.	5,700,000	57,000	100	....	....	....	....	151,000	July	1882	.40
107	Quincy, c	Mich	1,000,000	40,000	25	200,000	Dec.	1862	....	4,410,000	July	1883	2.00
108	Richmond, s. l.	Nev.	1,350,000	54,000	25	*	....	....	....	4,177,587	May	1886	1.25
109	Ridge, c	Mich.	500,000	20,000	25	220,000	Mar	1886	.50	100,000	Feb	1880	.50
110	Rising Sun, s	Dak.	750,000	150,000	5	*	....	....	....	52,000	May	1881	.07½
111	Robinson Con., s. l	Colo.	10,000,000	200,000	50	*	....	....	....	585,000	Mar.	1883	.05
112	Robert E Lee, s. l.	Colo	10,000,000	500,000	20	....	....	....	....	100,000	Dec.	1882	.10
113	Rooks, g.	Vt.	500,000	50,000	10	*	....	....	....	61,000	Apr	1885	.30
114	San Francisco, c	Cal.	5,000,000	50,000	100	45,000	Sept	188	.50	20,000	Feb.	1885	.05
115	Savage, s.	Nev.	11,200,000	112,000	100	6,156,000	Jun.	1886	.50	4,460,000	July	1869	3.00
116	Security L. Mg., Mfg.	Colo.	1,000,000	100,000	10	*	....	....	....	50,000	July	1884	....
117	Shoshone, g	Idah	150,000	150,000	1	....	....	....	....	7,500	Apl	1883	.01
118	Sierra Buttes, g.	Cal.	225,000	22,500	10	....	....	....	....	1,438,964	Oct.	1886	.37
119	Sierra Grande, s	N. M	2,500,000	500,000	5	....	....	....	....	860,000	Sept	1884	.25
120	Sierra Nevada, g. s.	Nev.	10,000,000	100,000	100	5,972,698	Sept	1886	.25	102,000	Jan.	1871	1.00
121	Silver Cord, g. s. l.	Colo.	5,000,000	500,000	10	....	....	....	....	225,000	Nov.	1883	.25
122	Silver King, s.	Ariz.	10,000,000	100,000	100	....	....	....	....	1,750,000	Aug	1885	.25
123	Silverton, g. s. l.	Colo.	2,000,000	200,000	10	*	....	....	....	75,000	Nov	1886	.02
124	Small Hopes Cons., s.	Colo.	5,000,000	250,000	20	*	....	....	....	2,375,000	Oct	1886	.20
125	Smuggler, s. l	Colo.	600,000	60,000	10	....	....	....	....	66,700	Aug	1883	.25
126	Socorro, c	N. M.	250,000	2,500	100	....	....	....	....	4,000	Mch	1882	.00¼
127	South Yuba, g	Cal.	2,000,000	[illegible]	50	*	....	....	....	150,000	Oct	1881	.75
128	Spring Valley, g	Cal.	2,000,000	2,000,000	1	50,000	Oct.	1886	.25	50,000	Jan.	1881	.25
129	Standard, g. s.	Cal.	10,000,000	100,000	100	25,000	Oct.	1884	.25	4,425,000	Mar.	1884	.25
130	Stormont, s	Utah	500,000	500,000	1	*	....	....	....	155,000	Nov.	1881	.05
131	St. Joseph, l	Mo.	1,100,000	110,000	10	*	....	....	....	562,000	July	1886	.60
132	Syndicate, g	Cal.	10,000,000	100,000	100	38,729	July	1882	.15	48,318	Sept	1885	.10
133	Tip Top, s	Ariz	10,000,000	100,000	100	250,000	Sept	1883	.25	100,000	Nov.	1881	.20
134	Tombstone, g. s. l.	Ariz	12,500,000	500,000	25	*	....	....	....	1,250,000	Apl.	1882	.10
135	True Fissure, g. s. l.	Utah	1,500,000	150,000	10	*	....	....	....	75,000	Jun.	1883	.15
136	United Verde, c.	Ariz	3,000,000	300,000	10	*	....	....	....	97,500	Feb	1881	.20
137	Valencia, m	N. H.	150,000	1,500	100	*	....	....	....	41,250	Apl	1886	2.50
138	Vizina, s	Ariz.	5,000,000	200,000	25	*	....	....	....	140,000	Apl.	1882	.10
139	Yankee Girl	Colo.	2,500,000	250,000	10	....	....	....	....	1,062,500	Oct.	1885	.10
140	Yellow Jacket, g. s.	Nev.	12,000,000	120,000	100	5,418,000	Dec.	1885	.75	2,184,000	Aug	1871	1.50

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par Value	Assessments. Total levied to date.	Date and amount per share of last.		
1	Agassiz Cons., s. l.	Colo.	$2,500,000	50,000	$50	*	....	....	....
2	Albion, s. l.	Nev.	15,000,000	150,000	100	$577,000	July	1882	.50
3	Allouez, c.	Mich	2,000,000	80,000	25	240,000	Feb.	1884	.50
4	Alpha Con., g. s.	Nev.	3,000,000	30,000	100	430,000	Mar	1886	.50
5	Alta, s.	Nev.	10,080,000	100,800	100	1,976,600	Oct.	1886	.25
6	American Flag, s.	Colo	1,250,000	125,000	10	300,000	Jun.	1877	.25
7	Anglo-Montana, Lt.	Mon.	600,000	120,000	5	....	....	....	....
8	Appalachian, Lt., g.	N. C.	1,500,000	300,000	5	....	....	....	....
9	Aspen Mg. & S., s. l	Colo	2,000,000	200,000	10	....	....	....	....
10	Barcelona, g.	Nev.	5,000,000	200,000	25	*	....	....	....
11	Battle Creek, g.	Dak.	5,000,000	200,000	25	....	....	....	....
12	Bear Creek	Cal.	300,000	300,000	1	....	....	....	....
13	Bechtel Con., g.	Cal.	10,000,000	100,000	100	173,500	Jan	1883	.10
14	Belvidere	Cal.	....	60,000	....	92,000	Feb	1882	.15
15	Belmont, s	Nev	5,000,000	50,000	100	735,000	Apl.	1886	.10
16	Best & Belcher, g. s	Nev.	10,080,000	100,800	100	1,748,590	Sept	1886	.50
17	Big Pittsburg, s. l.	Colo.	20,000,000	200,000	100	*	....	....	....
18	Black Jack, g	Cal.	250,000	100,000	2½	....	....	....	....
19	Bonanza Chief	Mon	1,000,000	1,000,000	1	*	....	....	....
20	Bondholder	Colo	500,000	200,000	2½	....	....	....	....
21	Boston Con., g	Cal.	10,000,000	100,000	100	170,000	Nov	1883	.25
22	Bradshaw, s	Ariz	2,250,000	225,000	10	....	....	....	....
23	Buckeye Common	Colo.	2,000,000	400,000	5	*	....	....	....
24	Bull Domingo, s. l.	Colo	10,000,000	200,000	50	*	....	....	....
25	Bullion, g. s.	Nev.	10,000,000	100,000	100	4,600,000	Aug	1885	.30
26	Bye and Bye	Ariz.	1,000,000	100,000	10	*	....	....	....
27	Calaveras, g.	Cal.	500,000	500,000	1	*	....	....	....
28	Catskill, s.	Nev.	1,500,000	300,000	5	....	....	....	....
29	Central Arizona, s	Ariz	10,000,000	100,000	100	....	....	....	....
30	Cen Contin'l, g. s. l.	C & A	2,000,000	200,000	10	*	....	....	....
31	Charles Dickens	Idah	1,250,000	250,000	5	....	....	....	....
32	Cherokee, g.	Cal.	1,500,000	150,000	10	....	....	....	....
33	Chollar, s.	Nev.	11,200,000	112,000	100	1,040,000	Aug.	1886	.50
34	Cinnamon Mt., g. s	Colo	750,000	150,000	5	....	....	....	....
35	Climax, s. l	Colo.	2,000,000	200,000	10	*	....	....	....
36	Colorado No. 2, s. l	Colo.	100,000	10,000	10	....	....	....	....
37	Con. Imperial, g. s	Nev.	50,000,000	500,000	100	1,100,000	Aug	1886	.10
38	Con Pacific, g.	Cal.	6,000,000	60,000	100	174,000	Feb.	1886	.15
39	Cons Silver, s	Mo.	2,500,000	250,000	10	....	....	....	....
40	**Cop. Queen Cons, c	Ariz	1,400,000	140,000	10	....	....	....	....
41	Courtlandt	Colo	500,000	50,000	10	....	....	....	....
42	Crescent, s. l.	Colo.	3,000,000	300,000	10	....	....	....	....
43	Crocker, s.	Ariz	10,000,000	100,000	100	65,000	May	1886	.20
44	Crowell, g.	N. C	500,000	500,000	1	....	....	....	....
45	Dahlonega, g.	Ga.	250,000	250,000	1	*	....	....	....
46	Dandy, s.	Colo.	5,000,000	500,000	10	....	....	....	....
47	Dardanelles, g.	Cal.	1,000,000	100,000	10	....	....	....	....
48	Decatur, s	Colo.	1,500,000	300,000	5	*	....	....	....
49	Denver City, s. l.	Colo.	5,000,000	500,000	10	*	....	....	....
50	Denver Gold	Colo	300,000	60,000	5	....	....	....	....
51	Deseret, g. s.	Utah	500,000	50,000	10	*	....	....	....
52	Dunderberg, s.	Colo	1,500,000	150,000	10	*	....	....	....
53	Durango, g.	Colo	500,000	500,000	1	*	....	....	....
54	Durango T.	Mex	120,000	1,200	100	....	....	....	....
55	Eastern Dev. Co., Lt	N. S	1,500,000	150,000	10	990,000	Mar.	1886	1.00
56	Elko Con., s.	Nev.	....	....	....	....	Mar	1884	.15
57	Empire Lt., g.	Mon	500,000	100,000	5	....	....	....	....
58	Empire, s.	Utah	10,000,000	100,000	100	....	....	....	....
59	Enterprise, s. l	Colo	800,000	80,000	10	*	....	....	....
60	Eureka Tunnel, s. l	[illegible]	10,000,000	100,000	100	*	....	....	....
61	Exchequer	Nev.	10,000,000	100,000	100	860,000	Oct.	1886	.20
62	Garfield, Lt., g. s	Nev.	500,000	100,000	5	....	....	....	....
63	Gold Placer, g.	Colo	5,000,000	200,000	25	*	....	....	....
64	Goodshaw, g.	Cal.	10,000,000	100,000	100	229,314	Dec.	1885	.25
65	Grand Belt, c	Te.	12,000,000	120,000	100	*	....	....	....
66	Grand Duke	Colo.	800,000	80,000	10	....	....	....	....
67	Gregory-Bobtail, g.	Colo.	550,000	550,000	1	....	....	....	....
68	Gregory Con, g	Mon	3,000,000	300,000	10	*	....	....	....
69	Harlem M. & M. Co, g.	Cal.	1,000,000	200,000	5	....	....	....	....
70	Head Cent. & Tr. s. g	Ariz.	10,000,000	100,000	100	....	....	....	....
71	Hidalgo, s	Mex	200,000	20,000	10	....	....	....	....
72	Highland, c	Mich	500,000	25,000	25	....	....	....	....
73	Hortense, s.	Colo.	2,000,000	200,000	10	....	....	....	....
74	Iroquois, c	Mich	1,250,000	50,000	25	....	....	....	....
75	J D Reymert	Ariz	10,000,000	100,000	100	*	....	....	....
76	Julia Cons., g. s.	Nev.	11,000,000	110,000	100	1,438,000	Nov	188	.10
77	Kearsarge, c.	Mich	1,250,000	50,000	25	100,000	Apl.	1886	5.00
78	Lacrosse, g.	Colo.	[illegible]	100,000	10	*	....	....	....
79	Lee Basin, s. l.	Colo.	5,000,000	500,000	10	*	....	....	....
80	Leviathan, s.	Nev.	10,000,000	100,000	100	380,000	Sept	1882	.25
81	Lucerne, s.	Colo.	5,000,000	500,000	10	*	Jan.	1883	.10
82	Mammoth Bar, g.	Cal.	10,000,000	100,000	100	50,000	Dec	1881	....
83	Mariposa pref., g.	Cal.	5,000,000	50,000	100	1,687,500	Feb	1883	.25
84	" common, g.	Cal.	10,000,000	100,000	100	1,975,000	Dec	1881	.20
85	May Belle, g	Cal.	10,000,000	100,000	100	84,000	Mar	1884	.15
86	Mayflower Gravel	Cal.	1,000,000	100,000	100	85,000	Sept	1886	.25
87	Mexican, g. s	Nev	10,080,000	100,800	100	2,565,760	Jun.	1886	.25
88	Mike & Starr, s. l.	Colo	1,000,000	200,000	5	*	....	....	....
89	Miner Boy, g. s. l.	Colo.	5,000,000	500,000	10	*	....	....	....
90	Miller	Nev	5,000,000	200,000	25	....	....	....	....
91	Moose Silver, s.	Colo	3,000,000	300,000	10	*	....	....	....
92	Nachoochee, Lt., g.	Ga.	1,000,000	200,000	5	....	....	....	....
93	New Pittsburg, s. l	Colo	2,000,000	200,000	10	*	....	....	....
94	North Standard, g.	Cal.	10,000,000	100,000	100	20,000	Nov	....	....
95	Noonday	Cal.	600,000	60,000	10	208,000	Dec	1881	.10
96	Old Dominion, c.	Ariz.	3,000,000	300,000	10	....	....	....	....
97	Oriental	Nev.	2,000,000	200,000	10	....	....	....	....
98	Oriental & Miller, s	Nev.	10,000,000	400,000	25	....	....	....	....
99	Overman, g. s.	Nev.	11,520,000	115,200	100	3,702,320	July	1886	.15
100	Parrott, c.	Mon.	1,800,000	180,000	10	....	....	....	....
101	Park, s.	Utah	2,000,000	200,000	10	....	....	....	....
102	Peer, s	Ariz	10,000,000	100,000	100	125,000	Apl.	1886	.10
103	Peerless, s	Ariz.	10,000,000	100,000	100	275,000	May	1886	.50
104	Potosi	Nev.	11,200,000	112,000	100	1,078,400	Aug	1886	.30
105	Quincy	Colo	3,000,000	300,000	10	....	....	....	....
106	Rappahannock, g. s	Va.	250,000	250,000	1	*	....	....	....
107	Red Elephant, s.	Colo	500,000	500,000	1	*	....	....	....
108	Rollins, g. s.	Colo	5,000,000	200,000	25	*	....	....	....
109	Ropes, g. s.	Mich	2,000,000	80,000	25	63,200	Mar	1886	.10
110	S. P. & Canon del A c	N. M	10,000,000	400,000	25	*	....	....	....
111	Sheridan	N. M.	2,000,000	200,000	10	....	....	....	....
112	Silver Cliff, s.	Colo.	5,000,000	400,000	12½	....	....	....	....
113	Sonora Con	Mex.	5,000,000	200,000	25	*	....	....	....
114	South Bulwer, g	Cal.	10,000,000	100,000	100	100,000	May	1881	.25
115	South Hite	Cal.	10,000,000	100,000	100	195,000	Jan.	1885	.05
116	South Pacific	Cal.	500,000	100,000	5	....	....	....	....
117	State Line, s	Nev.	250,000	250,000	1	....	....	....	....
118	St. Louis & Mex., s.	Mex	5,000,000	500,000	10	*	....	....	....
119	St. Louis & St. Elmo	Colo.	2,000,000	200,000	10	....	....	....	....
120	St. L. & St. Felipe, g. s.	Mex.	1,500,000	150,000	10	....	....	....	....
121	St. L. & Sonora, g. s.	Mex.	1,500,000	150,000	10	....	....	....	....
122	St. Louis & Yavapai	Ariz	3,000,000	300,000	10	....	....	....	....
123	Sunday Lake, i	Mich	1,250,000	50,000	25	....	....	....	....
124	Sullivan, g. s. l.	Me.	500,000	100,000	5	125,000	Dec.	1882	.25
125	Sutro Tunnel	Nev.	20,000,000	2,000,000	10	*	....	....	....
126	Tamarack, c	Mich.	1,000,000	40,000	25	520,000	Apl.	1885	3.00
127	Taylor-Plumas, g.	Cal.	1,000,000	200,000	5	*	....	....	....
128	Tioga Cons., g	Cal.	10,000,000	100,000	10	*	....	....	....
129	Todos Santos, s.	Mex.	1,000,000	100,000	100	325,000	Oct.	1882	.10
130	Tuscarora, s.	Nev.	10,000,000	100,000	100	110,000	Oct.	1881	.15
131	Unadilla, s.	Colo.	50,000,000	500,000	100	*	....	....	....
132	Union Con., g. s	Nev.	10,000,000	100,000	100	2,085,000	Apl.	1886	.25
133	United Lundy, g	Cal.	1,000,000	200,000	5	....	....	....	....
134	Utah, s.	Nev.	2,000,000	20,000	100	1,820,000	Aug	1886	.50
135	Vandewater	Nev.	20,000,000	200,000	100	*	....	....	....
136	Washington	Ariz.	2,000,000	200,000	10	....	....	....	....
137	Wellington, s	Nev.	100,000	50,000	2	*	....	....	....
138	West Granite Mt., s.	Mon	5,000,000	500,000	10	*	....	....	....
139	Whalen Copper	Nev.	2,500,000	100,000	25	....	....	....	....
140	Whittier Dr'e Bull'n	Nev.	1,000,000	100,000	10	....	....	....	....

G. Gold. S. Silver. L. Lead. C. Copper. * Non-assessable. † This company, as the Western, up to Dec. 10th, 1881, paid $1,410,000. ‡ Non-assessable for three years. § The Deadwood previously paid $275,000 in eleven dividends, and the Terra $75,000. Previous to the consolidation in Aug., 1881, the California had paid $31,320,000 in dividends, and the Con. Virginia $42,930,000. ** Previous to the consolidation of the Copper Queen with the Atlanta, Aug., 1885, the Copper Queen had paid $1,350,000 in dividends.

NEW YORK MINING STOCKS.

DIVIDEND-PAYING MINES.

Name and Location of Company.	Highest and Lowest Prices per Share at which Sales were Made.												Sales.
	Oct. 30.		Nov. 1.		Nov. 2.		Nov. 3.		Nov. 4.		Nov. 5.		
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alice, Mon							1.50						223
Amie Con., Co													
Argenta, Ne													
Bassick, Co													
Belle Isle, Ne	.45		.45				.45		.40		.38		3,800
Bodie Cons., Ca							2.55		2.50		2.45		950
Breece													
Bulwer, Ca							1.70		1.80		1.75		1,500
Caledonia													
Carbonate Hill													
Chrysolite, Co													
Colorado Central											2.65		100
Cons. Cal. & Va., Ne			7.25						9.00		9.75	9.25	2,287
Crown Point													
Deadwood			2.20	2.10							2.10	2.05	700
Dunkin													
Eureka Cons., Ne											4.15	4.05	200
Father de Smet, Dk									.76				100
Freeland													
Gould & Curry, Ne											1.65		100
Grand Prize, Ne													
Green Mountain, Ca													
Hale & Norcross, Ne							1.55		1.50				500
Helena													
Homestake, Dk							18.00	17.25	18.50	18.00	18.00		810
Horn-Silver, Ut													
Iron Hill	1.60		1.60						1.60		1.60		400
Iron Silver, Co													
Leadville C., Co	.42	.41	.43	.40									1,500
Little Chief, Co													
Little Pittsburg, Co	.53	.51	.52	.50			.54		.51		.55		1,200
Martin White, Ne	.75		.85	.75			.90	.80	.95	.85	1.05	1.00	1,500
Moulton													
Navajo, Ne			.95				.97	.95	.96				2,700
North Belle Isle, Ne	7.75	6.50	6.50				7.25		7.50				1,900
Ontario, Ut	26.00	25.88					25.00	24.50					311
Ophir			3.75				3.90				5.00		650
Osceola													
Plymouth											16.25		150
Quicksilver Pref., Ca	23.50								23.50	23.25			400
" Com., Ca													
Quincy													
Robinson Cons., Co													
Savage, Ne			2.70										250
Sierra Nevada, Ne	1.40	1.35	1.30	1.25			1.35		1.25		1.70		1,400
Silver King, Ar							6.00						200
Spring Valley, Ca													
Standard, Ca													
Stormont, Ut													
Tip Top, Ar													
Yellow Jacket											1.70		100

NON-DIVIDEND-PAYING MINES.

Name and Location of Company.	Highest and Lowest Prices per Share at which Sales were Made.												Sales.
	Oct. 30.		Nov. 1.		Nov. 2.		Nov. 3.		Nov. 4.		Nov. 5.		
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Albion													
Alta	.80		.85										600
American Flag													
Barcelona, G													
Bechtel Con., G													
Belvidere													
Belcher													
Best & B'lcher, G. S									2.40	2.30	2.50	2.40	3.00	2.75	1,000
Big Pittsburg, S. L													
Bowman Silver													
Bull-Domingo, S.L													
Castle Creek													.09	.08	500
Central Ariz'na, S			.07												100
Cons. Imperial													
Con. Pacific													
Cusi													
Decatur													
Durango, G													
Eastern Oregon													
Goodshaw, G									.10						1,500
Harlem M. & M. Co													
Harshaw													
Kossuth													
Lacrosse, G	.09												.08		4,000
Mariposa Pref., G													
" Com., G													
Mexican, G. S									1.40	1.35	2.25	1.40	1,100
Mono									2.60				200
New Pittsburg													
North Standard, G													
N. Horn-Silv'r, S L													
Pri'nt'l & Miller, S											.09		.10		3,800
Plutus													
Potosi													
Rappahannock, G	.10		.10						.10		.10		.10		8,300
Red Elephant, S													
Ridge													
Silver Cliff, S													
Sonora Con													
South Bodie, G													
South Bulwer, G													
South Hite													
South Pacific													
State Line, 1 & 4, S													
" Nos. 2 & 3, S													
Sutro Tunnel	.15	.13	.14	.13			.15	.14	.14	.13	.15	.14	16,600
Taylor Plumas	.12		.12				.13						8,800
Tioga													
Unadilla, S													
Union Cons., G. S			.85								1.00	.95	700
Utah													

Dividend shares sold, 23,870. Non-dividend shares sold, 47,200.

San Francisco Mining Stock Quotations.

Name of Company.	Closing Quotations.					
	Oct. 29.	Oct. 30.	Nov. 1.	Nov. 2.	Nov. 3.	Nov. 4.
Albion						
Alpha						
Alta	.75		1.00		1.00	1.00
Argenta						
Bechtel						
Belcher						
Belle Isle						
Best & Belcher	1.62½		2.25		2.25	2.50
Bodie	2.50		2.37½		2.50	2.50
Bullion						
Bulwer	1.25		1.62½		1.62½	1.62½
Challar	1.50		1.50		1.50	1.50
Con. Pacific						
Con. Cal. & Va	7.25		8.12½		8.37½	9.25
Crown Point	1.12½		1.12½		1.50	
Day						
Elko Cons						
Eureka Cons			4.50		4.50	4.25
Exchequer						
Gould & Curry	1.50		1.50		1.50	1.50
Grand Prize						
Hale & Norcross	1.00		1.00		1.00	1.00
Independence						
Martin White						
Mexican	1.25		1.12½		1.25	1.25
Mono					2.50	2.37½
Mount Diablo	2.25		2.00			
Navajo	.95		.95		.90	.85
Northern Belle						
North Belle Isle						
Ophir	3.50		3.75		3.87½	4.37½
Overman						
Potosi	.90		.80		.80	.85
Savage	2.75		2.75		2.87½	2.87½
Scorpion						
Sierra Nevada	1.25		1.25		1.25	1.37½
Silver King						
Tip-Top						
Union Cons	.75		.80		.75	.80
Utah	1.12½		1.00		1.12½	1.25
Wales Cons						
Yellow Jacket	1.75		1.50		1.62½	1.75

Boston Copper and Silver Stocks.

[From our Special Correspondent.]

BOSTON, Nov. 4.

The market for copper stocks has been rather dull the past week, but prices have been well sustained, and, in view of the firmness of ingot copper, we look for renewed activity and a moderate advance in the market value of the leading dividend-paying stocks, which may lead to considerable speculation in the lower-priced stocks within the next sixty days. Calumet & Hecla has declined $1 since last week; but very little has been done in it, and any orders to buy would soon advance the price to much higher figures. Quincy, dull and neglected at $58. Franklin ruled dull and heavy early in the week at $13⅝@$13½, but in the past few days it has taken a fresh start, selling as high as $14⅜ to-day, and there is an active demand for it. With copper at 12 cents a pound, this company will be able to pay a handsome dividend early in the new year. Osceola has maintained its advance, and is in request at $19¾@$20. Atlantic, steady at $12, with sales of 350 shares. Allouez sold

BOSTON MINING STOCK QUOTATIONS.

	Oct. 29.		Oct. 30.		Nov. 1.		Nov. 2.		Nov. 3.		Nov. 4.		Sales.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Amie													
Allouez	2.50								2.25	2.	2.25		2,800
Atlantic	12.				12.								350
Arnold													
Aztec													
Belle Isle													
Blue Ridge													
Bodie													
Bonanza D													
Boston & Montana													
Bowman Silver					.09				.09				1,000
Bijou Cons													
Breece			.24										300
Bulwer													
Calumet & Hecla	224.				224.				224		224.		22
Catalpa	.22		.22½						.22½				1,200
Cedar Spring													
Central													
Con. Pacific													
Con. Virginia													
Copper Falls													
Crescent	.09		.09		.09				.09				1,100
"Cusi"					.30								1,000
Dana	.15		.15										200
Dunkin									.30				125
Empire													
Eureka													
Franklin	13.75	13⅜	13.50		13.50				13.75	13.50	14⅜	14.	1,845
Freeland													
Grand Prize													
Hanover													
Honorine			.22½										300
Humboldt													
Huron	2.50		2 37½		2.25				2.25				600
Mascot													
Mesnard													
Minnesota			1.12½		1.12½								200
Napa													
National			.85		.80								200
Ontario													
Osceola	20	19.75	19 50		19.50	19.25					20.		560
Pewabic	2.50		2.50		2.50								300
Quincy					58.50	58							15
Ridge			1.										200
Robinson													
Security									1.				200
South Side			.20										300
Standard													
Star									.12½				100
Sutro Tunnel													
Stormont	.13								.12				600
Tamarack													
Winthrop													

COAL STOCKS.

Name of Company.	Par value of shares.	Quotations of New York stocks are based on the equivalent of $100. Philadelphia prices are quoted so much per share.												Sales.
		Oct. 30.		Nov. 1.		Nov. 2.		Nov. 3.		Nov. 4.		Nov. 5.		
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Barclay Coal														
Cameron Coal	50	18⅝	18	18¾				18¾	18⅝	18¾		18⅝	18⅛	1,600
Col., C. & I	10	34⅛	32⅞	34¾	33⅛			34¼	33⅛	34	33¼	34	33¼	27,108
Ches. & O. RR	100	10⅛		10⅛						10				720
Consol. Coal	100	27		28¾				29	28¾					500
Cumb. C. & I	100													
Del. & H. C	100	107⅛	106¼	108	107¼			107⅛	107	107	106⅛	106¾	105¾	21,080
D., L. & W. RR	50	141⅛	140⅝	142¾	141¼			142⅛	141¾	142¼	141⅛	141¾	140⅛	48,330
Elk Lick Coal Co														
Lehigh C. & N.†	50	52¼		52⅜	52¼	52¼		52¼	52⅛	52⅛	52			1,955
Lehigh Valley RR.†	50	57¼	57⅛	57¼		57¼		57⅛	57	57				964
L. & W. C. & I. Co														
Maryland Coal	100	18⅝	16⅞	19¾	19			19½		19	18	18¾	18⅛	5,350
Montauk Coal	100													
Morris & Essex	50													
New Central Coal	100	16	15½	17	16½			17	16½	16½	16	16	15½	3,735
N. J. C. RR	100	50⅜	49½	50½	49⅜			50	49⅞	50⅜	49½	51¾	49⅞	86,582
N. Y. & S. Coal	50													
Penn. Coal	50													
Penn. RR.†	50	60⅛	59⅝	60¼	58⅛	58⅞	57½	57⅞	57½	57⅝	57¼			18,891
Ph. & R. RR.*	50	36¾	36⅝	36⅞	36			37	35⅞	37	36⅛	37	36¼	122,261
Spring Mountain	50													
Tennessee Coal, Ir. & R.		73½		75	74			78¾	75⅞	81	79½	85½	82	8,906
Westmoreland Coal†	50													

* Of the sales of this stock, 22,571 were in Philadelphia, and 99,690 in New York.
† The quotations for these stocks are not percentage, but actual price. Total sales, 347,982.

FREIGHTS.

The latest actual charters to November 5th, per ton of 2240 pounds :

To	From Philadelphia	From Baltimore.	From New York shipping ports.
Alexandria	.60@.65		
Annapolis	.65		
Baltimore	.58§		
Bangor	1.05*	1.15	.85*
Bath, Me	1.05*	1.15	.85*
Beverly	1.05*		.85*
Boston, Mass	1.05*	1.15	.85*
Bridgeport, Conn.		1.00	.65
Bristol		1.15	
Brooklyn		1.00	.18§
Cambridge, Mass.	1.05*		.85 3*
Cambridgeport	1.05*		.85 3*
Charleston, S. C.	.80@.85	.80	
Charlestown	1.10*		.85 3*
Chelsea	1.05*		.85 3*
Com. Pt., Mass.	1.05*		.85*
E. Boston	1.05*		.85*
East Cambridge	1.05*		.85 3*
E. Gr'nwich, R. I.			.80
Fall River	.90*	1.00	.80
Galveston	2.00@2.25	2.50	
Gardner	1.05*¶	1.15	
Georgetown, D. C.	.60@.65		
Gloucester	1.05*		
Hoboken		.95	
Jersey City		.95	
Lynn	1.10@1.15*		1.35
Marblehead	1.05*		
Milton	1.15*	1.30	
Newark		1.15	
New Bedford	.90*	1.00	.80@.85
New-Berne	.75		
Newburyport	1.20*	1.30	1.00*
New Haven		1.00	.65
New London		1.00	.70@.75
New Orleans	2.00		
New York		1.00	.25§
Newark, N. J		1.15¶	
Newport	.90*		.80
Norfolk, Conn			.65
Norfolk, Va	.60		
Norwich		1.15*¶	.80
Pawtucket			.75¶
Portland, Me	1.05*	1.15	.85*
Portsmouth, N. H.	1.15*	1.25	.95*
Portsmouth, Va.	.60		
Providence, R. I.	.90*	1.00	.80
Quincyport	1.05*		1.10
Richmond, Va.	.60@.65		
Rockport	1.10*		
Roxbury, Mass.	1.05*		
Saco	1.10†		
Salem, Mass.	1.05*	1.15	85*
Savannah	1.00	1.05	
Somerset	.90*	1.00	.75
Washington	.60@.65		
Williamsb'g, N. Y.		1.00	
Wilmington, Del		1.00	
Wilmington, N. C.	.85@.90	1.00	

* And discharging. † And discharging and towing. 3c. per bridge extra. § Alongside. ‖ And towing up and down. ¶ And towing. †† Pilotage. ** Below bridge. *** Old B. L.

at $2¼ in early dealings, and was quiet until yesterday, when a lot of about 1000 shares was forced on a dull market, resulting in a decline to $2. The market is firmer to-day, and sales have been at $2¼, with $2⅛ bid. Huron sold at $2¼, an advance of $¼ over last sale. Ridge sold at $1, same as before. Sales for the week comprise 14 shares Calumet & Hecla, 5 Quincy, 1435 Franklin, 435 Osceola, 350 Atlantic, 2800 Allouez, 200 Ridge, and 100 Huron. Total, 5359 shares.

In silver stocks, there is nothing doing. At the Mining and Stock Exchange, very little business has been transacted in mining stocks, the attention of operators being given more to railroad and miscellaneous stocks. Catalpa sold at 22@23c. Bonanza Silver, at 8@9c. Dunkin, 28@30c. Breece, 22½c. Crescent, 9c. In the low-priced coppers, 20c. is bid for Humboldt, 20c. for South Side, 10c. for Star, 15c. for Hungarian, 15c. for Dana ; but there are no lots to had at these prices.

St. Louis Mining Stocks. Nov. 3.

[From our Special Correspondent.]

The market for the past week has been quite active on Sheridan, with a pressure to sell from $5.50 down to $4.25. The reason for this was the non-receipt of news of the starting up of the mill, and the breaking of the cable of the tramway. Within the last few days, however, news of a favorable nature has been received, and the stock is, at this writing, in better demand. The most remarkable feature of the week has been the firmness of Granite Mountain stock, notwithstanding the passing of the dividend. The card issued by the directory, showing that funds in sufficient were on hand, and had been earned, and that the reason for the non-payment was merely on grounds of good business judgment, caused holders to be more firm, and the stock, at the close, is in better demand than it was last week. All other stocks are dull, and quotations merely nominal.

Name of Company.	Location.	Bid.	Asked.
Adams, S. L	Colo	$5.75	$6.00
Cen. Continental, G. S.	Ark		1.00
Consolidated Silver, S.	Mo		1.00
Courtland	Colo		.40
Dandy, S	Colo		1.00
Durango, T	Mex		
Grand Duke	Colo		
Granite Mountain, S	Mont	37.50	39.00
Hope, S	Mont	40.00	45.00
Ideal, S. L	Colo	1.10	1.20
Laclede			.65
Peacock	N. M	2.75	3.50
Puritan			1.00
Quincy	Colo	.10	.15
Sheridan	N. M	5.00	5.50
Small Hopes Cons., S. L.	Colo	7.75	8.25
St. Louis & Mexico	Mex	1.30	1.50
St. Louis & San Fran	Mex		
St. Louis & Sonora, G. S.	Mex		.25
St. Louis & St. Elmo	Colo	.40	.45
St. Louis & Yavapai	Ariz	1.15	1.25

Pipe Line Certificates.

Messrs. Watson & Gibson, petroleum brokers, No. 49 Broadway, report as follows for the week :

The oil market presents the same dull and dreary appearance. Brokers find activity and orders in the stock department of the Consolidated Exchange, and, as dullness reigns supreme in oil, they have one by one abandoned it. Meanwhile, production in Washington declines from week to week, and the situation in the general field grows more bullish. Some fear dangerous "wild-cat" wells in Greene County, but nothing has yet been found there. When the big power gets ready to move the oil market, it will find no resistance. Refined oil was advanced ⅛ to 6¾ cents a gallon on Thursday.

The following table gives the quotations and sales at the Consolidated Stock and Petroleum Exchange :

	Opening.	Highest.	Lowest.	Closing.	Sales.
Oct. 30	65¼c.	66¼c.	65¼c.	66⅛c.	1,692,000
Nov. 1	66½	66½	65⅞	65¾	1,240,000
2					
3	66	66⅛	65½	66	1,534,000
4	66½	66½	66	66⅜	1,670,000
5	66⅛	66⅜	66⅝	65¾	1,089,000
Total sales in barrels (40 gallons)					7,225,300

CONTRACTS OPEN.

64 OIL WELL DRILLERS—PROPOSALS will be received by "Editor," care of Engineering and Mining Journal, New York City, for boring for oil in France. Maximum depth 600 meters, through calcareous and bituminous shales. State price per meter, contractor finding all plant except engines.

100 STEEL GUN-FORGINGS AND ARMOR—Proposals will be received by the Secretary of the Navy, Navy Department, Washington, D. C., until December 10th, for about 1310 tons of steel gun-forgings, and about 4500 tons of steel armor plates.

101 MACHINERY FOR CRUISERS AND gunboats—Proposals will be received by the Secretary of the Navy, Navy Department, Washington, D. C., until November 24th, for the construction and erection on board the vessels of engines, boilers, and appurtenances, complete in all respects.

116 WATER-WORKS—SEALED PROPOSALS for the construction of works for the water supply of the city of Portland, Oregon, will be received at the office of the Water Committee, Portland, Oregon, until 12 M., December 15th, 1886. These works will be constructed according to the printed specifications dated August 24th, 1886, and will include thirty-one miles of wrought-iron pipe, 27 and 22¼ inches in diameter ; three iron bridges ; two thousand feet of submerged pipe under and across the Willamette River ; a reservoir within the city limits, and all other works described in the specifications, excepting those specified as "Head-works," which are now under contract. The specifications provide that the wrought-iron pipes shall be made of iron sixty inches in width, but proposals will also be received for furnishing the iron, and for manufacturing the entire length of pipe, of iron either forty-two, forty-eight, or sixty inches in width. Proposals will also be received for the construction of all the works described in the specifications, excepting the Head-works, for a lump sum, the contractor being at liberty to use iron for the pipes either forty-two, forty-eight, or sixty inches in width, the whole work to be completed within eighteen months after signing the contract. In these modified forms of proposals the width of iron proposed will be stated in the bids, and a copy of this advertisement will be attached to each bid. The proposals will be indorsed on the outside of the sealed envelope, "Proposals for Construction of Water-Works," and addressed to Philip C. Schuyler, Clerk of the Water Committee, Portland, Oregon. The specifications and such further information as may be required will be furnished on application by ISAAC W. SMITH, Engineer of the Water Committee, Portland, Oregon.

117 MINERAL OIL—PROPOSALS WILL be received at the Quartermaster's Department, Jeffersonville, Ind., until November 11th, for furnishing and delivering 100,000 gallons Mineral Oil at the Jeffersonville Depot, in cases of two five-gallon cans each.

Deliveries to commence by December 1st, 1886, and be completed by January 15th, 1887, in such quantities and at such times between those dates as may be agreed upon.

120 DREDGING—PROPOSALS WILL BE received at the U. S. Engineer Office, Wilmington, N. C., until November 9th for dredging in Georgetown Harbor, S. C., and in Cape Fear River, N. C.

121 DREDGING—PROPOSALS WILL BE received at the U. S Engineer Office, Wilmington, N. C., until November 20th, for dredging in Mosquito Creek, S. C.

122 STONE—PROPOSALS WILL BE RECEIVED at the U. S. Engineer Office, Wilmington, N. C., until November 9th, for furnishing 20,000 tons of stone for the improvement of Cape Fear River, N. C.

123 GRANITE STONES—PROPOSALS WILL be received by the Department of Docks, Pier A, North River, New York City, until November 9th, for furnishing granite stones for a bulkhead or river wall.

124 STONE—PROPOSALS WILL BE RECEIVED at the United States Engineer Office, 537 Congress Street, Portland, Me., until November 13th, for furnishing and placing stone on the Saco River Breakwater, Maine.

125 DREDGING—PROPOSALS WILL BE received at the U. S. Engineer Office, Wilmington, N. C., until November 25th for dredging in Bogue Sound, N. C.