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CONTENTS.

THE River and Harbor bill appropriating $20,000,000 for various public works, some extremely valuable, others a pure waste of the public money, even if not a worse than this, has become a law. The President declined to give his approval, owing, presumably, to the character of several of the items, but so necessary were others he did not veto the bill. It is to be hoped that the President will be empowered to veto items without vetoing an entire bill. This would prevent the disgraceful appropriations that creep every year into the River and Harbor bill.

The work to be done will keep our force of military engineers fully occupied, and will circulate a vast sum of money which will all tend toward increasing the business activity of the country.

THE CASTNER SODIUM-ALUMINUM PROCESSES.

The manufacture of cheap aluminum has been the dream of the metallurgist for many years, and innumerable have been the "processes" proposed for its realization. Among the most successful of these are the Kleiner method, described in the ENGINEERING AND MINING JOURNAL, April 9th, 1887, and the Castner method, already mentioned several times in these pages. Each of these methods makes aluminum through the reducing effect of sodium, and as the production of this is necessarily expensive by any method of manufacture yet known, the improvement effected by these processes, though great, seems to us to be only a step in the right direction, and to be indeed a step on a road that will never lead up to, though it approaches, the desired goal—cheap aluminum.

This dream, if dream it may still be called, must be realized by some direct method, which will take a cheap ore and reduce the metal so as to give it to us at the cost of copper or zinc or lead. We are still a very long way from this point, though the cost of production of the Castner aluminum is said by *Engineering* to be only 10s. or 15s., say $2.50@$3.50 per pound. (A pretty wide difference for a figure which should be known absolutely.)

Though the Castner process is an American invention, it has not yet been put in operation here, but we believe we are justified in saying that a more direct method, which has been under experiment for some time, promises a nearer approach to the ultimate solution of the problem of cheap, pure aluminum, while the great success of the Cowles electric method of producing aluminum alloys has already gone far beyond the Castner or Kleiner methods in reducing the cost of this remarkable metal in the form in which it must generally be used.

Pure aluminum has many valuable properties which would no doubt give it an extended application were its cost low enough, but the chief use for aluminum, so far as we can now see, must always be in alloy with such other metals as iron, copper, nickel, zinc, etc., and since the Cowles method produces these direct, and at a cost, for the contained aluminum, of, let us say, one fifth that of the Castner aluminum, it is evident that it is a far more important advance in practical metallurgy than is possible under the roundabout sodium-aluminum methods.

The problem is a very important one, and we gladly give space on another page to the description of the present condition of the Castner process in England, and trust we may be able before long to record further progress towards its complete solution in producing ten cent aluminum.

THE INFLUENCE OF ALUMINUM ON CAST IRON.

On another page will be found the record of an extremely important series of tests made by Mr. W. J. KEEP to determine the influence of aluminum on cast iron. The results are surprising and of great value to the iron founder and manufacturer, as well as to the engineer who uses iron or steel for structural purposes.

The credit for these experiments, or, we may say, for this discovery, is due to Mr. W. J. KEEP, and in it he has rendered a real service to the profession.

That the addition of these minute quantities of aluminum should produce such important additions to strength is very remarkable, and it seems to open up for cast-iron and steel a still wider field for useful application. It is generally understood that the cast-steel gun made by the Pittsburg Steel-Casting Company, and which has shown such a remarkably high quality, was made with an addition of aluminum; and certainly the results found by Mr. KEEP lead us to expect a strength in cast-steel guns made with the addition of aluminum which will far exceed the average strength of the expensive and unmechanical "built-up" gun.

In his tests Mr. KEEP first melts a crucible full of a given brand of cast iron and casts a set of bars from which he makes his various tests. He then remelts this iron in two parts. To one of the crucibles he adds aluminium, to the other none. He now casts two sets of bars and tests them. The difference of the results is the effect of the aluminium. He now melts his iron a third time, adding more aluminium to one crucible, the other simply representing the original iron melted over three times. He again takes his test bars, tests them, and obtains the difference and charts his results, as shown on the diagrams accompanying his paper. His method of investigation is novel and thorough, and his results can not be disputed.

We understand that Mr. KEEP has now carried his examination forward to measuring the influence of the most minute quantities of aluminum in the iron, and finds that the improvement in the quality of the iron is noticeable in every case; even two hundredths of one per cent doubled the time during which iron remained fluid in a small ladle. We are promised further information on this important subject; at present the results graphically illustrated will attract universal attention.

ARKANSAS BUBBLES.

In the ENGINEERING AND MINING JOURNAL of July 28th, we published a full exposé of the way the "Lost Louisiana" bubble of Arkansas had been inflated by a certain "Prof." SAMUEL AUGHEY and a Mr. A. M. BEAM. It was then shown beyond any question that these men are either knaves or fools, and so far as the public is concerned there is little to be gained by sampling them down closer to determine exactly to which class each may belong. The practical results to investors are about the same, but some of "Professor" AUGHEY'S former history which has come to our knowledge would seem to determine his status.

The authoritative and very instructive record which we then published

of the assays of this "Lost Louisiana" ore made at the St. Louis Sampling and Testing Works, was of a character to call for some response on the part of the Arkansas parties, but none has come. We are pleased, however, to note that on the 8th August the Governor of the State wrote Prof. JOHN C. BRANNER, State Geologist, as follows:

STATE OF ARKANSAS, EXECUTIVE OFFICE, LITTLE ROCK, Aug. 8, 1888.—Hon. John C. Branner, State Geologist.—SIR: At your earliest convenience please furnish this office with a brief statement of the true character of the gold and silver region in this State, as far as this question has been determined by the investigations of the Geological Survey. Respectfully, SIMON P. HUGHES, Governor.

And to this Professor BRANNER replied the same day in an article which will be found on another page, and which utterly explodes a number of promising "bubbles" based on the reports of the "experts" mentioned above and others. After detailing a long list of so-called "mines," which contain no valuable ore whatever, Dr. BRANNER says:

"Nowhere in Garland or Montgomery counties (the seat of most of the frauds) has there been discovered a deposit containing a sufficiently high average per ton in gold to pay for treatment. Indeed, it may be said of the gold mines of Arkansas in general that it is very doubtful whether a single one of them has ever legitimately returned a single ounce of gold." * * * "We are brought to the irrisistible conclusion that ignorance or fraud, or both, are at the bottom of the high gold assays reported from Montgomery and Garland counties."

For a long period reports of Arkansas bonanzas have come to us and some of the companies have endeavored to sell their stock here, but the ENGINEERING AND MINING JOURNAL promptly denounced more than a year ago some of the most active of these, of one of which we said: "Our advices and the official statements of the company give no encouragement to even reckless gamblers to invest in this stock."

And months ago we ineffectually endeavored to obtain the fuller information, now made public, with the object of preventing these swindling operations. As Professor BRANNER says: "It is to the interest of the people of Arkansas and of all honest men that the truth be made known, and that this waste of money in the search for what does not exist be stopped." Arkansas has valuable deposits of coal, iron, manganese and some other minerals, which are a better foundation for permanent prosperity than gold and silver mines, and the reports of State Geologist BRANNER, when they appear, will, no doubt, give us valuable information concerning them, and show the people of the State the benefits that result from a geological survey, managed with the ability and honesty Professor BRANNER and his assistants have shown.

THE EUREKA HILL AND BULLION CASE.

The protracted litigation between the Eureka Hill and Bullion mining companies, in Utah, has been fully settled by a compromise, fixing certain vertical side-boundaries between the parties, as fully stated in the ENGINEERING AND MINING JOURNAL of July 14th, 1888. Concerning the local details of this settlement, it is not worth while to speak here. They involve no general principle, and interest the two companies only. Speaking in a general way, we may say that the result is a concession to the Bullion of certain ground confirmed to the Eureka Hill by the decision of the case now before the U. S. Supreme Court on appeal; but, on the other hand, the Bullion party surrenders important claims involved in two other suits not yet come to trial. One of these was perhaps so related to the case already decided by the courts in Utah that a confirmation of that decision would necessarily give the victory to the Eureka Hill party in this issue also; but the third case (involving a complex of overlapping locations of different dates, such as the Champion, Beck, Keystone, Gemini, Redbird and Cornucopia), presented different questions, both of legal construction and of mining development, and would have required, without doubt, an expensive trial. Which party gains by the net result of the compromise can be better told when the value of the ore-bodies in the ground conceded by each has been more thoroughly explored. One thing is certain, namely, the important benefit to the district resulting from the removal of the legal injunctions which have for some time limited mining operations.

This conclusion of hostilities prevents the decision by the United States Supreme Court of two important points—one of practice, and the other in the construction of the mining law. The first may be briefly stated as follows: The Eureka Hill Company, being already defendant in a suit at law, began a proceeding in equity, pleading its title and asking relief by injunction, etc. Both cases coming up at the same term of court, Judge POWERS not only decided that the equity case had been properly brought, but gave it precedence, heard it (of course without a jury), and decided it in favor of the Eureka Hill—which decision was afterwards sustained by the Territorial Supreme Court, and appealed to Washington. The strongest point in the appeal, we think, was the point of practice just stated. It is argued that such practice defeats the right of a party to a jury.

A similar decision, noticed by us February 18th, 1888, was made by Judge BREWER, of the U. S. Circuit Court in Colorado. In that case also, a party threatened with litigation commenced an equity proceeding to settle his title, and the court upheld him in so doing. The principal importance of such a ruling is, that it permits the majority of cases involving titles to mining ground to be heard by the court without a jury, if either party so desire. This would be a great protection in all the Western mining districts to the owners of mines—especially the absentee or the incorporated owners—who are too often slaughtered without mercy by juries. In the instance now under consideration, this protection was apparently all-important; for one party was gentile and the other practically Mormon, and it would have been impossible to keep Mormons (non-polygamic ones, of course) off the jury.

The point of practice to which we have alluded now remains undecided by the highest authority; but so long as that is the situation, the ruling of the courts in Utah and Colorado will doubtless stand as the law in those communities, and may have weight in other States and Territories *having similar equity practice.*

As we have observed, there were two important points involved in the appeal of this case. After wading through the voluminous list of errors alleged by the appellants, we are inclined to think that on these two hang all the law and the profits of the case. The second was the old question, never yet authoritatively settled, Of two adjoining parallel locations, each containing a part only of the total width of the apex of a given lode, does either or neither, and if either, which, include the extra-lateral right upon the dip of that lode? The Utah judges decided that the elder location takes the whole lode between its end-planes. The question was fully discussed long ago in "The Law of the Apex" (*Trans. Inst. Min. Eng'rs*, XII., 417 *et seq.*) and more recently in our article of December 10th, 1887, on the opinion of Judge ZANE in the Eureka Hill case. We need not at present reopen it, since the late compromise throws no new light upon it. The Utah decision, which we think was right, will remain as the best authority on the subject until, in some other case, the U. S. Supreme Court shall be forced to pronounce the final word upon the question.

STRENGTH OF ELECTRO-DEPOSITED COPPER TUBES.

In the ENGINEERING AND MINING JOURNAL of May 1st, 1886, or more than two years ago, we described editorially the Elmore electrolytic method of producing seamless copper tubes of any diameter or length. The practical working of Mr. ELMORE'S process has since been continued at his works in England, and the high quality of the tubes now turned out has been fully proven.

In a paper on copper steam pipes for modern high pressure engines, recently read at a meeting of the British Institution of Naval Architects by Mr. W. PARKER, Chief Engineer Surveyor to Lloyd's Register, the inherent defects of brazed copper tubes were shown to be due to injury in brazing. In seeking means to eliminate these, Mr. PARKER was instructed to visit the works of Mr. W. ELMORE and examine the manner of manufacture of his electrolytic tubes. He gives the results of his examination in the paper to which we refer and from which we take the following data:

As already described in these pages the Elmore method of manufacture consists in revolving mandrels in a depositing tank of sulphate of copper, in which are placed cakes or slabs of Chili or other copper, parallel with the mandrel on which the copper is to be deposited. The mandrel, which is fitted with an insulated spindle and bearings, is the cathode, and the copper bars the anode of the circuit, the one connected with the negative, the other with the positive pole of an ordinary dynamo.

When the current is turned on the sulphate of copper in the bath is decomposed, the sulphuric acid going to the anode to dissolve the copper bars, and the copper from the solution is deposited on the revolving mandrel.

Experience has shown that the copper thus deposited is crystalline and possesses but little strength, but this difficulty has been completely overcome by Mr. ELMORE by a burnisher formed of a piece of smooth agate which travels along the entire length of the mandrel backward and forward pressing down and compacting the copper as it is deposited.

The speed of the revolving mandrel and of the traversing burnisher are nicely regulated, and the result is that a pipe is formed on the mandrel which is perfectly homogeneous and the copper of such excellent quality that the tests made with it by Mr. PARKER show it to have a remarkably uniform tensile strength of about 23¾ tons per square inch section, no matter in which direction, longitudinally or transversely to the tube, the test be made, while the strength of solid-drawn copper tubes was 20¼ tons per square inch, and that of rolled sheet copper was only 14 tons per square inch section. These remarkable results are accompanied by a very superior ductility in the electrolytically-deposited copper, the contraction in the area of the test pieces being chiefly near the point of fracture in the deposited copper, where it reached 72 per cent, while with the solid-drawn copper it was 12·8 per cent, and with rolled copper 45 per cent of the original sectional area of the test piece.

It is well known that copper loses its strength very rapidly at high temperatures. According to the classic experiments made in 1837 by the Franklin Institute the strength of copper at 500 degrees Fah. above the freezing point is already diminished nearly 25 per cent, and at about 800 degrees to 850 degrees it has lost half its strength and at 1300 degrees, or a bright red, its resistance is zero. Mr. PARKER has confirmed these results and has found that at 360 degrees Fah., or the temperature of steam of 150 pounds pressure, copper has about 15 per cent less tensile strength than when cold.

Mr. PARKER'S conclusion is that "ordinary sheet copper cannot be accorded a breaking strain of more than about 10 tons per square inch at the temperature of high pressure steam, apart from the danger and uncertainty arising from brazing;" while in the electro-deposited and solid drawn tubes the strength is about 15 tons under the same temperatures, or an increase of 50 per cent.

These experiments are of great value, and they appear to forecast the total abandonment of brazed copper tubes and the substitution of the electro-deposited or the cold-drawn tubes where copper still continues to be used. It would be extremely interesting to have a series of tests under similar conditions of temperature, etc., of aluminum bronze, which could be cold drawn, just as is the pure copper, and which possesses a very much higher tensile strength, and yet would give the advantages in conductivity which copper possesses.

The cost of producing the Elmore copper tubes is not given, but we are told that after revolving the mandrels in the bath for about 170 hours the thickness of the burnished metal was ·198 inch; and further, that one ampère of electrical current deposits ·005084 grain of copper per second per square foot of surface in a suitable bath.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents

The Lash Open-Hearth Furnace Plant.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Comparing the description of the so-called Lash open-hearth furnace with the furnace designed by Thwaite and patented in Great Britain in 1886, the two arrangements are practically identical, the only difference being that in the Thwaite furnace the long recuperator chambers are placed above the ground and in the Lash arrangement they are placed below. Yours truly,

LIVERPOOL, July 31, 1888. HONOR TO WHOM HONOR IS DUE.

COST OF A TON OF PIG-IRON IN THE SEQUACHEE VALLEY, TENN.*

By William M. Bowron, South Pittsburg, Tenn.

An interesting calculation was made at the Chattanooga meeting of 1885 as to the cost of making a ton of pig-iron in the Chattanooga and Birmingham districts. Since that time new territory has been opened, new railroads have been built, and recent construction has remedied some of the leakages of former practice. The metallurgy of the ores of these districts and the capabilities of their fuels are now clearly ascertained; but the old question, How much does it cost to make a ton of iron? is still unanswered, so far as popular knowledge goes.

Cost-accounts are considered, in this district at least, as close secrets; and I am not prepared to betray them, for the excellent reason that I have never had access to the cost-account of any firm making iron in these districts.

Probably if I had sought such special information I could have got it, but it would not have been available for publication, and its possession would have rather been a source of embarrassment than aid in the independent investigation that I have made. Besides which, there are peculiarities in the conditions of most firms that prevent them from being representative of their neighbor's practice.

My first idea was to try to get in confidence such figures as might be averaged; but a very little study made me abandon this, if for no other reason than that the differences in matters that were included in cost would render such average worthless. For example, one operator builds fifty coke-ovens and charges them up to "general expenditure." His neighbor, building the same number, charges them up to "capital account." The figures of cost on the same make and under similar conditions would not be identical. I now propose to give some data of cost that may assist those making their own calculations for any specific locality, premising that my figures are based on Sequachee Valley practice, as the district most familiar to me. It is but simple justice to the Tennesseee Coal, Iron and Railroad Company to state that none of the figures have been derived from their work. Owing to their special facilities they work one department into another, and the figures I arrive at should not be quoted against them. I am dealing with a furnace built in Sequachee Valley to work its own local ore and coal and to buy its soft ore.

The materials included in Sequachee Valley are ore and coke.

Hard ore is worth 75 cents per ton and soft ore can be had for about $2.25 per ton delivered.

A working mixture is, hard ore, 4200 pounds; soft ore, 3500 pounds.

Allowing the hard ore to run 30 per cent and the soft ore 50 per cent, this charge would give 3,010 pounds of iron. Reducing the ore to that required for 2000 pounds of iron, we have hard, 2757 pounds, worth $1·034; soft, 2325 pounds, worth $2·615; add 10 per cent for waste, moisture, etc., $·365. Total cost ore per ton of iron, $4·014.

The next item is coke. Analyzing its probable cost, I have from different sources and composite data got the figures below.

I have made an attempt to divide up the cost of mining, as follows:

Mining coal	50·0 cents.	Tipple	·25 cent.
Air course and entry	12·5 "	General expenses, *i. e.*, taxes, insurance, exhaustion of land, etc.	·75 "
Incline	·30 "	Timber	·25 "
Superintendence, clerks, and offices	·25 "		87·3
Mules, drivers, and outside labor	·68 "		

On cars at mine. Coked in 11-foot ovens, holding four tons of coal, 100 bushels of this coal gives 115 of coke; or 8000 lbs. of coal gives 4600 coke. The cost of this may be divided thus:

4 tons coal per oven	3·492 cents.	Extra labor, switching, weighing, etc.	·150 cent.
Charging, leveling, bricking, and drawing	500 "		
Loading	·250 "		
Repairs	·050 "		4·442

or $1·929 per ton of coke on cars at ovens.

To make a ton of pig-iron with this coke takes 2748 pounds of coke, worth net cost, $1·929; waste and braise, 10 per cent, $·193; total, $2·122, or $2·915 per ton iron, plus the freight for haulage from coal mines to furnace. To recapitulate: Ore, $4·014; coke, $2·915.

LABOR.

Wages and labor, taken from actual practice, amount to $1·834 per ton, on a make of 84 tons per day. We have then, ore, $4·014; coke, $2·915; labor, $1·834; stores, $·250 (including railroad iron, oil, coke-forks, sand, lumber, etc.) Total cost, $9·013. Being the cost of making a ton of pig-iron *less* the cost of bringing the fuel to the furnace, which is supposed to be located near the mine in the Sequachee Valley, and 25 cents should cover it. There only remains to add for repairs and depreciation of plant 10 per cent on $100,000 investment, and 6 per cent interest on the same for use of the money (for the only safe way is to regard the money invested as borrowed). These, calculated on 30,000 tons per annum, are: Depreciation, ·25; interest, ·15; brought forward, 9·013; probable freight on coke, ·25; total, $9·663.

As this is a ton of 2000 pounds, the cost of a ton of 2240 pounds will be, according to the above figures, $10.82.

The allowance for sand in the pig-iron ton does not require to be made here.

Local conditions vary, but the figures above will come very near the truth in Sequachee Valley, where ore and coke are only four miles apart in a direct line, and can commercially be united by rail inside twenty miles.

As a basis for comparison this estimate will be useful if only to check the wildly small estimates of the authors of "boom" literature and their residuary legatees, the tariff-tinkers. Unless conditions are favorable, construction suitable, and management good, these figures will be exceeded. Distance from market becomes a further factor in the question of "profit and loss," but I am simply regarding here the cost of making a ton of iron in Sequachee Valley.

THE INFLUENCE OF ALUMINUM UPON CAST-IRON.*

By W. J. Keep, C.E., Prof. C. F. Mabery, S.D., and L. D. Vorce.

Aluminum is a metal obtained from its oxide, alumina. It is white in color and very tenacious, and it alloys readily with iron. Cast-iron ordinarily used is iron which contains all the carbon that it could absorb during its reduction in the blast-furnace. This carbon, when found in chemical union with the iron, is called combined carbon. In this state it cannot be seen. It is also found mechanically mixed with the iron in the form of graphitic carbon, when it becomes visible. Other elements commonly found in cast-iron are phosphorus, sulphur, manganese and silicon. The natural condition of carbon in iron is the combined state. The presence of silicon drives a portion of the carbon into the graphitic state.

Sulphur, manganese and phosphorus do not cause the carbon to leave its natural combined state, and if silicon be present, these elements either drive it out or overpower it. Carbon is therefore a passive element, and is made to change its form by the presence of other elements. It is this change of carbon which indicates to the eye the influence of any element upon the cast-iron. Iron and combined carbon or carbureted iron is called white iron, and the grain is generally very fine, and often even, and the metal is very hard. Graphite darkens the fracture until it becomes a very dark gray, and the grain is coarse and irregular. With increase of graphite the metal becomes soft. We shall confine ourselves in this paper to the influence of aluminum upon cast-iron.

Let us for a moment review the present knowledge on this subject. It is known that fused wrought-iron, a mixture of cast-iron and steel, or steel alone, either of which would make castings which would be full of blow-holes, will make solid and homogeneous castings if as small a quantity of aluminum as one-tenth of one per cent is added just before pouring. Also that such addition causes the iron to remain fluid long enough to allow its being cast into moulds. It seems to be the general opinion that the aluminum does not remain in the metal, but that it exerts its influence between the time of its introduction and the time of its departure. This seems to be the sum total of the present information regarding the influence of aluminum upon iron.

We propose in this paper to give the results of a series of very carefully conducted tests, to further substantiate the statements just made, and to settle the question as to whether almuinum remains in the casting. Also to determine the influence of this metal upon the physical structure, and upon the composition of iron. The physical tests that we have employed are what are known as "Keep's Tests;" and by them we are enabled to make apparent to the eye the influence of any element upon cast iron.

When it was understood that we were to undertake this examination,

* From advance proofs of a paper read by W. J. Keep, Detroit, Mich., at the American Association for the Advancement of Science.

the Cowles Electric Smelting and Aluminum Company kindly furnished us with what ferro-aluminum we needed, and Prof. C. F. Mabery and L. D. Vorce volunteered to undertake the chemical examination of the test bars. The results of these investigations will be appreciated when it is understood that we began without the least expectation of the very important results we have obtained, and that the methods for the determination of minute quantities of aluminum were so imperfect that the small quantities used in the "Mitis" process could not be determined, if they still remained in the castings.

Regarding the physical tests, we should state that we use two bases, one a white iron, with composition Si 3·86, Al 11·42, P ·263, S ·0307, Mn ·092. The other, a gray Swedish iron marked FLM, with composition Si 1·249, P ·084, S ·04, Mn ·187. The ferro-aluminum contained silicon.

The melting was done in a covered plumbago crucible, in a coke furnace driven by a blast of two and a quarter ounces. The test bars were one foot long and cast in pairs, one being half an inch square, and its mate one tenth of an inch thick and one inch wide.

We started with thirty pounds of the base in the crucible. At the first heat there were cast four pairs of bars from the base alone, which took five pounds of metal. After allowing the remaining metal to become solid we returned the runners of the first cast, and added four pounds of the base, and returned the crucible to the furnace. When nearly melted we added enough ferro-aluminum to bring the percentage of aluminum

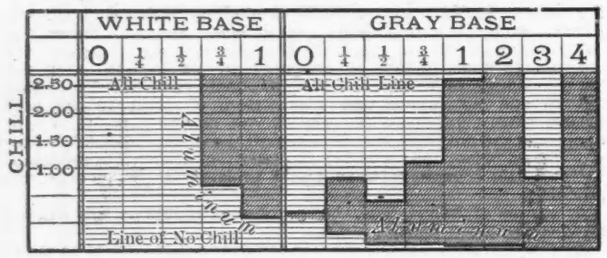
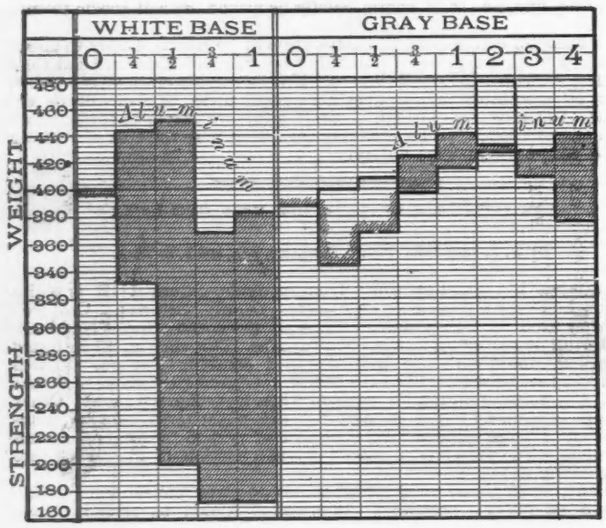


Chart 2.



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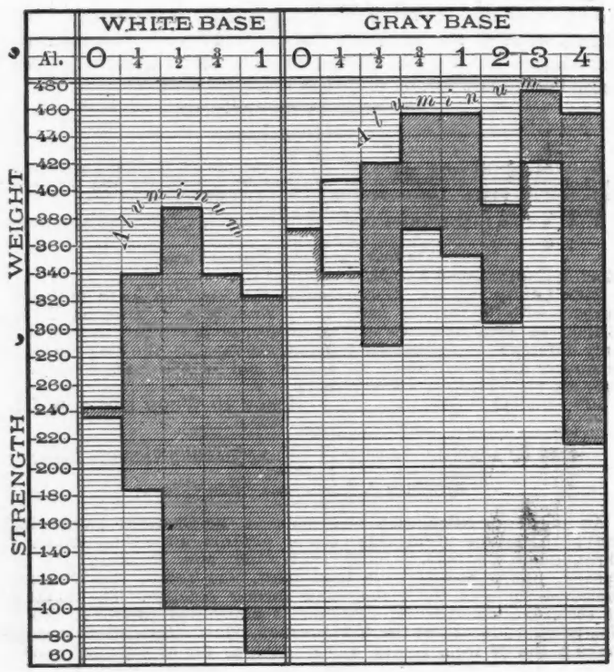


Chart 4.

545 pounds, a gain of 166 pounds, or about 44 per cent, from this small addition. Measuring the resistance to impact the white alone was 289 pounds, with aluminum 254 pounds, or about 6 per cent gain. The castings appear of slightly finer grain, and the character of the crystallization is somewhat different, but the secret of the strength lies in the closing of space between the grains, or, in other words, in the increased solidity of the casting. No other change is noticable in the metal.

A graphic representation of this test is not needed.

2D. DOES THE ALUMINUM REMAIN IN THE IRON TO EXERT AN INFLUENCE WHEN THE IRON IS REMELTED. (Chart 1.)

To determine this we made a series of six heats from the white base, and added to the first heat one fourth of one per cent of aluminum. This amount alters the grain very perceptibly, making it whiter and finer, and removing the tendency of the base to a slight specular appearance and giving a homogeneous fracture. It increases the strength above the base about 20 per cent to resist weight, and for impact an increase of over 70 per cent. The next heat was a remelt of the first, with the runners of the first cast put back, and enough white base added to reduce the aluminum to two tenths of one per cent when the second cast was made.

Our comparison will now be made between this series and the comparison series of the base alone. Looking at the chart, we see that the

in the whole to where we wished it, for the second set of bars. We proceeded in like manner through the entire series of heats. To arrive at the influence of the aluminum, we made another series of heats, with the same base, with exactly the same conditions, only we did not add the aluminum.

The difference between the two series of tests gives the effect of the aluminum.

We shall consider this subject under the following heads: 1st. The solidity of castings and the prevention of blow holes. 2d. Does the aluminum remain in the iron to exert an influence when the iron is remelted. 3d. The effect of aluminum upon the grain, or the changing of the carbon from the combined to the graphitic state. 4th. The taking away the tendency to chill. 5th. The prevention of sand scale. 6th. The effect upon hardness. 7th. The resistance to a load suddenly applied, or a dead weight. 8th. The resistance to a load suddenly applied, impact. 9th. The elasticity. 10th. Permanent set. 11th. The effect on the shrinkage of the iron. 12th. The fluidity of the melted metal.

1ST. THE SOLIDITY OF CASTINGS, AND THE PREVENTION OF BLOW-HOLES.

All of our tests bear upon this subject, but we have made one test, using the white base iron, and one-tenth of one per cent of aluminum. It is almost impossible to get a solid casting of the white base alone, and its resistance to weight is generally about 175 pounds for the ½ inch square bars, and its resistance to impact is about 100 pounds. We have obtained, however, exceptionally sound castings of this base, and we shall use the strength of such castings for comparison.

These sound castings of the white base alone resisted a weight of 379 pounds. With one tenth of one per cent of aluminum added, it resisted

effect of the aluminum in the second heat is greater than it it was in the first case to which heat the aluminum was added. This is due to the increasing porosity at each heat of the base when melted alone, and to the solidity of the series with aluminum. At the third and subsequent heats the same result is apparent, the remaining aluminum causing more solid castings, though the continued additions of white iron at each heat, and the consequent lessening of aluminum, render the castings less strong at each re-melting. Yet the effect of the aluminum is so constantly apparent at each melt, as to leave no doubt as to the presence even in the sixth re-melting. The chart which we have prepared shows those effects, both as to weight and impact.

As we proceed with the description of other tests, it will be noticed that we add but a small quantity of aluminum at each heat, and depend upon the additions made at previous heats to bring up the required percentage.

The results of the tests show conclusively that the aluminum remains and exerts its influence in subsequent casts as fully as would be expected.

3D. THE EFFECT OF THE ALUMINUM UPON THE GRAIN, OR THE CHANGING OF CARBON FROM THE COMBINED TO THE GRAPHITIC STATE.

Let us say a few words in regard to the way in which, and the reason why, carbon takes on the graphitic form. All of the carbon, both combined and graphitic, which the iron is capable of holding when solid, must be dissolved and exist as combined carbon in the melted iron. Cast-iron made in the usual way contains all of the carbon that it can hold. Very often cast-iron, when melted, contains more carbon than it can hold in combination when at a lower tem-

perature; if so, as the iron cools down, such excess of carbon will separate as graphite and rise to the surface. In any case when a melted iron contains more carbon than the iron can hold in combination when cold, all of the excess will not be able to reach the surface, though it may not be visible in the casting to the eye. The introduction of other elements into the melted metal may alter its ability to hold the carbon. Sulphur causes it to let some go, while manganese enables it to hold more carbon in solution. Silicon also somewhat dimishes the capacity of the molten metal to retain carbon while it is liquid.

Aluminum allows most of the carbon to retain its natural combined form until the metal is too thick for the separated carbon to escape, but at the instant of solidifying aluminum causes the iron to drop a portion of its carbon from the combined state. This liberated carbon takes the graphitic form, and is imprisoned in the otherwise solid iron. The advantage arising from a change of carbon from the combined to the graphitic state at the instant of crystallization is that all the carbon thus liberated is imprisoned uniformly throughout the casting, and is not accumulated in pockets forming soft and hollow spots, as would be the case if liberated while the casting was yet fluid. Aluminum, more than any other known element, accomplished this. It not only changed white iron to gray, but seemed at once to change the whole character of the metal. The drop of carbon seems to be instantaneous, at the instant of crystallization, and for this reason the time taken in cooling has little effect. In fact, when the aluminum obtains full control of the carbon it would seem that the more sudden the cooling the more the formation of the graphite, and the thin portions of the casting are therefore as gray as the thicker portions. The powerful and positive influence of aluminum upon the carbon, and therefore upon the grain and color of the iron, is shown by an examination of the samples. Take those made from the white iron base, with almost no silicon present. The base alone gives a white bar full of blow-holes. An addition of one quarter of one per cent aluminum gives us not only a perfectly homogeneous and solid casting, but the color is darker, and the grain shows that some of the carbon has taken the graphitic form. The thin casting shows this even more than the heavier bar, showing that the change occurred suddenly, and that time had but little effect. Examining such bar in turn, we see that each similar addition of aluminum produces a corresponding effect, until at the third addition, or three fourths of one per cent, the casting is gray with no sign of white, either in the square or in the thin bar.

The set of tests with the gray iron base, containing 1¼ per cent of silicon, shows that silicon and aluminum work together in the same direction, and that a slight addition of aluminum takes the white out of the casting at once, giving the same grain in a thin as in a thick casting.

This effect increases as the aluminum increases, and the indications are that at least up to four per cent, the limit of our experiments, the more aluminum, the softer and grayer the castings.

4TH. THE TAKING AWAY THE TENDENCY TO CHILL. (Chart 3.)

If cast-iron be cooled very suddenly, the carbon, which the melted metal holds in combination will not have time to separate, and will be retained in the combined state. Such castings are called chilled castings. Chill is caused by molten iron running against a body which rapidly withdraws its heat, causing it to retain its carbon in the combined form. Back from the chill, where this instantaneous cooling could not exert its full effect, a portion of the carbon takes the graphitic form. This property is made use of when it is desirable to obtain hard wearing surfaces, and in the same casting tough and soft central portions, as in car wheels. While this chilling effect is exceedingly valuable for many purposes, yet, generally speaking, the founder desires exactly the reverse.

We have said that aluminum causes the carbon to assume the graphitic form on the instant of solidifying, and therefore the sudden abstraction of heat does not imprison the combined carbon and cause chill.

This effect of aluminum is to give a uniform grain for thick and thin castings, and not allow the coldness of the mould to affect the grain.

5TH. THE THICKNESS OF SAND SCALE.

This is an important consideration, for the sand must be cleaned from the casting, and the surface must first be cut before the interior can be reached. To prevent the iron from burning the sand into itself, and thus forming a scale, a plumbago facing is sifted on the surface of the mould, but it is difficult for the facing to lie on the surfaces, or to resist the intense heat of the metal. When aluminum in an iron causes the dropping of the graphite from the mass of the metal, that graphite which is on the surface of the casting separates and forms a perfect plumbago facing, which opposes the sand and the heat. It will therefore be seen that in castings having sufficient aluminum to cause this separation of graphite, there will be sand clinging to the face, and that the surface will be soft as the interior of the casting. Every iron worker will appreciate this good effect of aluminum.

6TH. THE EFFECT UPON HARDNESS.

Hardness in cast-iron is caused by the carbureted or white iron in masses large enough to oppose the tool. If the carbureted iron exists in minute threads stretched around atoms of graphite, a tool will easily cut it, and it will not be considered hard. This graphitic carbon, minutely dividing the mass, gives the tools of the workman a chance to cut or break the films of metal, giving what we call softness to the iron. The later the carbon is dropped the smaller will be the atoms of graphite and the closer the grain. Yet this greater subdivision will, for the reason just given, make the iron work more easily. The fineness of the grain of iron affected by aluminum causes such iron to be much more easily cut than iron of coarser grain.

The power of wrought iron and steel to resist extension is so great that where such stresses are to be resisted, decarbonized metal should be used. The resistance of any cast-iron to crushing is so great that we need not consider this. The forces which cast-iron structures should be made to resist, aside from crushing, are a dead weight, or a blow applied transversely. We should therefore test cast-iron with these forces.

7TH. RESISTANCE TO A LOAD GRADUALLY APPLIED OR A DEAD WEIGHT (Chart 3.)

If we compare the transverse breaking weights of the two series which we have been considering, number by number, we perceive that the aluminum has increased the strength to sustain a constant load. This is a very important effect, and, perhaps, comes partially from the tenacity and strength of aluminum itself, but probably more from the uniform grain of the iron.

8TH. RESISTANCE TO A LOAD SUDDENLY APPLIED OR IMPACT. (Chart 4.)

It may be thought that the effect is substantially the same, whether the force be a constant weight or a suddenly applied blows. We shall at a future time prove that the effects are not the same, and that an iron should be tested by a blow if it is expected to resist impact. By a comparison of the graphic representation, we see that the capacity to resist impact is increased by the addition of aluminum much more than the capacity to resist a dead weight. It will be seen at a glance that the test bars made with the white base are benefited far more than those made with the gray base. The reason for this is, that the white base alone made porous castings; at each remelt this porosity increased, due to the continuation of the heat, running the strength down to 68 pounds at the fifth heat.

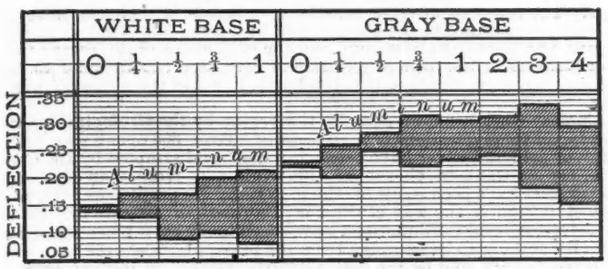


Chart 5.

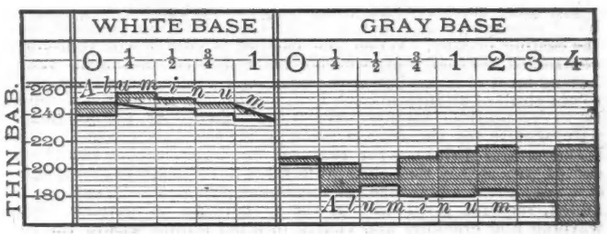


Chart 7.

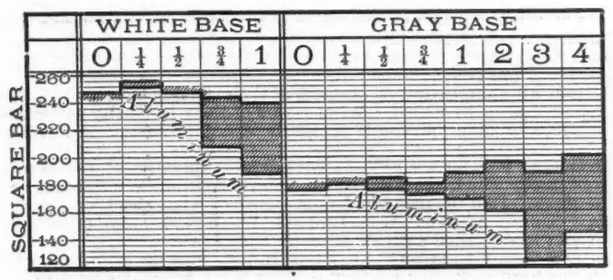


Chart 6.

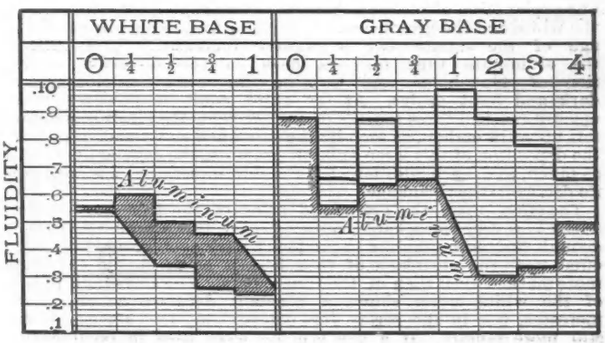


Chart 8.

The first and each subsequent addition of aluminum caused the castings to be perfectly sound, and the infinitesimal atoms of graphite deposited throughout the metal removed the rigidity and brittleness of the initial metal.

The gray iron base contained enough silicon to accomplish all this, and the only effect on strength that the action of the aluminum on carbon could have, would be to increase the fineness of the grain, unless the toughness of the aluminum itself could give strength to the casting, though the aluminum no doubt removed any slight blow-holes that existed in the initial gray metal. This leads us to notice that each addition of aluminum increases the strength over that of the initial metal. We must expect that after we have added enough aluminum to cause a solid casting and to remove the brittleness which the dividing up of the mass by the atoms of graphite accomplishes, any further additions of aluminum and consequent increase of graphite (which has no strength of itself) must weaken the casting.

9TH. ELASTICITY. (Chart 5.)

The compactness and closeness of the grain of cast-iron, when aluminum was the agent by which the graphite was precipitated, and the fine attenuation of the veins of iron and combined carbon, cause the metal to be very elastic, and, as we have seen, not so brittle as without aluminum.

10TH. PERMANENT SET.

This is caused by the compression of the graphite within the frame-work of iron and combined carbon. When this compression of graphitic carbon is produced by transverse bending the frame-work of the metal also takes on a permanent form, which cannot be altered, except by a greater force than was before applied. The fineness and compactness of iron alloyed with aluminum gives less permanent set than iron equally as soft when such softness is produced by silicon.

11TH. THE EFFECT ON THE SHRINKAGE OF THE IRON.

The more suddenly and completely the carbon is changed from combined to graphitic at the instant of crystallization the more space will the casting occupy. When the casting is cold it will, therefore, have contracted less than if more carbon had remained combined. White iron, having most of its carbon in the combined state, shrinks from one fourth to one third of an inch in each foot. Gray iron sometimes shrinks as little as one tenth of an inch to each linear foot. As the combined is the natural state for the carbon, we may say that this maximum shrinkage is the natural shrinkage for cast-iron having its carbon combined. We can, therefore, say that aluminum takes out or reduces shrinkage. This is a very great advantage, as shrinkage, when a sufficient quantity is added, requires great skill in the preparation of patterns to prevent warping and cracking and violent internal strains within the castings. The lessening of shrinkage avoids these evils, and is therefore a great gain.

Looking at Chart 6 for shrinkage, we see the most conclusive proof of our explanation of the way in which shrinkage is lessened. With both the white and the gray bases, during the first two additions the shrinkage of the square bar is slightly increased. The influence of the aluminum thus far has been in the direction of elimination of blow-holes and causing an even distribution of the dark and light grains. At the third addition, however, when the amount reached three fourths of one per cent, the effect was appreciably felt upon the carbon, as seen by the color, and as we should expect, from the deposition of this large bulk of graphite, the casting does not shrink as much, and, each addition of aluminum increasing, this bulk of graphite decreases the shrinkage.

The effect upon the grain and color of the thin bars of the series (chart 7) is very remarkable, showing that the aluminum has changed enough carbon to graphite to produce a dark even grained casting. The effect upon the shrinkage of thin bars is as we should expect, and is more marked even than in the square bars. The shrinkage in thin bars of the white series shows a constant decrease as the aluminum increases, but in the series for comparison, the shrinkage dropped still more rapidly. If a new crucible were used in commencing this comparison series, enough silicon might have been absorbed to produce this effect. This leads us to remark that on account of the variations of conditions in any series of tests, that cannot be foreseen, we must avoid drawing any but general conclusions, and these should be based upon a large number of experiments.

12. THE FLUIDITY OF THE MELTED METAL. (Chart 8.)

Our tests of fluidity are correct as far as each individual heat is concerned, but variation may be due to the heat of the metal of that particular cast when poured. Viewed in a general way, the indications are that with the white base, with almost no silicon, the aluminum has increased the fluidity: judging from the series with the gray base, we would say that combined with silicon, aluminium reduced the fluidity, but later tests show that the aluminum, to a very marked degree, increases the fluidity.

Our remarks in connection with shrinkage show that a sharp casting is produced by the instantaneous dropping of graphite when crystallization takes place, and that if the iron is fluid enough to fill the mould any extra fluidity causes the iron in shrinking to draw away from the mould. Again, the percentage of alumium necessary to bring about these desirable results will be too small to have much effect upon the fluidity of the metal.

The fact of the iron giving sharper and more perfect castings, caused by the deposition of graphite at the instant of solidification, might cause the iron to be pronounced more fluid, if judged by the appearance of the castings. No doubt the presence of varying quantities of manganese, sulphur phosphorus and silicon in the cast-iron used would modify the influence of aluminum, and until this is understood it may require considerable experiment to determine the amount of aluminum required or how it shall be introduced.

This hurried presentation of the remarkable effects of aluminum upon cast-iron will give an idea of the great benefit which is now promised to the iron founder by the rapidly falling price of aluminum as cheapened by the electric furnace.

THE MINING FRAUDS OF ARKANSAS.

OFFICE OF THE GEOLOGICAL SURVEY OF ARKANSAS,
LITTLE ROCK, August 8, 1888.

To His Excellency, Hon. Simon P. Hughes, Governor of Arkansas:

SIR: In reply to your request of this date for explicit information regarding the character of the gold and silver region of this State, I beg to submit the following statement of some of the general results obtained by the Geological Survey:

There has long been a popular belief that gold and silver existed in paying quantities in the State of Arkansas. During the last few years, notably since 1885, a great many people have become excited upon the subject of the occurrence of the precious metals about Hot Springs and through the country west of there. This excitement culminated in 1887 and 1888. In some portions of the State it reached such a pitch that almost every man abandoned his usual occupation to stake off claims and turn miner. Every unfamiliar rock was regarded as a valuable ore or an "indication" of something, and these delusions have been kept alive by assayers, some of whom were, perhaps, sincere, but some of them certainly fraudulent. These same assayers and their dupes have been so successful that they induced capitalists and business men, both in and out of the State, and especially the visitors to the Hot Springs, to believe in the value of the region for mining purposes to such an extent that during the last two and a half years companies have been incorporated under the laws of Arkansas with a total capital stock of more than $111,000,000 for the purpose of working the supposed gold and silver mines and ores of the State. As one investment after another has failed to pay dividends the authors of this excitement have persuaded people, whether honestly or fraudulently makes but little difference, that the ores of this region were "peculiar" and only required some new process to get gold and silver out of them. The repeated adverse reports by competent assayers were attributed to ignorance of the character of the ores. The Lost Louisiana ore was said to contain tellurium, and the gold was said to escape from other assayers in the form of telluride of gold, and this in spite of the fact that no one was able to detect tellurium in it in the minutest quantities.

Sufficient work has been done in this region by the Geological Survey to settle all these questions beyond dispute. Over 300 openings made in search of gold and silver have been examined and sampled by Dr. Comstock, my assistant in charge of this work, and more than 300 assays and analyses have been made of the material. No prejudices have been allowed to stand in the way of the most thorough investigations. To insure safety, careful examinations have been made even when there was evidently nothing to be expected from the material. The ores have been tested thoroughly, and by the best methods known to modern science, while the chemical work done in the survey's laboratory has been checked by some of the best assayers in this country, notably by Dr. P. de P. Ricketts, of Columbia College, New York, and by Prof. R. H. Richards, of the Massachusetts Institute of Technology, Boston.

Of the silver districts, the two following appear to hold out some promise:

The Silver City District probably merits development, but the work so far has been without an understanding of the nature of the deposits, and the mines are now almost unworkable.

The Kellogg mines, in Pulaski County, yield galena, but the quantity obtainable is unknown.

The following properties, on account of their prominence, are selected as examples of another kind. What is said of these is usually applicable to hundreds of other prospects which it is not necessary to mention here.

The Golden Wonder has milled a considerable quantity of the barren siliceous rock, which occurs without vein structure over hundreds of square miles. Had the rock yielded one tenth of what had been claimed by Prof. Samuel Aughey, A. M. Beam, J. W. Webster, and others, the mill would have earned a dividend many months ago.

The Lost Louisiana is an extinct hot spring, with no semblance of a vein in the hard rock. The country-rock for many miles around is called "smelting ore" by Professor Aughey. The soft material which occurs in pockets in the mine and in the choked throat of the extinct spring is nothing but "wad," a form of bog manganese. This is called "high-grade telluride ore" by Mr. Aughey and his associates. It has been tested many times by the chemists of the survey and also by Dr. Ricketts of New York, and by other chemists. All report "no trace of tellurium."

The Ozark mine is an old hot spring mound containing a deposit of fine black earth, which is the famous "black mud" of this region, and is said to be "lead ore, rich in silver." It contains neither lead nor silver.

A sample from the Accident Mining Company's shaft containing graphite, but without a trace of gold, silver or lead, was reported by A. M. Beam as yielding 33 per cent of lead. A smelter has been erected to work this material.

The Garland County Mining Company call slabs of graphite there "richest silver ore, running high in lead." It contains no trace of trace of either.

The Phœnix Mining Company has been working dolomites and grits which have no trace of mineralization, except in occasional seams which carry only traces of gold and silver.

The Shippey mine at Hot Springs has in place of ore a mass of quartz of the same character as the country-rock for miles around. The failure of the mill at Jonestown is due to the barrenness of the material worked. No process can make it pay.

Mozambique Tunnel is in shale with streaks of limonite iron ore, bearing no apprciable amount of precious metals.

The Golden Crown is in quartz of unworkable value.

The Accident ore is a common gritty sandstone like the barren carboniferous sandstone at Golden City, Logan County.

The Silver World, in Polk County, depends largely upon the same black earth as that at the Ozark mine. Worthington's mines and others south of Dallas are mostly of this character, though some like the Phœnix are in common gritty sandstones.

The Sand Carbonate, in Saline County, is a deposit of silicious mate-

rial like geyserite, lying between quartzite and shale, and carrying only traces of gold.

Near Blocher a little gold occurs in patches of bog iron ore, but there is not enough of it to pay for working.

The Golden City swindle has already been smothered by Arkansas citizens.

Nowhere in Garland or Montgomery County has there been discovered a deposit containing a sufficiently high average per ton in gold to pay for treatment. Indeed it may be said of the gold mines of Arkansas in general that it is very doubtful whether a single one of them has ever legitimately returned a single ounce of gold.

The results obtained by this survey and here announced do not agree with those reported by Prof. Samuel Aughey, Beam, Waitz and others. Those gentlemen claim to use a special formula in their assays, a copy of which was kindly furnished the survey. This formula has been tried on their own ores many times, but the results do not differ essentially from those obtained by the methods in use by all competent assayers. Of this formula the opinions have been sought of several of the leading American assayers. These opinions agree that while it will make an assay it has no advantage whatever over the methods ordinarily used.

We are brought to the irresistible conclusion that ignorance or fraud, or both, are at the bottom of the high gold assays reported from Montgomery and Garland counties.

The region has been properly characterized by one of the leading men of the State as "the richest mining region or the biggest swindle on the face of the earth." A rich mining region it is not.

Much as these adverse results are regretted, it is to the interest of the people of Arkansas and of all honest men that the truth be made known, and that this waste of money in the search for what does not exist be stopped.

The future of Arkansas, as a mining State, must depend upon her coal, iron, manganese, antimony, and possibly zinc, lead and graphite; in these and in oil-stone, marble, chalk, marble and building stone she is rich. The geology of the State is not favorable for the production or mining of the precious metals.

I have the honor to remain your obedient servant,

JOHN C. BRANNER, State Geologist.

[The Little Rock *Gazette* of the 11th August, which publishes the above, republishes in connection with this the exposé of the Lost Louisiana swindling assays from the ENGINEERING AND MINING JOURNAL, 28th July.—ED. E. AND M. J.]

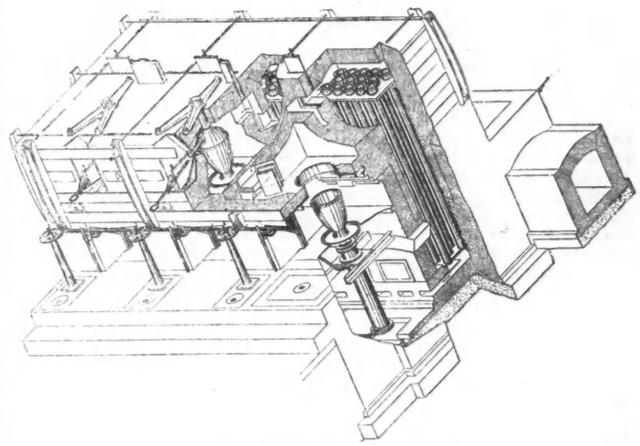
THE CASTNER SODIUM AND ALUMINUM PROCESSES.

London *Engineering* describes as follows the operations carried on at the Castner Works at Oldbury during a recent visit of a number of gentlemen to them. We have annexed an illustration of one of the forms of the Castner sodium furnace.

"The Castner sodium process, as is now tolerably well known, is a modification of the familiar Deville process—the only process that has hitherto yielded pure aluminum on a commercial scale. It differs from the ordinary Deville process, however, in carrying on the process of reduction at the comparatively low temperature of 800 degrees Cent., whereas in the old process the temperature is usually 1500 degrees Cent. This modification allows of the employment of steel vessels of comparatively large size, instead of the small wrought-iron tube that was previously called for by exigencies of temperature, and is attended by a great deal less wear and tear of plant, as well as by a much larger production. Since the original Castner patents were obtained, their author has developed other improvements, alike in his sodium and his aluminum processes, the principal of which are his system of charging the crucibles hot, and the use of larger crucibles, whereby a heavier charge can be treated in a shorter period. The crucibles, moreover, are now charged with the fused mixture, instead of receiving the solid ingredients in the cold state. The conjoint result of these several improvements is that the price of sodium has been reduced from about 4s. or 5s. to 9d. per pound, while aluminum, which formerly could not be purchased for less than about 50s. per pound, and was only produced on a commercial scale at very few small works, is now manufactured at 10s. to to 15s. per pound, and sold at 20s. per pound in practically unlimited quantities. The cost has been cheapened at every stage of the process, and in operating on a large scale all the claims originally made seem to have been amply verified.

"The first process is the making of the carbon compound, which is obtained by manufacturing from a mixture of melted pitch and iron a coke which is afterwards finely ground and employed as the reducing material in the production of sodium from the caustic soda. Alongside of this operation was shown that of the manufacture of sodium. For this part of the industry a very fine plant of twenty furnaces is employed, ranged in two rows in a building immediately behind a plant of Wilson producers, whereby the gas is generated that is employed in the processes of heating and reduction. The caustic soda and the carbide of iron, employed as the raw materials of this process, are kept at a temperature of 800 degrees Cent. for about an hour and a half. During this time the sodium is distilled into small iron condensers. About 6 pounds of caustic soda produce 1 pound of sodium and 5 pounds of carbonate, and about 3 pounds of sodium and 10 pounds of chloride are employed to produce 1 pound of aluminum. There is thus a considerable amount of handling of materials required, in order to get the final product. The residue obtained from the sodium process, which consists of 80 per cent of carbonate of soda and of 20 per cent of metallic iron, is lixiviated in special apparatus, and the solution of the soluble carbonate is pumped over to the alkali works of Messrs. A. Chance & Co., from whom the Oldbury Company purchase their caustic, and to whom they sell their carbonate under contract. The metallic sodium, after being collected from the condensers in dry iron pots, is brought into a separate shop, where it is packed in oil for shipment or for use on the premises.

"For the manufacture of the double chloride of aluminum and sodium, the company employs twelve regenerative heating furnaces, each 20 feet high by 30 feet long and 15 feet wide. There are five retorts in each furnace, or sixty retorts in all. The capacity of the plant is about 6000 pounds per day. The furnaces are charged with a mixture of alumina and carbon. When the charge has reached the proper temperature, which takes about an hour, chlorine gas is admitted in definite proportions, the amount being regulated by a series of valves. The process is continued for about two days, about 100 pounds of chlorine being passed into the furnace daily. During the two days of the operation the double chloride is being continually distilled from the charge, and when the whole of the latter has been got out, the chlorine gas is stopped and the double chloride obtained is withdrawn from the condensers in the form of a crystalline mass of about 2½ hundredweight. The double chloride contains about 12 per cent of aluminum, and yields under treatment with sodium about 10 per cent of aluminum. The plant employed for the generation of chlorine is a modified Weldon plant, and is declared by Sir Henry Roscoe to be the most perfect Weldon plant extant. The same authority, speaking of the double chloride process as a whole, has just reported that 'the plant necessary for carrying on this process is very extensive, and much of it is entirely novel in its character, and, in consequence, it is not in quite so forward or perfect a condition as that of the sodium manufacture; but portions of it are complete, and these have been at work already satisfactorily, whilst the remainder is on the eve of completion.' The double chloride, on being withdrawn from the furnaces or stills, is stored for use in air-tight chambers, each capable of containing two tons.



Castner's Sodium Furnace.

"In the treatment of the chloride by sodium so as to produce aluminum, two special descriptions of furnace are employed at the Oldbury Works. One of these has a slanting hearth, somewhat after the form of a bath-tub. The furnace is heated by gas, as are all the furnaces and other apparatus used throughout the works. The temperature of the furnace is about 1000 degrees Cent. The charge consists of about 25 pounds of sodium, 80 pounds of chloride, and 30 pounds of cryolite, which is used as a flux. These materials are charged into the furnace through a hopper at the top, and after an interval of about an hour and a quarter the slags are drawn off, and the aluminum is run out into a cup at the bottom. About 8 pounds of aluminum are obtained from each charge. The second form of furnace employed does not materially differ from the one just described, except in regard to the method of withdrawing the charge of aluminum, which is allowed to settle to the bottom of a crucible, whence it is withdrawn by removing a plug in the bottom. In the latter case the aluminum is found enveloped in its slag, the latter having to be broken before it is withdrawn. Both furnaces are now under careful experiment, and it is probable that one will be definitely adopted before long. The aluminum is cast in the form of small pigs not unlike the shape of pig-iron. Each pig weighs about a pound."

The chemical reactions that occur in the manufacture of aluminum are as follow:

1. The sodium process—
$$6NaHO + FeC_2 = 2Na + 2Na_2CO_3 + 6H + Fe.$$
2. The chlorine process—
$$Al_2O_3 + 3C + 6Cl + NaCl = NaClAl_3Cl_6 + 3CO.$$
3. The aluminum process—
$$Al_2Cl_6 + 6Na = 6NaCl + 2Al.$$

Pig-Iron Production in Germany in 1888.—The production of pig-iron in the German Empire, including Luxemburg, in the first half of the current year amounted to 2,106,714 tons, against 1,848,481 tons in the corresponding half of 1887, an increase of nearly 13 per cent. The production in the last month of the half year reached 350,404 tons, a quantity made up of 172,089 tons of forge and spiegel, 33,952 tons of Bessemer, 102,594 tons of Thomas, and 40,969 tons of foundry pig. In June last year the total output of pig amounted to 320,760 tons.

Cost and Quantity of Copper Per Lamp Used in Electric Street Lighting.—In a recent paper by Mr. G. H. Bliss, read before the Chicago Electric Club, he gave the actual cost of copper per lamp in the Edison system. For one installation which provides 100 street lamps scattered over an area of 1¼ miles square, and 500 lights for stores, residences, and churches in a mile square, the entire cost of copper, at 20 cents per pound, is $3000, or $5 per lamp. For another installation where 100 street lamps are scattered in one area two miles square and 800 inside lights in an area about a mile square, the entire cost of copper, at 20 cents a pound, is $3102, or $3.44 per lamp; that is, the amount of copper varies from 17 to 25 pounds per lamp.

The proposed Siam-China Railway will be about 1000 miles long, and has been surveyed. More surveyors are going out from England.

The Japanese make their own ships, and they claim the manufacture of the finest repeating gun in the world. They buy mining machinery in the United States.

Medical Properties of Emmensite.—In an address before the Lehigh Valley Medical Association at Easton, Pa., on the 15th inst., Dr. Benjamin Lee, of the State Board of Health, stated that the new explosive, emmensite, when inhaled through the nostrils will check a cold in the head, and if taken internally it is a febrifuge, and is useful in malaria.

The Great Log Raft or ship, the launching of which was described in the ENGINEERING AND MINING JOURNAL, July 28th, was safely towed to New York, where it is now being broken up. It is said the profit on the undertaking was nearly $20,000. No doubt this demonstration of the feasibility of this cheap method of transporting timber will lead to many more examples. It is said that two rafts are to come from Nova Scotia next year.

What the Japanese are Doing with the Money we Returned Them.—The Japanese Government has at last agreed to a proposal to build piers, and thus improve the port of Yokohama. The present plan contemplates a 5000-foot pier to extend from the Admiralty wharf and a breakwater 3800 feet long opposite the northern end of the fort at Kanagawa. The funds to be used in the undertaking are said to be $1,300,000, the amount of the Shimonoseki indemnity returned by the United States, besides $300,000 advanced by the treasury.

Railroads in China.—The railway from Tientsin progresses fast, and if the summer rains are not excessive it is possible trains may run from a station on the northern bank of the Peiho, near to that settlement, to Taku and Kaiping by August next. The Yellow River banks are the cause of deep disquiet to the Imperial Government. The prospect of closing the gap is worse. The Formosa Railway will go from Kelung to Taipeh, and thence to South Formosa. The work, which is being proceeded with at various points simultaneously, is half completed. This offers a new market for American supplies.

The Volta Prize.—After a competition lasting for five years, the Committee of the French Chamber and Senate have decided to award the Volta prize of 50,000 francs to M. Gramme, for the improvements made by him in the construction of dynamo-electric machines. We need not here recall the well-known history of this invention, but it is gratifying to know that the inventor of the machine, which has probably more than any other brought electrical applications into prominence, and especially electric lighting, should be placed by the side of Faraday, Ampère, Ruhmkorff and Bell, among the former recipients of the prize. The commission has done well in awarding the prize to M. Gramme, who has always been a hardworking and modest man, but has we believe, been little recompensed, considering the widespread and general introduction of dynamo machinery as the result of his efforts in the production of the continuous current machine.

The Amsterdam Diamond Cutting Trade.—On this subject Mr. Consul Robinson, in a report to the British Foreign Office, says: The trade was in a decidedly unhealthy state throughout the year. Prices of cut diamonds were disproportionately low as compared with those of the raw material, and, in several cases, stocks of cut goods had to be cleared off at a very great sacrifice. The speculation in South African diamond shares has possessed itself of our diamond market, and there is more gambling in these than legitimate trade in the diamonds themselves. There has been a large increase in the number of mills, simply as a speculation, in order to let them to the cutters. In consequence of this, the rents paid by the cutters have fallen considerably. On the whole, there was barely sufficient work for the greatly increased body of workers; with the exception of the less skilled class, wages remained on about the same level as in 1886.

The Electrolytic Production of Magnesium.—M. de Mongelas has lately devised a process for obtaining magnesium by electrolysis. An alloy of magnesium is first obtained in the form of an electrolytic deposit. The bath consists of a concentrated solution of chloride of magnesium, combined with an equally concentrated solution of the chloride of any other metal except aluminium. The solution preferred is one part of chloride of zinc and two parts of chloride of magnesium. The two solutions mark 18 degrees on the Beaumé scale. Good results are obtained by using the electrolytic bath as the battery. The external jar contains the double chloride solution and the copper cathode; the amalgamated zinc anode is placed in dilute sulphuric acid. The zinc is deposited in a "spicular" or "arborescent" form, and the magnesium in granular crystals. This alloy is then washed, dried, and crushed, and finally melted in a crucible containing chloride of sodium. The zinc volatilizes, and leaves pure magnesium.

Cutting Glass by Electricity.—The *Pittsburg Dispatch* says that several of the South Side glass factories are now using electricity for cutting glass. Heretofore when they wanted to cut one of the large cylinders of window glass a simple but primitive method was used. This consisted of the pulling out from the furnace of a thin shred of glass heated white. This was quickly wrapped around the bottle-shaped end of the cylinder, and it burned through or fractured the glass. A pair of tongs had to be used in the process. By the new method the glass cylinder is encircled with a fine wire, the extremities of which are put in connection with a small electric battery. It is necessary that the wire adhere closely to to the glass. When a current of electricity is passed through the wire it becomes red hot and heats the glass beneath it. Then a single drop of water deposited on the heated place will cause a clean breakage of the glass clear around in the path of the wire. Contrary to what takes place with the usual process in the treatment of this fragile material, it is found that the thicker the sides of the cylinder the better the cut.

Undeveloped Fields of Coal, Petroleum and Asphalt in Venezuela.—E. H. Plumacher, consul at Maracaibo, Venezuela, gives an account of some very remarkable coal deposits in that country between the Sierra de Tulé and the Sierra de Guasdual. An area of nearly 100 square miles is underlaid with seams of bituminous coal. The coal is exceedingly rich in gas, burns with very little smoke, and leaves only a small amount of ash. Some of these seams are on fire. Many of the seams are more than ten feet in thickness, and in some places they attain a thickness of thirty feet. In the department of Guzman Blanco, between the rivers Palmar and Santa Anna, and the Sierra de Perija, are a considerable number of asphalt deposits, and that portion of the department of Colon between the rivers Santa Anna, Zulia and the mountains of the Columbian frontier is very rich in both asphalt and petroleum. It is stated that in several places bitumen emerges in streams from the earth, and at one place petroleum and hot water are thrown out from openings in a mound of sand, and for a long distance from this petroleum geyser the ground is impregnated with the oil. A rude calculation of the amount of petroleum vented from a single one of these openings gave 5760 gallons per day of 24 hours. The consul states that there are as yet no monopolistic concessions in the State of Zulia, and that American capital would meet with hearty encouragement by the government of Venezuela for the sake of developing these resources.

Minerals of Asia Minor.—United States Consul A. M. Jewett, at Sivas, in Asiatic Turkey, reviews in one of his reports the mineral wealth of Asia Minor, as far as obtainable data permit. A few mines are being worked in a desultory manner by natives, and one lead mine is in operation under a concession from the Turkish government to the Asia Minor Mining Company, Limited, of London. The ore from this mine is concentrated, and the concentrates are transported by mules 60 miles to Kerasunda, on the Black Sea, from which point they are shipped to Liverpool, after paying a royalty of 5 per cent to the Turkish government. The company was forced to import Italian laborers, owing to the incompetency of the natives. Argentiferous lead and copper of good quality are reported from the Euphrates district; also iron and coal, and extensive deposits of marble and alabaster lying near the river Euphrates. The Koniah district, embracing most of the Eastern table-land of Asia Minor, yields lead containing silver, and mixed with ores of copper carrying gold. The government lets contracts for working these mines, and receives from them annually about 138 tons of lead. There are 16 furnaces in operation, but work is carried on with that lack of system and energy characteristic of the East. The Euphrates and Koniah districts are the most promising in Asia Minor, unless account is taken of the extensive iron region of Kairsarieh (the ancient Cæsarea), and the introduction of modern methods could open up many profitable mines. Among the minerals that might prove especially remunerative is a large deposit of asbestos near the city of Sivas, to which no attention has as yet been paid.

Natural Gas and Salt Wells in China.—Mr. Charles Denby, United States Minister to China, sends the State Department some interesting information about natural gas and its use in that country. It is found in Sz'chwan, near a town called Tsz-lin-tsing. In an area of twenty-seven li (nine miles) diameter salt wells are found. To make a well the Chinese use a long and elastic bamboo pole, supported in the middle by a cross piece, a rope made by coupling the ends of long (not twisted) slices of bamboo and an iron instrument which weighs 120 catties (catty equals 1⅓ pounds). The rope is fastened on the thin end of the pole, and the iron on the end of the rope. A slight up-and-down motion of the thick end of the pole makes the iron hop and bore a vertical hole with its broad, sharpened edge. The ground to be perforated consists chiefly of sandstone and clay. When a portion of the rock is mashed clear water is poured into the hole, a long bamboo tube with a valve in the bottom is lowered and the turbid water raised to the top. Pipes of cypress wood are rammed in to protect the sides of the bored hole and to prevent the water contained in the surrounding ground from getting access to the well: the pipes are attached to each other at the ends with nails, hemp and tung oil. The inner width of the pipes is about five inches. As the work proceeds the pipes are rammed deeper, and a new one attached on the top; the rope, too, is made longer. At a depth varying from 70 to 100 chang (700 to 1000 feet) the brine is struck, and the well is fit for use. The brine is raised to the top through long bamboo tubes and bamboo ropes, as described, by means of a horse-whim, and then carried to large pans for evaporation, or led to them through bamboo pipes. Besides these wells there are others, which are bored to the depth of from 1,800 to 2,000 feet. At that distance below the surface petroleum is struck. Immediately on reaching it an inflammable gas escapes with great violence. Work is now stopped, and a wooden cap fastened over the mouth of the pit, perforated by several rows of round holes. In each of them a bamboo pipe is inserted, and through these the gas is led under the evaporation pans. The pipes ramify, and on each end a tapering mouthpiece, terminating in a small aperture, is attached. The gas is then used for evaporating, the brine. The enterprising spirit which induced the Chinese to examine the ground at so great a depth is said to have had its origin in the drying up of a brine pit. The proprietor was in hopes of meeting brine at a greater depth, but found instead the gas. When the country was infested with rebels during the Taiping rebellion, they removed the cap from one of the gas pits and set fire to it. Since that time a long column of fire has risen from that pit, and it is considered nearly impossible to stop the flame. The gas pits and brine pits are owned separately by corporations. The owners are subject to the control of the Government. The Government monopoly is in the hands of the "Taotai," who resides at the place. The salt works of Tsz-lin-tsing yield considerable revenue to the Government, and have besides enriched numerous proprietors, and give occupation to a numerous population. The number of "fire-pits" is twenty-four, and the salt pits are innumerable. Some of them do not enjoy the advantages of gas. The brine is evaporated with grass and wood.

BOOKS RECEIVED.

[In sending books for notice, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review in another part of the Journal.]

Annual Report of the State School of Mines, Golden, Colo., Containing the reports on field work and other investigations for the year 1887. 1. Iron Resources of Gunnison County. By Regis Chauvenet. 2. Notes on Leadville. By Magnus C. Iblseng. 3. Western Assay Methods. By George C. Tilden. 4. The Ore Chutes and Recent Developments of Iron Hill, Leadville, Lake County, Colo. By A. A. Blow, and 5, Colorado Ore Deposits. By Arthur Lake. Pages 231 and Index. Illustrated.

THE METALLURGY OF STEEL.*

By Henry M. Howe.

(*Continued from page* 111.)

Of especial present interest is No. 21 of Table 80, the six-inch steel cast gun lately made by the Pittsburgh Steel Casting Company. The composition and physical properties of many other unforged steel castings are given in Table 9, p. 19.

It is in large part owing to the great advances in preventing blowholes by the use of silicon and manganese that methods of liquid compression have received so little attention of late.

§ 234. DESCENDING MOULD-BOTTOM.—In order to shorten the fall of the metal during teeming, and thus to diminish the quantity of air drawn down by the friction of the falling stream, G. W. Billings places within his vertical prismatic mould a piston moved by a cylinder standing beneath. When teeming begins this piston is raised to near the top of the mould, and is gradually lowered as teeming proceeds, so as to keep the upper surface of the molten metal always near the mould top.[a] As the mould can have little or no taper and as there must therefore be considerable play, one fears that the molten metal may run down past the piston, jam it, and perhaps freeze upon the mechanism beneath: and that the ingot may stick to the mold and refuse to descend with the piston.

§ 235. DEAD-MELTING OR KILLING, *i. e.* holding steel in a molten state before casting, greatly lessens the formation of blowholes. Thus crucible steel which would yield honeycombed ingots if poured as soon as melted, yields solid ones if "killed," *i. e.* simply held molten for say an hour.

The rationale is not certainly known. During killing in the crucible process the metal takes up silicon from the walls of the crucible: its solvent power for gases is thereby increased, and this may be at least one essential feature of killing. According to some killing consists in the gradual escape of gases, according to others in the gradual removal of oxygen: but we would hardly expect that an appreciable quantity of oxygen could coexist for even a few minutes with the large proportion of carbon which most crucible steel contains.

CHAPTER XIII.

STRUCTURE AND RELATED SUBJECTS.

§ 236. IN GENERAL.—The structure of iron may be studied by microscopic examination of polished and of etched surfaces, and through its fracture. The former tells us the true condition of the metal before it is subjected to the strains which cause rupture: while the fracture rather tells us of the planes of weakness in the metal, functions of the structure and of the method of rupture jointly. Each method throws valuable light on the structure.

Passing ever from the simpler to the complex, let us first consider the former. But let it not be thought that because the simpler it is the easier. The difficulties attending the microscopic study of the ultimate structure as revealed by polished sections, due in part to the considerable length of the waves of light when compared with the size of the ultimate crystals of the metal, are so great that the results obtained by one observer only, Sorby, have given us any important insight into the question.

Pushing the etching of polished surfaces a degree further leads to a third method of study, differential solution, or dissolving certain of the components of the metal by appropriate solvents, as in Weyl's method, obtaining the other components as a skeleton which preserves the original structure. By this plan, which promises a rich harvest, Osmond and Werth have already reached valuable results.

After considering the facts reached by these methods, we may in this connection conveniently study segregation (a cause of local variation of structure), as well as the effects of heat treatment, forging, cold-rolling, wire-drawing and punching on the physical properties of the metal as taught by the testing machine.

PART 1ST, MICROSCOPIC STUDY OF POLISHED SECTIONS

§ 237. GENERAL PHENOMENA.—From the microscopic study of polished sections iron appears to be constituted, like granite and similar compound crystalline rocks, of grains of several distinct crystalline minerals, of which seven common ones have already been recognized, through peculiarities of crystalline form and habit, color, lustre, hardness and behavior towards solvents. Their nature, size, shape and orientation, and through these the structure and physical properties of the metal as a whole, seem to depend chiefly:

1 On the ultimate chemical composition of the mass;

2. On the mechanical treatment which it has undergone;

3. On the conditions under which it has been heated and cooled, *i. e.*, its "heat-treatment," which may induce the ultimate components of the mass to regroup themselves in new combinations, thus causing one set of minerals to give place to another.

It is too early to insist that these apparently distinct substances are true minerals, that the general features of their life history,—*e. g.* the constancy of their composition, crystalline form, hardness, density, color, etc.,—are so far like those of the minerals of nature as to make it expedient to class them permanently in the same division of nature's objects. Some distinct class-name suggesting their resemblance to minerals, such as "metarals," may be found desirable. Meanwhile, the known phenomena can be conveniently presented by classing these substances provisionally as minerals, and by provisionally assigning them mineralogical names.

During the initial crystallization of the mass from a molten or semi-molten state some one dominant mineral, dominant through its abundance, though its higher freezing point, through strong crystallizing tendency or what not, seems to determine the form, size and orientation of its own crystallization: it displaces the other components to a certain extent. A second component mineral crystallizes next, and has the second place in determining the structure. As the dominant mineral has already determined the position of the components of this secondary mineral, the crystallization of the latter can do little more than to determine the size, shape and orientation of its own crystals, and even these may have been already determined to a great extent by the space which the dominant mineral has left the second one to form in. And so on with a third and fourth.

To illustrate. Certain meteoric irons consist chiefly of three minerals, a dominant metallic one, a second metallic one, and a phosphide of iron and nickel, schreibersite. The dominant metallic one appears to crystallize first in strongly marked, regular, thin meshes of the Widmanstätten figuring (figure 52). Between these

[a] U. S. Patent, 298,661-2, May 13, 1884. Cf. U. S. Patent, 319,779-80, June 9, 1885, F. Billings and W. R. Hinsdale.

meshes the second mineral crystallizes, while the schreibersite lies between these two sets of crystals, dislodged, residual from the solidification of its more powerful elder brothers.

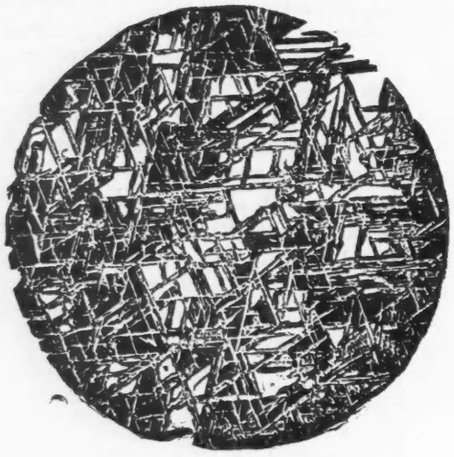


Fig. 52.

Tazewell meteoric iron, Sorby, showing Widmanstätten figuring.

Now after this original crystallization has occurred, with change of temperature, affinities changing, the elements present may re-group themselves forming new minerals, or the old minerals may assume new crystalline shapes. But the position and the general outline of the crystals of the new species may still be determined by the original crystallization, for this has distributed the elements in certain proportions, and, in recrystallizing the crystallizing force can move each molecule but a short distance. Thus in certain meteoric irons, while the original Widmanstätten figuring is readily traced by the layer of schriebersite which still exists, the ultimate structure of the material composing the net-work is in no way related to the shape of the net-work itself, but consists "of a mass of interfering granular crystals,"[a] apparently due to recrystallization. Under other conditions the recrystallizing force may be so great as to efface all pre-existing crystallization. Examples will follow: suffice it here to say that in commercial iron we now find the effects of but a single crystallization, now the superimposed effects of two if not three successive ones. As a mineral is more likely to be the dominant one when abundantly present, so we find that a given mineral,—here forming the bulk, there but a small fraction of the whole,—may here form the nucleus around which the others crystallize, may there lie as a residual layer between the crystals of the other minerals.

§ 238. THE COMPONENTS OF IRON DESCRIBED.—Both for brevity and clearness in describing the chief minerals which have been recognized in iron I venture to substitute mineralogical names for Sorby's cumbrous ones.

(TO BE CONTINUED.)

[a] Sorby, Journ. Iron and Steel Inst., 1887, I., p. 285.

TABLE 81.—MINERALS WHICH COMPOSE IRON.

Number.	Name. Sorby's.	Name. Suggested here.	Probable composition.	Occurrence. An important constituent of	Occurrence. Little or none present in.	Occurrence. Occurs chiefly in.	Color by Direct illumination.	Color by Oblique illumination.	Lustre.	Behavior on heating.	Form, habit, etc.	Hardness.	Relative solubility
1.	Free iron.	Ferrite.	Nearly pure iron.	Malleable iron, chief component. Open grey cast-iron, especially when annealed. Forms about ¾ of pearlyte.	.....	Malleable iron.	.....	.....	.....	Crystallizes, segregates from thin plates to grains.	Crystals, probably interfering cubes or octahedra, homogeneous, malleable! Nearly or quite equiaxed after hot forging: elongated by cold-work: made equiaxed by reheating. Sometimes as shells surrounding and shooting into crystals of pearlyte: also as parallel plates within and dowelling the crystals together. In grey pig probably as stout layer against graphite.	Comparatively soft.	More soluble than cementite
2.	Iron combined with carbon=the intensely hard compound.	Cementite	Iron with cement carbon.	About ¼ of refined white cast-iron, and ¼ of spelgeleisen. About ½ of pearlyte	Open grey cast-iron, soft steels, weld- and ingot-iron.	.....	Intensely brilliant.	Perfectly black.	.....	Changes little, segrating somewhat. Changes to ferrite on losing its carbon.	Usually structure-less, occasionally in flat plates, say, ·0€,001@·02 in. thick. In blister-steel as net-work surrounding and occasionally shooting into crystals of pearlyte.	Intensely hard.	Less soluble than ferrite.
3.	"The pearly constituent or compound" recrystallized	Pearlyte.	A mixture of about ¾ ferrite and ¼ cementite.	Ingot- and weld-steel of all kinds unless hardened. Almost sole component of moderately hard steel (·70 % carbon ?).	Very soft iron.	.....	Dark on brilliant metallic ground in refined white pig.	Bright and pearly on black ground in refined white pig.	.....	Components combine at a high temperature to form hardenite.	Pearly, fine parallel plates, curved and straight, of ferrite, 1-40,000 in. alternated with cementite 1-80,000 in. thick. In soft ingots in irregular groups, often 1-30 in. diam., independent of ingot-structure. Also in ostrich-feather crystals in white pig iron.		
4.	"The pearly constituent or compound" unrecrystallized.	Hardenite	Iron and hardening carbon probably in all proportions up to 2 or possibly 3 %.	In Bessemer and probably all other classes of steel when quenched. Arises from union of all minerals present.	Annealed or slowly cooled steel and cast-iron and in very soft iron under all conditions	.....	.....	.....	.....	Separates (probably below W) into pearlyte and free ferrite or cementite.	Very minute grains, about 1-20,000 in. diam.	Intensely hard.	More soluble than cementite
5.	Ruby and dark crystals.	Sorbite.	Perhaps silicon or nitride of titanium.	.....	Weld iron and good cast-steel.	Cast-iron.	Ruby and deep blue.		.....	.....	Triangles, rhombs, hexagons, complex crosses, less than 1-1000 in. in diameter.		
.	Graphite.		Carbon.	Cast-iron.	Steel, ingot and weld iron.	Cast-iron.	Iron black.		Metallic	Changes but little and slowly.	Comparatively large, somewhat irregular plates, often bent, tapering edges, laminar. In grey Scotch pig, uniformly distributed, ·03@·05 in. broad, ·0005@·0010 in. thick. In No. 3 pig partly in irregular radiating groups.	1 to 2.	Insoluble.
7.	Slag.		.....	Weld iron and steel.	Ingot iron and ingot steel.	.....	Black.		.. ..	.. ..	In hammered blooms is in irregular patches; in bar, plate, etc., iron in fine threads. Very irregularly distributed.		
8.	Undetermined residue.		Probably matrix or residue from formation of substances 1 to 6, and hence of widely varying composition.	Cast-iron.	.....	.....	....		Metallic				
9.	More soluble metallic substance.		.....	Components of meteoric iron.	....	.....	....		... .	.. ..	A rhombic lattice- or net-work, orientation often uniform over a considerable area.	....	More soluble than 10.
10.	Less soluble metallic substance.		.....		.....	....	....		.....	.....	Often crystallized in relation to the orientation of the inclosing net-work of No. 10.	.....	Less soluble than 9.
11.	Schreibersite.		Iron, 55·4@87·2 %. Nickel, 4·2@28·1 %. Phosphorus, 7·3@14·9 %.		....	.....	....		.....	....	Often a thin skin covering the net-work of No. 10.		

PERSONAL.

Dr. J. Magin has returned from Mexico—dissatisfied with what he saw in Mazatlan.

Prof. R. D. Jackson, of Berkeley, Cal., has been appointed assayer at the Nevada State University.

Mr. Minor K. Meiggs, son of the railroad contractor, Henry Meiggs, died in Lima, Peru, recently.

Mr. O. W. Potter, President of the North Chicago Rolling Mill Company, has gone to Europe for recreation.

Dr. E. D. Peters has been appointed general manager of the Canadian Copper Co. of Sudbury, Ontario.

Mr. Robert T. Hill, of Commanche, has been appointed Professor of Geology at the University of Texas.

Mr. William B. Baker, the owner of extensive rolling mills, died at his residence in Winchester, Va., on the 12th inst.

Mr. John B. Farish, of Farish & Farish, mining engineers, of Denver, Colo., has gone to Baker City, Ore., to examine mining property.

Mr. W. Taylor has resigned the superintendency of Lawrence colliery at Mahanoy Plane, Pa., and has been succeeded by Mr. Geo. Burchill.

Mr. St. John Clark has resigned his position with the Passaic Bridge and Rolling Mill Company, N. J., and accepted an engagement in Portland, Ore.

Mr. Arthur Macy, superintendent of the Silver King Mining Company, of Arizona, has tendered his resignation to the company, to take effect in September.

Mr. W. A. Goodyear, Geologist for the California State Mining Bureau, and eight or nine other scientists, are now engaged in the work on various parts of the State.

Mr. James Skelding, manager of the Low Moor furnaces, at Low Moor, Va., died on the 5th inst. Mr. Skelding was well known as one of our most able and skillful furnace managers.

The sudden death is announced of Mr. John Featherstone, of Chicago, at Dresden, Germany, aged fifty-four years. Mr Featherstone was proprietor of one of the largest iron foundries in the Northwest.

Col. James E. Day, formerly a resident of Sharon, Conn., died suddenly at Wilkes-Barre, Pa., on the 15th inst., aged 63 years. For the past twenty years he had been paymaster and secretary of the Laflin Powder Company.

Dr. Persifor Frazer, Secretary of the American Committee of the International Congress of Geologists, will leave for Europe this month. Dr. T. Sterry Hunt, also a member of the American Committee, left in July, and intends to be absent till October.

Capt. William R. Jones, Superintendent of the Edgar Thomson Steel-Works, at Braddock, departed for Europe on the 11th inst. He expects to be gone about three months, and will visit all the principal iron and steel works in England and on the Continent.

Mr. Chas. Newman, of Durango, Colo., manager of the Carbon Lake G. & S. M. Co., Red Mountain, principal owner of the Newman group at Rico, and others elsewhere, is one of the most successful and widely interested mining and business men of the San Juan. Mr. Newman says that Mr. Brunton's article on Aspen Mountain is to him the most valuable on mining problems he has read in many years. He has a similar, almost a parallel, proposition in the Newman, Chestnut, and Stevens groups in Rico, upon the formation of which he has spent much thought and work. Mr. Brunton's clever exposition throws new light on many points that have been, to say the least, little understood, while several of the ideas advanced have already been verified. Mr. Newman is a busy man with his many projects, but he says all of the time he has expended reading the ENGINEERING AND MINING JOURNAL has been well employed. He is very enthusiastic concerning the JOURNAL's value.

Mr. Charles Crocker died at Monterey, Cal., on the 14th inst. Mr. Crocker went to California in 1849, and, after engaging in placer mining, opened a general store in Sacramento. Later he became connected with railroad enterprises and with Leland Stanford, Mark Hopkins and Collis P. Hungington, he furnished means for a survey of a railroad route across the Sierra Nevada Mountains, and on the passage of the Union Pacific Railroad Bill by Congress he was associated with them in constructing the Central Pacific Division, the four supplying the capital beyond the government subsidy. He personally built a large portion of the most difficult sections under contract. He practically entered railroad life in 1862 as general superintendent of the Central Pacific Railroad. In 1871 he was elected president of the Southern Pacific Railroad Company of California, and second vice-president of the Central Pacific, superintending in the former capacity the construction of the divisions in Arizona, New Mexico and Texas. In 1884 he effected a consolidation of the properties of the two companies, having a joint control of 8903 miles of railroad and steamship lines.

SAMUEL NOBLE.

Mr. Samuel Noble, of Anniston, Ala., whose death after a short illness occurred on August 14th, was one of the most distinguished of the pioneers in the industrial development of the South. Born in Pennsylvania, and bred to the manufacture of iron and machinery, he removed with his father shortly before the war to Rome, Ga., where they successfully established and conducted an extensive foundry and machine shop.

With the profits of this business, and with the assistance of Gen. Daniel Tyler, known to fame as the commander of the "Connecticut Brigade," Mr. Noble and his brothers entered upon the great enterprise which now shows its results in the beautiful and busy town of Anniston, Ala., and the industries which surround and support it. It began with the formation of the Woodstock Iron Company and the erection of a charcoal iron furnace in 1873.

The organization of the Anniston Land and Improvement Company followed at a later period; and the great development of the resources of Alabama during the last few years has been nowhere established on surer or wiser foundations than in that community. More than $11,000,000 of capital is represented in the various industries of the district, which employ between 5000 and 6000 workmen. The beautiful Anniston Inn (one of the finest of the new hotels which, at a few places in the South, stand out in striking contrast to the prevailing type), the Noble Institute for Boys, the Noble Institute for Girls, the exquisite gothic stone church and other architectural beauties, the electric light, water-works, and other well-planned municipal improvements, all speak of intelligant energy and judicious philanthropy. And in these and other undertakings, both of private enterprise and of public spirit, Mr. Noble was the moving spirit. As he well said, in an address delivered at Anniston a year ago, "All that has been done has been carefully considered, and for a purpose—not to make a speculative town; not to boom real estate, for that will take care of itself; not to 'unload' on the ignorant and unsuspecting, and pocket other people's money, leaving them with exhausted resources to create an industrial community as best they can. With us it means the creation of new industries and the sustaining of the old, and making all prosperous and profitable alike."

To us, who so recently enjoyed at Anniston, after the Birmingham meeting of the mining engineers, the courteous and cordial hospitality of Mr. Noble and his associates, the news of his death comes as a personal shock and grief. His hearty and sympathetic reception of guests and his unwearied attentions to their pleasure and comfort marked the model host; and if his family and business associates were not less active and graceful in hospitality, it was easy to see that they had caught from him the inner spirit of good-will which shone through every outward expression of it.

INDUSTRIAL NOTES.

The foundry and machine shops of John Ducan, in Fort Howard, Wis., were burned on the 12th inst.

The machinery in Mill No. 2, of the French Steel Springs Works, at Pittsburg, Pa., was destroyed by fire on the 15th inst.

It is announced by cable dispatches that the Siemens Steel-Works at Landore, near Swansea, England, have been suddenly closed.

The American Sheet-Iron Works, at Phillipsburg, N. J., after an idleness of several weeks, resumed operations on the 14th inst.

The Pennsylvania Iron Works at Lancaster, Pa., will close for an indefinite period on the 18th inst., owing to dullness in the iron trade.

The Lawrence Furnace Company, of Ironton, Ohio, propose to build a 30-ton coke furnace in the vicinity of its present idle charcoal furnace at Culbertson, Lawrence County.

Arrangements are making at the Benwood Iron Works, Wheeling, W. Va., to prepare the furnace in the forge department for immediate resumption. This department has been shut down since August 16th, 1887.

The new machinery in the Wheatland Rolling Mill, at Sharon, Pa., was tested on the 13th inst., and worked satisfactorily. It is said that as soon as a few more repairs are made, the mill will start up and manufacture bar iron.

The scale of the Amalgamated Association of Iron and Steel Workers has been signed to-day by the Niedringhaus Rolling Mills, at St. Louis, Mo. The new scale advances the wages of the employés 10 per cent, and will go into effect on the 20th inst.

It is reported that the North American Phonograph Company, of New York, to the organization of which we referred in our issue of July 21st, will establish a branch office in Pittsburg, and that phonographs will be rented at from $25 to $50 per annum.

The large rolling-mill and nail factory of Taggart & Co., at Northumberland, Pa., resumed operations on the 14th inst., and will be placed on double-turn as soon as the full force of employés can be secured. The mill had been idle for sixteen months.

The Belleville Iron and Steel Company, of Illinois, and Pennsylvania Forge Works, of Pittsburg have signed the Amalgamation Association wage scale. It is stated that the only firm still holding out in Pittsburg is Delworth, Porter & Co., Limited.

The Columbia Rolling-Mill will remove its works from New York to Jersey City, N. J., where a new building covering half a block of ground on Grove, Thirteenth and Fourteenth streets has been built for it. The main office will be in New York.

The Jackson Iron Company, it is stated, has definitely decided to remove its furnaces from Fayette to some point where the difficulty of obtaining fuel will not be so great, and that they will probably be located at Negaunee, Mich., where the company's mine is.

The O. T. Luce Manufacturing Company, of Nashville, Tenn., made an assignment on the 12th inst. for the benefit of creditors. The firm has extensive wire-works at West Nashville. The liabilities are placed at over $400,000, with assets about the same. Mark S. Cockrill has been appointed assignee.

The Bellaire Goblet Company, of Findlay, Ohio, began work on the 13th inst. with a 15-pot furnace. A second furnace of similar capacity will be started as soon as workmen can be secured. The Columbia Glass-Works also began for the season with 10 pots. The Dalzell Flint-House, Lippincott Chimney-Works, and Model Flint-Works will start up shortly.

The sale of the Graff, Bennett & Co. property, referred to in our last issue, to James W. Friend, Jos. M. Bailey and James Rickard, trustees, for $25,050 in cash, was confirmed nisi by Judge Ewing at Pittsburg, Pa., on the 14th inst., to become absolute in ten days unless exceptions be filed thereto. The sale is subject to the mortgages.

The Joliet Steel Company's new rod mill, at Joliet, Ill., is now in successful operation. A material point of difference in operating this mill as compared with others in existence is that all the trains of rolls are driven from one massive engine, connected with large pulleys and very wide leather belts. It is too soon to say what the capacity of the mill will be, but it is understood that it will be no less than the best rate of production of any modern mill of the kind.

The entire property of the Sheffield Land, Iron, and Coal Company, Sheffield, Ala., has been sold, it is reported, for $1,750,000 or $2,000,000. The purchasers are mainly Eastern capitalists. Of the price paid $750,000 or $1,000,000 is to be in cash. The sale must be ratified by the stockholders. In addition to the sum to be paid for the property the purchasers agree to invest about $1,000,000 in new enterprises.

Judge Colt, of United States Court at Boston, on the 14th inst., filed his decision in the suit brought by the Thomson-Houston Electric Company against the American Electric Manufacturing Company, of New York, which is a victory for the Thomson-Houston Company, and grants an injunction against the American Company, prohibiting the manufacture by it of its present system of electric lighting.

The work of dismantling and removing the boilers, engine, machinery and iron work of the Monocacy Furnace, at Monocacy, Pa., was commenced on the 13th inst. The furnace was built by a company 33 years ago, and has been leased and operated by several different firms and companies, but never very successfully. It has been owned for some time by the Philadelphia & Reading Coal and Iron Company, as has also the furnace at Bechtelsville.

The assignee of the Cartwright Iron Company, of Steubenville, Ohio, which failed last June, has filed his inventory, appraisement and schedule of liabilities. The assets are $22,236.38, and the liabilities are $58,232.39. The Miners and Mechanics' bank of Steubenville has a mortgage of $9000 on the premises for purchase money, and there is due the employés $3,411.78. The stock on hand, it is said, will sell for very little more than will pay the costs and the lien of employés, and it is not thought that the plant will not bring more than enough to satisfy the mortgage.

The report presented at the recent annual meeting of the North Chicago Rolling Mill Company, held at Chicago, shows that the year's business ending June 30th, 1888, was as follows: Gross earnings of the mills at North and South Chicago and Milwaukee, $13,549,486, against $14,297,382 in the year preceding; total product in gross tons, 1,000,139; raw material received, gross tons, 1,302,235; pig metal produce, gross tons, 347,795; steel ingots, gross tons, 313,016; steel rails, gross tons, 263,722; steel beams, gross tons, 630; bar iron, fish-plates, nails, and muck bar, gross tons, 74,923. The company declares a 3 per cent dividend for the half year.

The plant of the North Chicago Rolling Mill Company at South Chicago is to be shut down for a time. The blast-furnaces will, however, continue in active operation. Manager E. C. Potter states that the suspension of work is but a temporary one and affects but a part of the plant. The railroads are withholding their orders on account of the present state of politics. As the deliveries have been made, it became necessary to shut down for the time being. The company has some August deliveries to make and it is quite probable that operations will be resumed the latter part of this month. Two more blast-furnaces have been blown in making three in operation and leaving one idle. These furnaces were started up to make Bessemer pig-iron for another company.

CONTRACTING NOTES.

Machinery and supplies wanted. See page xiv.

Contracts open will be found on page xix. New contracts this week: No. 1000, Water Works Construction; No. 1001, Sewers; No. 1002, Sinking Tubular Wells; No. 1003, Railroad Work; No. 1004, Pumping Engine; No. 1005, Pump; No. 1006, Coil

Boilers for U. S. Navy; Nos. 1007 and 1008, Artesian Wells; No. 1009, Water Works; No. 1010, Iron Superstructure and Masonry in Piers and Abutments for a Bridge; No. 1011, Six Iron Bridges; No. 1012, Electric Light.

The following contracts have been secured by Pittsburg firms for the U. S. armored ship "Texas": Park Bros. & Co., 920 tons steel plates, $66,700: Carnegie, Phipps & Co., 503 tons steel shapes, $43,266, and 100 tons of rivets, $8601.

A contract has been awarded by the Seattle, Lake Shore & Eastern Railroad to the Moss Bay Iron and Steel Company for rails, the delivery to commence next July. The works of this company are in process of construction on Lake Washington, near Seattle, W. T.

GENERAL MINING NEWS.

Shipments of iron ore from the mines of the districts mentioned below for the season up to and including August 8th, as reported by the Marquette *Mining Journal*, were as follows:

		Tons. 1888.	Tons. 1887.
Marquette,	Marquette District	305,042	469,639
St. Ignace,	" "	63,457	50,200
Escanaba,	" "	419,567	504,575
"	Menominee District	495,986	652,282
"	Gogebic District	108,589	....
Ashland.	" "	483,761	603,599
Two Harbors,	Vermillion District	155,495	191,869
Total tons		2,031,897	2,472,194

The Coal Miners and Mine Laborers' National Trades Assembly No. 133 concluded its session at Cleveland, O., on the 14th inst. A committe report was made requesting that the General Executive Board reverse its action in declaring that coke-workers are not miners or mine laborers, and are therefore not classified in the membership of National Trades Assembly No. 135. A resolution to remove the headquarters of the Secretary-Treasurer to Pittsburg was not adopted. Wilkes-Barre, Pa., was decided upon as the next place of meeting, and the date of the gathering the third Wednesday in September, 1889.

ALABAMA.

The Bessemer Iron and Steel Company, to which we referred in our issue of August 4th, has bought large bodies of ore lands in Murfree's Valley and coal lands in Cahaba Valley, including the Henry Ellen coal mines.

ALASKA.

Our correspondent sends us the following:

Mining here is getting to look more like a legitimate business daily. Those desiring an artificial boom are at a discount. The Takon Union group, three miles east of Juneau, was sold to a company in Seattle. The purchasers paid cash. Are now finishing a wagon road to the mines. A ten-stamp mill has been ordered. The force of mechanics now putting up the addition at the Treadwell mill will also put up the mill of this company. Lumber and timbers are being cut at the A. M. & M. Company's saw mill. The whole affair has the appearance of solidity and honesty. The Bear's Nest group has also been sold, according to information of a gentleman interested in the sale. (Details given in ENGINEERING AND MINING JOURNAL, August 4th.) Machinery, consisting of power drills, air compressor and boiler, is about in place for driving a tunnel for about 1000 feet from beach to ledge. Work continues night and day at the Mexican tunnel, now in between 350 and 400 feet. The additional 120 stamps at the Treadwell group are receiving the finishing touches, and will be in operation in a few days more.

Berners Bay and also Glacier Bay districts are receiving more attention, which they well deserve.

Nowell reports to the local press here that he has 1000 tons of ore on the dump at his Silver Bow Basin property, some of it assaying into thousands. It is to be hoped his assertions this time have a better foundation than those he made concerning the Alaska Union ores.

The placer miners at Silver Bow Basin are reported to do extremely well.

ARIZONA.

MARICOPA COUNTY.

It is said that a company is being organized to erect sampling works and a ten-stamp mill at Phœnix.

PIMA COUNTY—QUIJOTOA DISTRICT.

CROCKER MINING COMPANY.—In this mine the south drift is in a strong vein, showing a clear-cut hanging wall, with good ore in bunches.

PEERLESS MINING COMPANY.—Upraise No. 1 from the 200-level has connected with the 100-foot level, securing ample ventilation for further prospecting and stoping. The raise shows a continuous run of high-grade ore between the levels. West cross-cut No. 2 on the 300-level shows some change, which probably indicates a close proximity to the ore-vein. The formation is harder, and is of a mixed quartzite and porphyry, with considerable iron stains.

WELDON MINING COMPANY.—The stopes in this mine at Quijotoa continue to yield unusually high-grade ore, carrying a large percentage of gold.

CALIFORNIA.

BUTTE COUNTY.

BIG BEND TUNNEL AND MINING COMPANY—The Sprague electric plant at the Big Bend of the Feather River, illustrated in our issue of May 12th, 1888, is said to be working the pumps and hoists on the 20-mile circuit very successfully, and the grave is said to be turning out very rich, so that all concerned are happy.

MONO COUNTY.

STANDARD CONSOLIDATED MINING COMPANY.—The company at Bodie has again passed its dividend for the current month. The Standard-Bulwer mill has shut down, and the production of bullion has ceased.

NEVADA COUNTY.

NORTH BANNER MINING COMPANY.—It has been decided to remove the present five-stamp mill to just below the mouth of the lower tunnel and to add five stamps, making ten in all. An incline from surface to the upper tunnel has been opened and men are at work pushing a "raise" from the lower to the upper tunnel. When this work is completed, in about three weeks, there will be an incline 500 feet in depth. Down this water-pipe will be laid and in the lower tunnel a Pelton wheel and other machinery for pumping and hoisting will be placed. The property is situated at Nevada City

COLORADO.

One hundred and ten thousand acres of coal land in Los Animas and Huerfano counties were sold to a Pennsylvania syndicate on the 10th inst., it is said, for $1,500,000. The land was the property of nine hundred claimants.

The Commercial Grain and Stock Exchange has been opened at Denver. The company is incorporated under the laws of the State of Illinois and operates under letters patent. For the benefit of those who do not thoroughly appreciate or underderstand the workings of the company the following explanation is given. Owing to the imperfect telegraph service between Denver and the Eastern stock boards, and in order that parties who so desire may purchase stocks, they have put in the automatic market register to determine prices. This register has been successfully operated for the past four or five years in various large Eastern cities and has proved universally popular and a satisfactory method of determing values. This clock, by an ingenious method, drops cards with quotations upon them, which gives the market price as it were. These cards before being placed in the machine are well shuffled, making it utterly impossible to manipulate them in any form. Furthermore the company guarantees to deliver to the purchaser the stock itself should he so desire, or to receive same when tendered. Quotations are given on commercial, common, first and second and on New York and Chicago common and preferred. Deals can be made in from five shares and upwards, and margins from $1 up. Commissions are ⅛ per cent, and the profits to purchasers, as it will be seen, are unlimited. Daily sessions are held from 10 A. M. to 4 P. M.

MONTROSE PLACER MINING COMPANY.—This company has been organized under the laws of Illinois with a capital stock of $5,000,000. The object is to acquire by location, purchase, or lease mining claims, mill-sites, and water rights and to engage in business of mining and sluicing, the reduction of ores, and the purchase or sale of the products of mines and mills in any portion of Colorado. The directors are A. T. Homer, James E. Blythe, Joseph Herrin, William Flannelly, George F. Neale, Oscar G. Murray and W. H. Halleck.

ARAPAHOE COUNTY.

HOLDEN SMELTING COMPANY.—This company has now five stacks in blast, the sixth having blown out for repairs. A new copper smelter, 120×36, is now under construction. Another important addition to the plant, soon to be completed, is an extension of the dust chamber for a distance of 205 feet and return, giving a total added length of 410 feet. Mr. M. B. Iles, the metallurgist, is not partial to the great furnaces measuring 120×48 inside, and it is probable that future construction will drop that size. The amount of ore treated daily is 270 tons.

OMAHA & GRANT SMELTING COMPANY.—Ten furnaces are working at these works treating 380 tons daily. The largest furnace used measures 102×36 inside.

CHAFFEE COUNTY.

SEDALIA.—This is the only copper mine in the State worked exclusively for copper says the Denver *Mining Industry*. It is situated about four miles above Salida, and is being worked by the Brooks Brothers, under lease. The lessees have just completed a wire tramway leading from the mine to the road, a distance of about 1200 feet, and it is said they can hereafter ship 100 tons daily. The mine is opened to the depth of about 400 feet, and developed so that it can maintain a daily production of 100 tons for some months. The width of the vein is from 40 to 50 feet, and the pay streak from a few inches to six feet. The average of the ore is about 30 per cent copper. It is mostly a carbonate, mixed with a little oxide. Several other copper properties are being rapidly developed in that region of country.

CLEAR CREEK COUNTY.

ASTOR ALLIANCE MINES, LIMITED.—The agreement with the proposed new company under the scheme of reconstruction, shows that the capital of the company is to be reduced to £30,000, divided into 240,000 shares of 2s. 6d. each. The property and assets are to be transferred to the new company in consideration of its undertaking to pay all the debts and liabilities of the old company and the costs attending the winding up; every shareholder is entitled to have allotted to him two shares for each share held by him in the old company. The liabilities of the old company will not exceed £10,000. The property is said to be worth at least £30,000. The company was organized in London in 1886. See ENGINEERING AND MINING JONRNAL, January 1st, 1887.

BERTHA MINING COMPANY.—What is supposed to be the New Southwest vein has been cut in the tunnel, the objective point in the breast of which there is a vein of mineralized quartz eighteen inches in thickness. Good ore is being taken from the surface of the Wild Goose lode, which belongs to this same company.

THREE QUEENS MINING AND TUNNELLING COMPANY.—This company is the owner of the following group of mines: Gold Queen, Silver Queen, Mountain, Rogers, Great Eastern and Gage County, situated on the Fall River and Spring Gulch slopes of Deer Mountain. A cross-cut tunnel is now under way from the Fall River slope for the purpose of intersecting with the properties above enumerated.

EL PASO COUNTY.

WESTERN COAL AND MINING COMPANY.—This company, which owns a quantity of coal land about eight mile east of Colorado Springs, has decided to erect a plant on its property which will cost between $25,000 and $30,000. This company is now employing between thirty and forty men, and during the winter the working force will be increased to about 200. The Rock Island will run a branch road to the banks, which will be fully developed.

LAKE COUNTY.

AGASSIZ CONSOLIDATED MINING COMPANY.—The company has contracted with Messrs. Hendrie & Bolthoff, of Denver, for the immediate erection of a plant of concentrating works, which will have a guaranteed capacity of 200 tons per day. The work is expected to be completed within four months. The works will be built in duplicate parts, so that repairs will necessitate no stoppage of the work. Its operation will be as nearly automatical as possible. It will contain twenty jigs, eight of which—four compartments each—will be located on the upper floor, and the tailings from which will be carried to a third set of rolls for a second treatment. It will have two sets of screens of punched steel, and the remainder will be water-sizers. An 18-foot buddle will be provided for slimes. The concentrates will be dropped into ore bins in the basement, while the tailings will be carefully preserved—this last in view of their being of value in the future, should the electro-chlorination, or some other process, succeed in treating them profitably. The plant will be supplied with water—650 to 750 gallons per minute. The electric light plant will furnish 100 lights. The plant will be located about 250 feet from the shaft-house and connected by a tramway. Its approximate cost will be $50,000.

BREECE MINING COMPANY.—In the Harlem Court, New York, on the 17th inst., Justice Welde held Jacob E. Sutterlin, Secretary of the Breece Mining Company, in $10,000 bail for trial on the charge of forging a certificate of deposit of the United States Trust Company belonging to the Breece Mining Company, and thus securing $1500. Charles Roger, president of the mining company, is complainant in the case. In our issue of February 4th, we referred to the arrest of Mr. Sutterlin.

CHRYSOLITE MINING COMPANY.—About 700 tons of iron are being shipped monthly.

ENTERPRISE MINING COMPANY.—The Forepaugh mine of this company has commenced shipping ore again, the ore-body having being struck by the cross-cut of the lower level which was driven to cut it on its dip. The ore-body as cut here is about the same as it was in the workings of the upper level, and of about the same grade. But little ore will be shipped, however, until further prospecting and development work has been done from the second level.

IRON SILVER MINING COMPANY.—W. H. Stevens, of Detroit, the managing director of this company, is now at Leadville. All the apparatus, supplies and machinery for the proposed ore testing works are now in Denver at the works of the Omaha & Grant Smelting and Refining Company, and they are to be erected immediately. Then the process of the chlorination of zinc ores of Mr. H. B. Slater, referred to in our issue of June 2d, is to be given a thorough trial on ores of the Iron Silver Company.

LA PLATA MINING AND SMELTING COMPANY.—About 300 tons of ore are now being shipped per month, most of which is produced by lessees. The company is producing a small amount of ore and is doing considerable prospecting work from the Rickard shaft. Some drifts are being driven in the limestone, 600 feet from the surface, and one drift driven into the Guesen claim, prospecting the contact. The latter is in good contact matter, but as yet has found no ore.

LITTLE PITTSBURG MINING COMPANY.—On the 6th inst. the saw mill at this mine was entirely destroyed by fire, which, it is believed, was of an incendiary origin. The mill was fitted up with valuable machinery, which was completely ruined.

MANSFIELD GROUP MINING COMPANY.—The company has decided to unwater the Capen shaft and continue the prospecting from the point at which it was stopped. A powerful plant of machinery is to be placed at the shaft for this purpose.

MORNING STAR MINING COMPANY.—Some 800 tons of lead ore from the McHarg shaft were shipped on the 11th inst. But little ore has been shipped from this shaft since the decline in the value of lead, and the present shipments represent the accumulation of some weeks. This lot of ore is to go to the new Philadelphia Smelting and Refining Company, of Pueblo, which is now entering the market for ore.

SILVER CORD COMBINATION MINING COMPANY.—From 15 to 20 tons of ore are shipped daily. The ore is carbonate, and is coming mainly from the old stopes of the upper workings. A large amount of prospecting work is being done in the mine, and the long incline is being driven steadily ahead.

TIP TOP.—This mine which has been worked for some months under the tribute system, has been shut down. The object is to effect a re-arrangement in the manner of working the mine, as the output became too large for the present system. The mine produced $20,000 in the month of July.

PITKIN COUNTY.

The ore shipments from Aspen for the week ended the 10th inst. amounted to 2048 tons, of which Denver got 882 tons; Pueblo, 475 tons; Leadville, 393 tons; Kansas City, 247 tons, and Salt Lake, 51 tons.

DAKOTA.

The manufacture of fire-brick has been commenced in the Black Hills by Messrs. Ratcliff and Lampert, of Rapid City. Extensive experiments made with the clays show that they are of a satisfactory character and it is thought that the venture will be successful.

LAWRENCE COUNTY.

DEADWOOD SMELTING COMPANY.—At a meeting held last week a call was issued for the second installment of 25 per cent of subscriptions, payable at once. The money must be in New York by the first of September to insure shipment of machinery. The purchase of certain machinery, consisting of boilers, engine, tubs, settlers and rock crusher, of the Terry's Peak Company was approved.

IDAHO.

LEMHI COUNTY.

VIOLA COMPANY, LIMITED.—The third level, which was driven ahead to intersect the ore-body in the Westmoreland ground, has cut it. Development work will be pushed in this part of the property.

KANSAS.

The Kansas City Mining Exchange has elected the following officers:

President, Howard M. Holden; Vice-President, Alexander MaJors; Treasurer, W. J. Anderson; Secretary, F. R. Palmer.

Directors—H. M. Holden, L. E. Irwin, W. J. Anderson, J. K. Selleck, A. R. French, A. MaJors, Thomas H. Swope, J. M. Ford, J. M. Warder, B. F. Jones, H. W. Gilbert, R. J. Prail, C. F. Madison.

And appointed the following standing committees:

Executive Committee—L. E. Irwing, J. K. Selleck, H. W. Gilbert.

On Membership.—A. R. French, J. M. Ford.

On Public Enterprise.—Geo. W. Warder, A. A. Whipple, G. W. Bibbens.

On Mining Properties and Stocks—J. K. Selleck, J. R. Holibaugh, F. S. Hammond.

Committee of Appeals.—C. F. Madison, H. W. Gilbert, J. C. Selby.

The by-laws show that if a company wishes to list property it must first make a formal application to the committee on mining properties and stocks, and from the nature of the facts contained in the application the committee thinks it the kind of a property wanted it will instruct the expert employed by the exchange to examine the property and make a full report of its value, conditions, etc. The committee will then examine this report, and if it finds the property of sufficient merit to justify listing it will place the report before the board of directors, with its recommendation, and the board may either receive or reject it.

The mining company is required to furnish an abstract of title and a monthly report, which, together with the report of the expert, will be kept constantly displayed on the walls of the exchange. The board of directors reserve the right to send the expert to examine any listed property as often as they may deem necessary.

MAINE.

HANCOCK COUNTY.

UNITED COPPER MINING AND SMELTING COMPANY.—This company, which is to operate the Douglass and two other Bluehill mines, is preparing for extensive work.

MICHIGAN.

An occasional correspondent sends us the following very interesting letter from Marquette under date of the 14th inst.: I send you herewith a few items concerning the different mines of this district. I will begin at Republic and travel over the ground eastward to Marquette.

Republic.—There is nothing to be found here that would interest the general observer more than the operations of the so-called Republic Production Company. The Republic mine and its history are so familiar to all as to rob it of its interest. Its wonderful output, character of ores and method of working have been for such a long time the standards of this district, that it is acknowledged to be the ideal mine of the Marquette range. Great care was taken in the sorting of the ore, as the enormous rock-piles silently testify.

Houghton parties, profiting by the experience gained in washing tailings from the copper stamp mills, and believing these iron waste-heaps would yield a fair return for some labor in dressing, obtained an option upon them, formed a reduction company, transplanted an old copper dressing mill, frame and machinery from Houghton to Republic, and made a failure of the scheme. Their surmise that the piles were valuable was correct, but their method of dressing faulty. It consisted in crushing the waste in a Blake crusher and running the product over jigs. This resulted in a fine "heading" that under heat had no coherence, and was useless for fettling purposes. The cost items also were high, as jasper entered largely into the composition of the ore.

After lying idle for something over a year, some bright, practical level-headed business men of this town bought out the Houghton parties, mill, lease and all. Totally ignoring the machinery on hand in the mill, they put up some tram-roads from the stock pile to the cover of the mill, and began work by simple hand-sorting and very little cobbing, with the flattering return of about 5000 tons monthly of a grade of ore that has found a ready sale, even in this year of low prices and high qualifications for ore. I understand they have made a sale of 25,000 tons for this season's delivery. They employ only laborers in the sorting, as the superintendent, Mr. Harry Blackwell, told me they made better sorters than Republic miners. The latter hesitate in their decision whether a piece should go into the ore cars or waste heap, thus losing time, while the more ignorant man, having possibly less mind to make up, decides quickly and as a rule correctly. About 150 men are on the pay-roll. At Champion, of late, the ore shipments have increased, and if they could sell their No. 2 ore to advantage, would about equal last year's output.

About two miles west of the line connecting Republic and Champion the St Clair Brothers have recently renewed operations on their find of hard black ore, of which, I am informed, they have a seam of 10 feet, with about 10,000 tons on the stock pile. The Duluth, South Shore & Atlantic Railway are putting a spur into this mine, and this ore will doubtless be moved before snow flies.

At Humboldt the Humboldt mine has begun shipping from its stock pile and to sink their main shaft; to date, this year they have done virtually nothing, but are now waking up and shaking some of their dust and ore off.

The Samson, formerly the Argyle, has finished pumping the old mine and is about to put down a skidroad to the bottom to exploit for ore. A small shaft, 30 feet deep, shows a seam of black magnetic ore 12 feet wide, which is yielding 20 to 25 tons daily. For the first time in the history of this fluctuating property power drills are working, and should the owners find ore-bodies as large as their predecessors there is a fair probability of the mine showing a balance upon the right side of the books.

Two diamond drills will soon be at work, one now having its stand-pipe some 60 feet in sand. This is undoubtedly a valuable tract of land entirely unexplored here, and which the late C. A. Wright, State Geologist, predicted held valuable deposits of ore.

The Saginaw mine between Humboldt and Ishpeming is being prospected by diamond drill by Detroit parties under the direction of Lee Peck.

Six miles north of Saginaw mine, the old Dexter is about finding its feet again, as the diamond drill work of last winter proved the existence of a deposit some 30 feet wide of hard hematite of good bessemer quality. They are raising considerable ore now, and the present activity of operations presents a marked contrast to the "innocuous desuetude" into which the mine had fallen at the time of my former visit in March last, when about everything was frozen up, except a few leaky steam pipes.

THE GOLD FIELDS.

I hesitate before attempting to touch, be it ever so lightly, upon Ishpeming's dearest, because latest, offspring. Shortly after the strike by the Lake Superior Company, the Chicago *Times*, with commendable enterprise, sent a society reporter to interview Dame Nature. The well known diffidence of a Chicago reporter, however, failed to support him at the most critical time, for, having journeyed all the way to Ishpeming, when shown the door at which to knock, his knees weakened; *he wouldn't go down the shaft!*

However, as the newspaper world doesn't control the mine, it is working to-day.

There was considerable rich ore found in sinking this shaft, and it doesn't take an expert to know that plenty of that kind of ore will pay. Personally, my experience with "sugar quartz" has led me into the belief that it is apt to run very irregularly in the precious metals, either exceedingly high or an almost entire absence of gold. But I have seen other quartz than that in the Lake Superior Mining Company's office that I unhesitatingly pronounce of a stable character, and the finding of which would tend to prove the permanency and ultimate value of the mine rather than the abormally rich quartz. It was compact, "healthy," live and dark-colored, very little iron pyrite showing, but still enough to show mineralization—an ore to count on to yield $10 to $15 a ton, and to have for a series of years, rather than the will-o'-the-wisp "specimen" rock that has marked so many gold enterprises. These plums should be gathered as they come, though if the ground through which the search be prosecuted be barren, it will prove a paying investment to sell those plums "sour."

Of the Ropes mine, we hear little save that the stamps are dropping (I wish I could say merrily, but candor forbids) regularly and turning out between $4000 and $5000 monthly. I understand that Detroit parties have been nibbling at the hook (the bait being $2.75 per share), but to date have heard nothing definite. If one could know the value of the ore as it goes to the mill, the entire question of the value of this property could be closely arrived at, for the mine *certainly* can be put in better shape than it now is, and *possibly* better mill work could be done. It strikes me that the output of the mill is not comparable to that of some of our Western ones. The ore is *not* hard to crush, 40 mesh screen is not too large to use, yet an average of 70 to 75 tons daily for 45 stamps would indicate that something is lacking; 100 tons would not be an overestimate of the mill's capacity, and I incline to the belief that the one corkscrew shaft, with, say a three quarters of a ton bucket, is the colored gentleman in the fence. The facilities for raising ore are not comparable to those for milling it, and possibly by the introduction of new capital the dearest wish of every Ishpemingite, the payment of a dividend from this mine, will be realized.

The iron mines are all pursuing the even tenor of their way and shipping large quantities of ore. The Barnum mine recently shut down on the night shift, thus letting out some 90 men. Of the find near Morgan, which is currently reported to be 35 feet or so of soft hematite ore, until I know something more definite, more tangible, more trustworthy than the drill core from a diamond drill, I shall allow the reports to come and go as they will.

Lastly, *Marquette* itself has not been devoid of mining excitement, and, for the nonce, its interest in green lawns and well kept streets has given way to green stains and deep shafts. About three miles south of that town a seam of copper glance was found in novaculite schists, having quartzite for a foot and hanging wall. Hand specimens, with accompanying certificates of assay, were galore. "Better than the Calumet!" was not infrequently heard. "Think of it, 40! 50!! 60!!! per cent pure copper." Such, indeed, were the assays; but when the size of a working drift is sampled, if it will yield 8 per cent of metallic copper there is something in it. The ore is remarkably pure, being little else than copper and sulphur, with a small percentage of iron; no phosphorus, zinc, arsenic or antimony, bismuth or lead.

I understand two barrels of the ore have been shipped for trial to the Chicago Copper Refining Company, at Blue Island, Ill. We will await the result with much interest. The shaft is down about 30 feet, with a concentration of ore-seams near the hanging wall. I look to see the quartzite carry considerable ore, and if this becomes a fact, there is more than an even chance for a new industry to spring up in this vicinity.

And, by the way, Marquette wants something to stir it up, waken it from the lethargy into which it is slowly, but none the less surely, sinking. Its ore shipping business has for the past four years been growing less and less. Escanaba has taken the lion's share, and this because of the difficulties met with in passing through the Sault Ste. Marie Canal locks; time is lost, and that to a vessel is money. A vessel arriving at night at the locks must await dawn before it is allowed to pass through. Thus vessels going to lower lake ports via the "Sault" must go from 300 to 500 tons lighter than their carrying capacity. All this works to Marquette's injury. Where could a small portion of our surplus funds of the Treasury be better applied than in improving one of the most important points of the great lakes. The tonnage and traffic of these lakes is astonishing to those who have given the matter no consideration.

Hastily I have gone over this wonderful field and probably given you some news (?) that was old to you before you wrote me. However, take this letter at any rate, use what you care to of it, and should the sample prove satisfactory, drum me up in three months time from now; may be I'll be able to give you a batch of fresher news—at any rate, it won't be older than three months.

COPPER MINES.

ATLANTIC MINING COMPANY.—Although very little encouragement in the way of a find has been encountered by the work so far carried on at Sec. 16, prospecting is still under way, says the Houghton *Mining Gazette*. Already five pits have been sunk to a depth of 30 feet or over, and the surface skinned for about half a mile, but nothing of value has as yet been discovered. Two amygdaloid belts were found about 30 feet wide, but carrying no mineral. Work is now being carried forward on a branch, full of vein matter and copper. This branch is about six inches wide. At the 18th level, south of No. 3 shaft, very good rock is being mined.

CALUMET & HECLA MINING COMPANY.—The annual meeting of this company was held in Boston on the 15th inst. There were 72,722 shares represented, and President Agassiz was in the chair. The president made an encouraging statement of the condition of the old property, and its relations to the new million-dollar acquisition. The latter, he said, though a portion of it had promised to be barren, had, upon sinking shafts, proved to be quite productive below the fifth level, and then it was a continuation of the old vein. In regard to the fire of a year ago, he said that but little of the timber—perhaps two hundred cords—was burned, but the amount of gas generated was enormous. The bulk of the timber, though charred, was not injured for the uses of the mine. In regard to supplanting masonry for timber in the shafts, Mr. Agassiz preferred the timber backed by refuse rock. He announced that the entire output of the mine was being taken by a syndicate at 13 cents and a half of the profit above selling expenses, and that the copper in hand was estimated in the annual report at 14 cents.

The following-named gentlemen were elected directors unanimously: Alexander Agassiz, of Cambridge; Quincy A. Shaw, George Higginson and H. H. Hunnewell, of Boston; James N. Wright, of Michigan. According to the official report of the stockholders of this company there are in all 2410 shareholders; eighty-one persons hold only 1 share each. The president of the company holds 1305 shares. Mr. J. N. Wright, the local superintendent, holds 800 shares belonging to himself, 3750 shares as agent and 266 shares in trust as agent for the C. & H. Employés' Aid Fund. Among the other large shareholders are Quincy A. Shaw, of Boston, who holds 6110 shares; R. S. Oliver, trustee, 5875 shares; H. H. Hunnewell, 2054 shares, A. S. Wheeler, 1200 shares; J. H. White, 1000 shares; G. Higginson, 1725 shares; H. L. Frue, 1000 shares; C. P. Curtis, 1310 shares; J. W. Clark & Co., of Boston, 900 shares. The total number of shares held by upper peninsula persons does not cut a very great figure, very few of them, exclusive of those given above, holding more than a hundred shares. Peter Sauer, Red Jacket, holds 152 shares. Some of the most conservative trust and insurance

companies in the United States are holding large blocks of this stock as an investment and security. The company has invested in real estate $5,044,755.18. Its unsecured floating debt is $549,772.35. Its personal estate is $3,670,324.17.

According to the Red Jacket *News* the twenty-six level in this mine is now being cleaned up preparatory to stoping. There are seven drill machinces at work at the Hecla end now, and one at the Calumet, in addition to which there are five machines at work raising Hecla No. 6 shaft.

FRANKLIN MINING COMPANY —A letter from Captain Vivian, dated August 12th, says: "The diamond drill hole at the twenty-eighth level showed nothing of value. We shall start another hole at this level tomorrow. The cross-cut at the twenty-ninth level will reach the east lode on or about the 16th inst. We expected to have reached the lode at this point ere this, but owing to the ground being very hard and not very good for breaking, we have not got along as fast as we do generally. The east lode at the thirtieth level is still affording a large amount of good stamp-rock and large and handsome barrel copper. All other points of the mine are showing about the same as they have for a long time. The largest friction wheel at No. 2 hoisting drum broke last evening. We expect to have a new one in and ready for hoisting on the 14th."

PENINSULA.—The work of unwatering this mine is completed. Drills will be started and the work of sinking begun at once.

IRON MINES.

In the suit over the title to the Gingrass-Forty property, referred to in our issue of July 28th, Judge Grant has directed that the Michigan Gold Company, of Cleveland, gets possession of the Michigan gold mine, but it will be appealed immediately by George Grummet, the contesting claimant, and carried to the Supreme Court. This will delay all operations for a month or so longer.

AURORA.—The miners and surface-men at this mine have struck for higher wages. The wages were reduced not long ago, when business was quiet, and now that the price of ore has advanced the men claim that their wages should be put back to the former figure. The wages paid at present are $1.35 for surface-men and trammers, and $1.80 for miners. The men demand $1.50 and $2.00 respectively. The demand of the strikers will probably be granted.

NORRIE.—The total lake shipments of this mine amounts so far for this season to 167,759 tons.

PITTSBURG & SUPERIOR IRON COMPANY.—This company, which has done considerable exploratory work with a diamond drill near Morgan, where it owns about 2000 acres of land, has encountered ore at a depth of 140 feet, and from last account the drill had goue a distance of 45 feet. The find is of great importance, as tending to establish that the East Negaunee range continues eastward, and that producing mines will before long be developed in close proximity to Marquette.

REPUBLIC IRON COMPANY.—The North Republic mine has commenced shipping ore quite extensively.

MONTANA.

JEFFERSON COUNTY.

CATARACT MINING AND SMELTING COMPANY.—The concentrator now being erected by this company is nearing completion, and it is expected that in thirty days it will be in running order. The concentrator is being erected for working the ore of the Evening Star group of mines, located in the Cataract District.

NEVADA.

CONSOLIDATED ESMERALDA MINING COMPANY.—Sinking the main shaft was to start on the 15th inst. Everything at the mill is working well. The ore is being worked with great care, and they are not running through quite as much daily as the batteries will crush. The average so far is about 22 tons. It is stated that there is nothing rebellious in the ore, and the quicksilver and amalgam are perfectly clean. Fifteen tons per day are being shipped from the mine, and the balance is being drawn from reserve at the mill.

ESMERALDA COUNTY.

PAMLICO.—We are informed that this gold mine, situated in Hawthorne mining district, has been in operation since November 1st, 1887. During which time there was shipped gold bullion amounting to $49,291.96 from 93 tons of ore; from this amount $29,040 has been paid in dividends up to July 1st, besides carrying $4,500 surplus. Since July 1st there was extracted ore estimated to be worth $15,000. The mine is opened 200 feet in depth, and will soon have a tunnel in that will prove it at 400 feet. The vein averages about 12 inches wide, and is quite regular through all the work, the ore occuring in chutes in the vein. The mine is owned by Messrs. Livingston & Bliss, Forbes & Toby and Knapp & Laws, of Hawthorne, and is under the management of S. A. Knapp, of the latter firm.

EUREKA COUNTY.

EUREKA CONSOLIDATED MINING COMPANY.—It is reported that the United States Attorney-General has been requested by his superiors in office to institute civil suit against this company, of Nevada, to recover $3,670,741. This sum, it is alleged, represents the value of charcoal and cord wood manufactured from cedar, pine and mahogany timber unlawfully cut from public mineral lands in Nevada.

LINCOLN COUNTY.

Messrs. Roe Brothers, who erected a small copper furnace at Bristol some time ago, mentioned in our issue of July 7th, have so far shipped 13 tons of copper. A furnace with a capacity of 10 tons per day is now building. It appears that the experimental run of the furnace was made at an actual net profit to all concerned.

STOREY COUNTY—COMSTOCK LODE.

We condense the following from the Virginia City *Chronicle:*

The following statement of the ore and bullion product of the Comstock lode mines for the quarter ending June 30th, is obtained from the official report of Superintendents now on file in the Assessor's office:

CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.—Produced 40,463 tons of ore yielding a total $1,027,294.89 in bullion; average yield per ton, $25.33; actual cost of extraction, transportation and reduction, $614,419.92; net yield above cost of production and subject to bullion tax, $412,874.97; total bullion tax on net proceeds, $12,386.25.

CONFIDENCE MINING COMPANY.—Produced 17,285 tons of ore, yielding bullion valued at $401,293.18; average yield per ton, $23.85; actual cost of extraction, reduction and transportation, $239,898.18; net yield above cost of production and subject to bullion tax, $161,395; bullion tax, $5648.83.

CHOLLAR MINING COMPANY.—Produced 4750 tons of ore, yielding a total of $74,507.24 in bullion; average yield per ton, $15.65; actual cost of extraction, reduction and transportation, $81,983.74; cost of production above yield, $7476.50; no tax.

HALE & NORCROSS MINING COMPANY.—Produced 18,075 tons of ore, yielding bullion valued at $451,740.08; average yield per ton, $25; cost of extraction, transportation, and reduction, $305,883.13; net yield above cost of production and subject to bullion tax, $145,566.95; bullion tax, $4375.70.

YELLOW JACKET MINING COMPANY.—Produced 7080 tons of ore, yielding bullion valued at $55,022.04; average yield per ton, $7.80; cost of extraction, reduction, and transportation, $88,333.03; cost of production above yield, $33,310.99. No tax.

RECAPITULATION.

The total number of tons of ore extracted during the above quarter, according to the above statement, was 87,653 tons, producing bullion valued at $2,009,812.43. The product of the Savage is not included in the above list, which will swell the total to $2,529,000. The product of the lost quarter of the current year exceeds that of the yield of the preceding quarter nearly $600,000.

The drain drift which is being run from the south lateral branch of the Sutro Tunnel to connect with the Belcher workings on the 1500-foot level will take about three months more. The completion of this drift to a connection with the workings of the Crown Point and Belcher will be followed by the starting of the joint pump to drain these mines down to the 2700-level, below which there is a large area of ore of "milling" value exposed, with a prospect of an important development being made on the 2700 in the light of recent discoveries that explorations of that level, prior to the abandonment of the mine below the water line, were conducted in the wrong direction. The joint pump has ample power to drain the Crown Point and Belcher to the 3000 level, when it is only required to lift the water to the Sutro Tunnel level. In explorations on the 400, 500 and 700 levels of the Crown Point numerous wet seams have been tapped. The connection with the Sutro Tunnel will admit of the upper workings of the principal mines in the Gold Hill group being drained.

ALTA MINING COMPANY.—The Keystone shaft, near the Alta, at the south end of the Comstock, is down about 160 feet below the surface and sinking is progressing rapidly since a steam donkey hoist was put in position. Upraising above the 725 level to connect with the shaft was discontinued at a point above the 500 level on account of bad air. There remains a space of nearly 300 feet between the upraise top and shaft bottom. The extraction of about 25 tons of ore daily continues from the Alta stopes and the mill and concentrators are in constant operation handling it.

CONFIDENCE MINING COMPANY.—The total bullion production for July amounted to $125,918.

CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.—The total product for July amounted to $206,872.26.

HALE & NORCROSS MINING COMPANY.—The starting of the remaining 40 stamps in the Nevada mill will enable this company to double the present bullion yield of the mine, which will leave a monthly surplus of above $30,000 over the cost of production with only 40 stamps crushing the ore. The company is negotiating for the lease of the Brunswick mill, on the Carson River, pending the suspension of ore extraction from the Confidence mine while repairs are in progress to the Yellow Jacket shaft and surface machinery. The Brunswick has both steam and water power to operate its complement of 76 stamps.

WASHOE COUNTY.

Since the settlement of the title suit in the Jumbo District, referred to in our last issue, the interest in this district is abating. The Virginia City *Chronicle* says that the Wild Goose managment has reduced its force of miners from ten to four and J. C. Dunlop, the principal owner, has concluded to suspend operations. The shaft is down 108 feet below the surface and the development so far made is not considered of sufficient importance to warrant further expenditure. There are two tons of high-grade ore on the dump at the mine, extracted in explorations, which it is expected will produce above $1000 in gold bullion. The men employed on the Wild Goose will be transferred to the Watson location. Ore from this location, crushed at the mill at the Baltimore mine, netted a fair profit in gold bullion above the cost of production.

WHITE PINE COUNTY.

EBERHARDT & MONITOR COMPANY, LIMITED.—An extraordinary general meeting of this company was held in London on the 3d inst. for the purpose of confirming resolutions for voluntarily winding up the company and authorising the liquidator to sell and transfer—subject to due provisions being made for dissentient shareholders, if any—the property of the company to the new Eberhardt Company, Limited, to the organization of which we referred in our issue of May 5th, 1888, already registered with a capital of £75,000 in 5s. shares. Mr. Slater was appointed liquidator.

OHIO.

Arbitration was begun at Saratoga, N. Y., on the 15th inst., before James Carter, of New York, and E. W. Kitteridge and Lawrence Maxwell, of Cincinnati, between the Columbus, Hocking Valley & Toledo Railway Company and Stevenson Burke and others, formerly directors of the company. This is by agreement for the purpose of settling questions involved in a suit now pending in Ohio, to which we referred in our issue of July 14th. The hearing will probably occupy ten days.

The stream of crude petroleum which was started from Lima, July 29th, as mentioned in our issue of the 4th inst., to fill two great tanks at South Chicago, began pouring into the reservoirs shortly after midnight on the morning of the 14th inst. The oil is now flowing at the rate of 8000 barrels, or 336,000 gallons a day. Each tank has a capacity of 35,000 barrels.

STARK COUNTY.

Under the Shisler farm, near Massillon, the boring for this year has revealed five holes in the Massillon seam, respectively 6 feet 6 inches, 6 feet 8 inches, 7 feet 2 inches, 7 feet 4 inches, 7 feet 6 inches, with from 2 feet to 5 feet of black slate immediately over the coal and from 6 inches to 12 inches of black slate under the coal, these five holes together with six other holes showing from 4 feet to 5 feet 6 inches in thickness through the coal.

PENNSYLVANIA.

PHILADELPHIA & READING RAILROAD COMPANY.—This company has opened an English agency at Dashwood House, New Broad street, London, E. C., for the purpose of giving information about the company and its securities. Mr. Sebastian B. Schlosinger, who was formerly with Messrs. Naylor & Co., is the European agent.

COAL.

PHILADELPHIA & READING RAILROAD COMPANY.—The company is preparing to make an important change in its coal storing, transportation and seaboard delivery system. Surveyors are now locating a site near Mahoney Plane, Schuylkill County, for the erection of immense coal-storage docks, chutes, inclined planes and elevated railroads. With this it is the company's intention to handle and store its output of coal, instead of sending it forward to tide as fast as it is mined. This will do away with the taking up of miles of track by loaded coal trains, which are in reality places of storage, and lie along the line for days waiting for a call to the seaboard dumping docks, interfering greatly with the business of the road.

It is said the management of this company is about to begin a system of operations, the purpose of which is to largely increase the company's output of coal and iron at a minimum of cost. One of these methods will be the connecting of the underground workings where two mines are located close together, so as to need the operation of but a single shaft and breaker, thus reducing the expenses one half from the bottom of the shaft.

NATURAL GAS.

SOUTHWEST NATURAL GAS COMPANY.—This company is offering free gas to new consumers until October 1st. The rates will be 25 cents per fire per month after that.

OIL.

Exports of refined, crude, and naphtha from the following ports, from January 1st to August 11th:

	1888. Gallons.	1887. Gallons.
From Boston	1,961,060	2,831,125
Philadelphia	75,058,398	95,000,959
Baltimore	4,701,461	5,372,549
Perth Amboy	14,490,384	9,640,264
New York	209,840,841	225,315,017
Total exports	306,052,144	338,159,914

The chief of the Bureau of Statistics reports the total values of the exports of mineral oils from the United States for the month of July, 1888, and during seven months ended July 31st, 1888, as compared with similar exports during the corresponding periods of the preceding year, as follows: July, 1888, $4,056,481; July, 1887, $3,845,163; twelve months ended July 31st, 1888, $25,082,067; June 30th, 1887, $24,951,994. The exports from the above-named ports comprise about 99 per cent of the total exports of mineral oils. It is stated on good authority that the distillation of 100 gallons of crude petroleum will yield 76 gallons of illuminating oil, 12 gallons of gasoline, benzine, or naphtha, 3 gallons of lubricating oil, and 9 gallons of residuum.

The excitement continues in Green County, where the Nineveh well was struck a few weeks ago. Six large tanks have been constructed and a pipe line is being laid to Washington. The well is doing 13½ barrels per day. Land is being leased in all directions, and cannot be bought, it is said, within three miles of the well for less than $200 per acre. Thirteen new wells were located last week and work commenced on most of the rigs.

MARSHALL OIL COMPANY.—This company has secured an important oil lease from Andrew McDaniel, Sr. The farm lies just west of Washington, Pa., and contains 100 acres, 90 of which are included in the lease. The consideration is said to be a cash bonus of $9000, $100 an acre and one eighth royalty. The bonus is paid $1500 cash, and the rest in notes, one of $1000 due in three months, $1000 in four months, $1500 in five months, and $4000 in one year. The farm adjoins

the Prigg farm, where the company has a forty-five barrel well. Operations will be commenced at once.

TAYLOR OIL COMPANY.—This company has awarded the contract for boring a well, and operations are to begin at once. The site is on the Taylor farm, which is located in the Bakerstown field.

SOUTH CAROLINA.

The following shipments of land phosphate rock from Charleston during July are reported by Mr. Paul C. Trenholm:

	1887. Crude. Tons.	1887. Ground. Tons.	1888. Crude. Tons.	1888. Ground. Tons.
To domestic ports	12,996	800	17,124	1,075
To foreign ports	920	...	.....	....
Total	13,916	800	17,124	1,075

UTAH.

The ore and sampling-works at Salt Lake City, owned by R. Mackintosh, were burned on the night of the 13th inst. Loss is estimated at $24,000 and the insurance $10,000.

FRISCO MINING AND SMELTING COMPANY.—There is a strong probability that the old abandoned Carbonate mine, the property of this company, will be re worked this summer and fall at least.

WISCONSIN.

EAU CLAIRE COUNTY.

Reports from Eau Claire, Wis., state that the rumors circulated in Chicago and other Eastern papers to the effect that a rich bed of gold and silver ore has been discovered twelve miles east of that place are unfounded, except in the desire of land owners to dispose of their worthless land. The tracks where it is alleged mineral abounds can almost be bought to-day for the same prices that would have been accepted a half dozen years ago.

FOREIGN MINING NEWS.

CANADA.

PROVINCE OF NEW BRUNSWICK.

GRAND LAKE COAL COMPANY.—This company has been organized, with a capital stock of $200,000; shares, $100 each. The chief place of business is to be Chipman, Queens County. The incorporators are Dr. Louis G. De Bertram, of New York, John P. Illsey, of Philadelphia, engineer; Thomas M. Williamson, of Buctouche, Kent County, civil engineer; Edward W. Clark, Jr., Edward E. Denniston, C. Ford Stevens, all bankers of Philadelphia.

PROVINCE OF ONTARIO.

CANADIAN COPPER COMPANY.—Arrangements are now making for the erection of smelting-works. The company owns the Copper Cliff, Stobie, and Evans copper mines at Sudbury.

MEXICO.

The Department of Public Works has granted a concession to Mr. Andrés Tello for the exploration and working of mines of all kinds in the Mineral de Arteaga, State of Guanajuato.

The gold mines of Calmallie district, in Lower California, says the San Francisco *News Letter*, which have been attracting much attention, are lately pronounced a fraud by competent authority. The placer mines are played out, and the quartz mines simply pocket claims. There is a scarcity of water, and the miners who rushed there during the excitement are returning in disgust the best way they can. It is said that an attempt will be made at San Francisco to dispose of some claims, the price asked being $300,000.

Mr. J. A. Strickler, of Westmoreland, who went to Mexico some time ago to test the coking qualities of a coal field owned by New York capitalists, has been making some tests with the coal, some of which was from the lowest seam and some was taken from the slack pile at the mines at the coke ovens of McClure Coke Company, at Bridgeport, Pa. The Mexican article was placed in nail kegs and coked with the regular charge. That of the pure coal made a coke of good quality and somewhat heavier than the Connellsville output. The slack did not do so well, although a small quanity of fair coke was got from the top of the keg, the greater portion, however, having burned away. The test shows conclusively that if the company expects to use the Mexican slack coal it must first be washed. An analysis has not yet been made. Messrs. White and Withrow, of Pittsburg, who are interested in San Falique mines, Mexico, have made a similar test with like results.

A correspondent who is very familiar with Mexican mining sends us the following:

I left El Paso sometime ago on a trip to the mining regions of Mexico, and send you a brief account of my observations, which may be of interest. From Frisnello, Zacatecas, I went to Sombrereta, where the plant erected is much larger than necessary. One quarter of the outlay actually made for machinery, etc., would have been sufficient for all purposes, and the percentage of profit would have been much higher. The present management is more economical. At Chalsitas, thirty miles beyond, the lixiviation process is successfully employed at a number of mines. Leaving here, we came to the works of the Vocas Mining Company, who have operated here for seven or eight years, and paid dividends the last five, smelting most of their mineral, though some fine milling ores are to be had.

Durango, our next stopping place, contains extensive iron mines, said to be owned by Chicago capitalists. It is rumored that the Mexican Central Railroad will build a branch past the mines from Lierdo to Durango, not so much for the local freight between the towns, as to get the iron.

From Durango a three days' trip brought us to Vantanas, fully 6500 feet above sea level. Its 2000 inhabitants are entirely dependent upon the mines for support. The firm of Carroll, Wallender, Ward & Allen, work six or eight mines in the vicinity, and lixiviate the ores in two mills run by water power, one being situated one mile south of the town, and the second nine miles north. Twenty-eight miles north of this is the Candelauo mine at San Dimas, the present bonanza of the State of Durango, of which Mr. Burnes is the manager. Leaving here we pass through the old mining towns of Panuco and Copala. The Panuco Company operate five or six mines, keeping their 30-stamp mill running night and day. Their make their own iron work, and employ from 400 to 600 hands, occasionally as many as 800 or 1000. Mr. R. Galiou, the superintendent, informs me that they have paid dividends amounting to $1,700,000 in the last four years, besides expending $800,000 on the mines and mill. S. A. Halliday, of San Francisco, has just erected for this company a seven mile cable tramway to bring in wood for the mill and mines. Mr. Parson directed the work of erection. Half a mile east of here the Francis County Mining Company operate two mines and a 15-stamp mill, and has paid large dividends.

South of this and the Panuco lode, and near them, is the Constancia, formerly owned by Judges Don Petro Sanches and Tomas Martin, but now in the hands of Walfskill and Pershbaker, the former a large merchant in Copala.

At Copalo, eight miles south of Panuco, a bonanza has recently been discovered in the shape of an old mine running under the town, and it yields $200 to $3000 per ton, one quarter being gold. Mr. W. H. Furman and Messrs. F. Echeguran, Bro. & Co. are the largest owners of this property. West of this is the San José comprising six lodes, four of which have been worked a distance of 2000 feet above water level, and in parts down to it. Many millions were taken from here, and many left behind by the old time Spaniards, who could not work a $25 or $30 ore. During the last sixteen years Messrs. Walfskill and James Truwater have taken out 100,000 ounces of silver, but there are still many tons of $10 to $30 ore on the dump which can be made to pay well. Thousands of tons of low-grade ores are now in the 240 foot stopes of the old San José working. About one mile west of this is the Napoleon, one of the best fissure veins I have seen, averaging 18 feet in width and yielding from $16 to $300 per ton. Very rich strikes have recently been made in sinking the air shaft. This property is very easily worked, nearly 1200 feet of tunnels, etc., 275 foot stopes and a down grade of 3600 in an air line to the Panuco River, where the steam and water-power mill is situated.

From here we left for Rosario, about 60 miles south, where two extensive mines are situated; the Tajo, owned by Mr. Bradbury, of Los Angeles, Cal., with its 25-stamp mill and splendid plant, which has yielded its owner over $16,000,000, and the Guadalupana, owned by F. Echeguran & Co., with a 20-stamp mill and the most elaborate machinery in the state. Each of these mines produces from $3000 to $6000 per day. The Guadalupe is reported sold to an English company for $1,500,000, and is well worth it.

From here I left with my party for Lower California, by way of Mazatlan.

DON EURIQUE MINING COMPANY.—The creditors of the Cusihuiriachic Mining Company, who purchased the property at receiver's sale (see ENGINEERING AND MINING JOURNAL, February 4th, 1888), have organized, upon the basis of the property purchased by them, the above company. It has been arranged to give to each holder of Cusihuiriachic stock, who may desire to avail himself of his privilege, his pro rata proportion of 100,000 shares, at $1 each, of the stock of the Don Eurique Mining Company in exchange for his stock in first-named company. Thus the exchange is made on the basis of 1 share of the new for 10 shares of the old. Certificates must be sent to Messrs. James C. Fargo or Geo. F. Crane, 1 Nassau street, N. Y., committee of creditors, on or before the 1st of January, 1889, on which day the privilege above mentioned will cease. The transfer of the new shares is made without covenant or warranty by the committee.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, August 17.

Statistics.

Production Anthracite Coal for week ended August 11th and year from January 1st:

TONS OF 2240 LBS.	1888. Week.	1888. Year.	1887. Year.
P. & Read. RR. Co..	195,568	3,555,786	4,253 092
Cent. R. R. of N. J.	138,648	3.168.201	2.983.181
L. V. RR. Co.	174,241	3,833,492	3,965,288
D., L. & W. RR. Co.	135,765	3.822,098	3,211,089
D. & H. Canal Co..	96,730	2,547,946	2,166,033
Penna. RR.	68,966	2,673.387	2.171,642
Penna. Coal Co.	44.254	973,817	894,099
N. Y., L. E. & W.	*19,000	559,976	477,485
Total	873,172	21,134,703	20,121,909
Increase	141,115	1,012,794	....

* Approximated.

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:

1883	18,204,683	1885	17,242,341
1884	17,820,668	1886	18,322,645

Production of Coke on line of Pennsylvania RR. for week ending August 11th, and year from January 1st, in tons of 2000 pounds: Week, 76,985 tons; year, 2,359,214 tons; to corresponding date in 1887, 1,996,636 tons.

Production Bituminous Coal for week ended August 11th, and year from January 1st:

	1888. Week.	1888. Year.	1887. Year.
EASTERN AND NORTHERN SHIPMENTS.			
* Tons of 2240 lbs.			
Phila. & Erie RR.	948	42,131	10,629
Cumberland, Md.	61,115	2,120, 06	1,875,996
Barclay, Pa.	2,962	109,001	120,226
Broad Top, Pa.	6,775	213,412	198,739
Clearfield, Pa.	63,696	2,281,733	2,179,441
Alleghany, Pa.	19,326	535,663	518,254
Pocahontas Flat Top	28,415	964 532	696,836
Kanawha, W. Va.	28,242	1,106,584	920,083
Total	211,479	7, 73,362	6,619,604
WESTERN SHIPMENTS			
Pittsburg, Pa	12,630	489,368	396,073
Westmoreland, Pa.	32,881	1,062,485	913,304
Monongahela, Pa.	7,360	266,686	254,950
Total	52 851	1,818,539	1,564,327
Grand total	264,330	9.191,901	8,183,931

Anthracite.

The accompanying statement of shipments shows as clearly as words and figures can the booming condition of the anthracite trade. On the first of the month we had already increased our production 856.658 tons over that of last year, and the production for this month is put down at 3½ million tons, as against the actual production of 3,198,725 tons in 1887, but no doubt it will a good deal exceed 3½ million tons, so that by the close of the present month our production will have exceeded that of last year by probably 1,400,000 tons. In fact, the production now simply depends upon the supply of cars, for each company is doing all it can without any regard to quota. This is evident by a reference to the figures of output in July, where we see that the Lehigh Valley exceeded its production in the corresponding month last year by 180,637 tons, and the Lackawanna & Western exceeded its last year's output by 116,368 tons. The Reading alone of all the companies showed a decrease last month, and this is due to the fact, now pretty generally admitted, that the Reading management was so anxious to make a big showing of economy over the old management that it neglected the mines and stopped development work to such an extent that now, when the prices are very high and the profits correspondingly large, it is unable to produce even its quota, while all the other companies are largely exceeding theirs. Nor is the end yet, if we are well informed. The mines cannot be made to keep up their proportional production during this year, and a good deal of money will have to be spent to put them in the relative condition they were in when the present management took hold of them.

The sales agents had their meeting this week, as announced, and though one of the gentlemen proposed to make an advance in the price of coal, the others discreetly demurred, and finally the question was left open to be decided at a meeting to be held on the 24th inst. At that date there will be a meeting of the Western sales agents in this city, when it is expected that an advance will be made, and in the afternoon of the same day the Eastern sales agents will decide the matter of an advance. It is practically decided that an advance will be made, and it is probable that it will will be as talked of, and quoted in our issues of last week and the week before; that is, it will raise the price of coal as follows:

Present prices compare with those of a year ago, just after an advance of 10 cents a ton had been made, as follows:

	1887.	1888.	Increase this year
Broken	$3.50	$3.85	$0.35
Egg	3.70	4.15	0.45
Stove	4.10	4.50	0 40
Chestnut	3.85	4.50	0.65

The proposed advance which is expected to go into effect September 1st, will make an increase over last year's prices, as follows: On Broken, 45c. per ton; on Egg, 60c.; on Stove, 65c., and on Chestnut, 90c. per ton.

The railroad companies have already announced their increase in freights from the mines to tidewater as follows:

An advance to New York and Philadelphia of ten cents per ton, an advance to Buffalo of twenty-five cents and to Chicago of fifty cents. The old and new tariffs from the mines in the different regions are as follows:

	To Philadelphia. Old.	To Philadelphia. New.	To New York. Old.	To New York. New.
Schulyill	$1.70	$1.80	$1 75	$1.85
Lehigh	1.75	1.85	1.70	1.80
Wyoming	1.80	1.90	1.80	1.90

The new rate to Buffalo from all regions is $2.25 and to Chicago $4.50. It is reported that some of the Wyoming companies will make the rate to this city $2, in which event the others will do likewise. It is said that no other change in tolls will be made until January, and very possibly not then. The present tolls are expected to continue as a basis, and efforts will be made to keep them steady until next season.

The general impression in the trade, based upon the orders coming in, is that there will be a slack up in demand somewhat earlier this year than usual, since the demand has come earlier, both in the East and in the West. There is some anxiety among purchasers to get their coal, but as the next advance in prices will probably be the last and make the highest prices for the year, there will be no object in hurrying in orders, except where deliveries may be affected by the winter. Consequently we expect to see an easing up in the demand and less urgency for deliveries after, say the middle of next month.

It is understood that old contracts are still running at the prices ruling previous to the last advance and that they will not all be filled by the first of Septem-

bar. Some orders have been taken at present prices, calling for delivery during September. As a rule, however, prices now asked by the trade are those that are expected to rule after the first of September and which will, no doubt, be announced on the 24th inst., as we have indicated.

The stocks of coal at tidewater decreased during the last month no less than 155,000 tons. Deliveries were more than 3½ million tons during the month. The croakers who have been talking of bad business and depression will do well to study the statistics of the anthracite trade during the present year; they are something marvelous. That we should have so increased our output this year (with considerably higher prices than were obtained last year), following a year of unexampled prosperity, was not to be expected. Never before in the history of this country has such a business been done, or at such large prices generally, as we have had in the anthracite trade during the current year. Even the decline in the iron business was not able to check the coal consumption, so that the general prosperity in other industries is undoubtedly greater than has been generally supposed, and greater even than during 1887, though prices in some articles are a little less. These facts are given without any reference to their bearings upon current politics.

Mr. John H. Jones, Chief of Bureau of Anthracite Coal Statistics, has issued the following statement of anthracite coal tonnage for the month of July, 1888, compared with same period last year. This statement includes the entire production of anthracite coal, excepting that consumed by employés and for steam and heating purposes about the mines, but does not represent the entire anthracite coal tonnage actually transported by the respective railroad companies, adjustment being necessary in the compilation to avoid duplications, etc.

COMPANIES.	July, 1888.	July, 1887.	Difference.
Phila. & Reading RR...	606,950	608,138	Dec. 1,188
Lehigh Valley RR.....	697,091	516,454	Inc. 180,637
Central RR. of N. J....	517,108	435,753	Inc. 81,355
Del., Lack. & West. RR.	523,391	407,024	Inc. 116,367
Del. & Hud. Canal Co..	355,522	277,045	Inc. 78,477
Pennsylvania RR	430,227	335,856	Inc. 94,371
Pennsylvania Coal Co.	167,137	125,149	Inc. 41,988
N. Y., L. E. & W. RR...	68,848	56,205	Inc. 12,643
Total	3,366,274	2,761,624	Inc. 604,650

COMPANIES.	For year 1888.	For year 1887.	Difference.
Phila & Reading RR...	3,244,708	3,926,722	Dec. 682,014
Lehigh Valley RR.....	3,360,600	3,654,978	Dec. 294,378
Central RR. of N. J....	2,901,274	2,769,379	Inc. 131,895
Del., Lack. & West. RR	3,599,845	2,960,934	Inc. 638,911
Del. & Hud. Canal Co.	2,390 668	2,042,095	Inc. 348,573
Pennsylvania RR	2,598,843	2,062,008	Inc. 536,835
Pennsylvania Coal Co..	909,967	800,470	Inc. 109,497
N. Y., L. E. & W. RR..	515,824	448.485	Inc. 67,339
Total.....	19,521,729	18,665,071	Inc. 856,658

	July, 1888.	July, 1887.	Difference.
From Wyoming Region	1,717 686	1,379,699	Inc. 337,987
From Lehigh Region..	705,313	531.498	Inc. 173,815
From Schuylkill Region	943,274	850,426	Inc. 92,848

	For year 1888.	For year 1887.	Difference.
From Wyoming Region	11,870,850	9,644,841	I. 2,226,009
From Lehigh Region .	2,524,436	3,420,504	D. 896,068
From Schuylkill Region	5,126 442	5,599,725	D. 473,283

The stock of coal on hand at tide-water shipping points July 31st. 1888, was 586,469 tons; on June 30th, 1888, 741,958 tons; decrease, 155,489 tons.

Bituminous.

There is nothing to report in the soft coal market but to repeat the figures which we have quoted for so long. The trade is fairly good in quantity, and prices are now held much more firmly than they were a few months ago, when the temptations of large orders caused their shading.

The advance in the prices of anthracite does not affect the prices of bituminous further than that it increases the demand for soft coal, and with that brings a gradual stiffening in prices, and though no nominal advance will be made, an actual advance is very probable.

The soft coal has almost destroyed the Eastern business in pea and buckwheat coal, which sizes continue to be a drug on the hands of the anthracite companies.

We continue our quotations of last week, namely: $2.60 f.o.b. Baltimore and Georgetown, and $3.25 for New York harbor.

Boston. Aug. 16.

[From our Special Correspondent.]

The coal market is highly satisfactory to those at this port engaged in the anthracite trade, but not so satisfactory to the bituminous agents and jobbers.

To take up one matter at a time, however, and looking first at the bright side, one finds the anthracite market in first-class condition. The demand is rather light still, but as an offset there is very little coal pressing for shipment. The market is almost entirely in sellers' favor. There is still more or less detention in shipment of sizes most in demand, and while there is coal enough to be had at circular rates in one quarter and another, some of the companies are very backward about taking orders for future delivery at current prices. This is owing to the talk of an advance in a fortnight or so. The individual operators are not a disturbing factor in the market at present. The retail trade in Boston are delivering an immense amount of coal, and though they are receiving a good deal on old orders they will be buyers again shortly, particularly if the threatened advance seems likely to be realized.

There is a fair movement in bituminous coal now, both on old and new business, and on everything but prices (the essential point, however) there is a good feeling. Quotations have been and are being severely cut. The pool is scarcely more than a name, and one that is held in mighty slight esteem at that. Its restraining influence has been *nil* with some of the largest shippers, and good coal can be had now of pool operators at lower prices than prevailed last year, to say nothing of this year's advance, unless the current gossip in this market is all wrong. There is more cutting according to common reports on Long Island Sound business than on tonnage to northern and eastern New England, but delivered rates of say $3.35@$3.50 are talked of as readily obtainable for Boston trade. Whether the state of affairs is such as to cause any trouble on so-called protected contracts does not yet appear.

The Boston & Albany contract for 50,000 tons water freight has been taken and it would be interesting if the figure could be got at. The steam heating company here are asking bids for 10,000 tons pea and dust and an equal amount of bituminous. The conditions of the contract are said to be unusually severe, but in the rush for tonnage that will probably make no difference. It appears to be the case now, as before mentioned, that the Cumberland people are not cutting as much as other members of the pool, but every kind of coal seems to be cut by some one or other.

The freight situation is strong and inclined to higher rates.

We quote vessel rates, exclusive of discharging: New York, 80@85c.; Philadelphia, 90c.@$1; Baltimore, $1@$1.05; Newport News and Norfolk, 90c.@$1; Richmond, $1.15@$1.25; Provincial, $1.60@$1.75.

There is a hustling retail trade at this port and prices are strong at former figures.

Buffalo. Aug. 15.

[From our Special Correspondent.]

The situation of coal matters is the same as was written last week, therefore repetition is unnecessary. The following paragraphs and statistics are the only items of interest.

Petty larceners are constantly before our local justices for stealing coal from cars; they are generally fined $2 each and discharged with a caution to "sin no more."

The Western New York & Pennsylvania Railroad have about secured the coveted short route to the Reynoldsville coal regions. A twenty-mile line is to be built from Clermont, Pa., at the Southern end of the McKean & Buffalo branch of the road, across to Johnsonburg on the Philadelphia & Erie and Pennsylvania railroad systems. This extension will make the distance from Buffalo to Reynoldsville 158 miles: as short a haul as the Erie or the Buffalo, Rochester & Pittsburg lines.

The Erie street coal trestles of the Delaware, Lackawanna & Western Railroad are to be enlarged and strengthened, and all the modern methods of handling will be adopted. The chutes will be enlarged also. The work is to be completed early in September. About 3,000,000 feet of lumber will be used in the reconstruction.

Our city inquirer reports that with some trifling alterations and additions to the pressure valves, Buffalonians can be assured of perfect safety in the use of natural gas fuel.

The center span of the Poughkeepsie cantilever bridge was joined on Saturday last," says the Buffalo Bridge Works people. Only half of one span now remains to be connected, and the whole work will be completed by September 1st. The New England States will then have a short, direct coal road.

In consequence of down grain freights being advanced from and the large number of vessels offering for Detroit and Toledo, coal rates to those points declined 15c. per ton last Friday, and have continued to rule at same figures since. Lakes Michigan and Superior ports schedules have not changed. The continued scarcity of coal as compared with the number of craft awaiting cargoes here caused many vessels to leave light or with only part of their tonnage made available. On Wednesday an agent said the situation was about as follows: "Coal continues scarce and vessels plenty; do not expect any improvement in receipts of fuel until about September 1st or when the heavy Eastern demand lets up; the promised advance to be made in rail freights will have a tendency to give us higher freights on the lakes."

The shipments from August 9th to 15th, both days inclusive, were 55,380 net tons: namely, 20,560 to Chicago, 11,820 to Milwaukee, 6132 to Toledo, 2940 to Duluth, 2110 to Detroit, 800 to Green Bay, 2850 to Racine, 700 to Sheboygan, 600 to Saginaw, 780 to Cheboygan, 450 to Muskegon, 1300 to Kincardine, 240 to Port Huron, 260 to Bay City, 1600 to Lake Linden and 240 to Kelly Island. Total shipments thus far this season, 1,301,260 net tons, including cargoes on vessels from Tonawanda not reported at custom house here. The rates of freight were as follows: 75c. to Chicago; 70c. to Milwaukee, Sheboygan, Marquette and Green Bay; 60c. to Duluth, Superior and Ashland; 90c. to Portage; 80c. to Marinette, 85c. to Kenosha; 50c. to Port Clinton, Pt. Huron, Bay City; 50@85c. to Toledo and Detroit; 50c. to Cheboygan and Saginaw; 75c. to Lake Linden; 85c. to Muskegon; 85c. to Racine; 65c. to Kincardine; 70c. to Manitowoc. A load of soft coal taken to Gladstone at 75c. per net ton.

Canal receipts of coal here for second week in August 9674 net tons; the shipments, 426 net tons.

Pittsburg. Aug. 16.

[From our Special Correspondent.]

Coal.—The season being over, mining operations are about closed. The employés and operators have not so far come to a proper understanding as regards wages. The difference is only ¼ from present rates. At last accounts two works were being operated on the miners' terms, all others being idle. The prospect is that most of them will remain idle until fall.

PRICE OF COAL PER 100 BUSHELS = 7600 LBS.

First pool.....	$4.75	Fourth pool.....	$3 25
Second pool	4.25	Railroad coal.....	5.00
Third pool.....	3.75		

Connellsville Coke.—The demand for dollar coke is increasing, furnaces take all the coke they have room for. An operator remarked that the idle ovens would not be started up until there is an advance in prices. Nothing has been done, so far, regarding the new syndicate.

Present rates: Blast-Furnace, $1 per ton; to dealers, $1.10; foundries, $1.15.

Freight rates to Pittsburg, 70c. per ton; to the Mahanoy and Shenango valleys, $1.35; East St. Louis, $3.20; to Cleveland, $2.80; to Chicago, $2.75; to all other points the same proportions.

FREIGHTS.

Freights on Oil.—The local committee on grading up the rates established by the Oil Committee of the Central Traffic Association, at its recent meeting in Chicago, met at Pittsburg last week and decided on the following rates per 100 pounds on oil from Pittsburg and Oil City, in car-load lots: To Chicago, 17½ cents; Cincinnati, 12 cents; Columbus, 9 cents; Detroit, 10½ cents; East St. Louis, 19½ cents; Cairo, 22 cents; Terre Haute, 17½ cents; Fort Wayne, 12½ cents; Cleveland, 8½ cents; Joliet, 17½ cents; South Bend, 16½ cents; Milwaukee, 19½ cents; Indianapolis, 13½ cents. These rates will take effect about September 1st.

The latest actual actual charters to August 16th, per ton of 2240 lbs

From Philadelphia to:—Bangor, 95*; Boston, 90@95; Charleston, .75@80; Chelsea, .95; Com. Point, Mass., .95*; East Cambridge, 1.05*; Fall River .90*; Gardner, Me., .95*; Gloucester, 1.15*; Lynn, 1.10@1.30*; New Bedford, .85@.90*; Newburyport, 1.15*; Newberne, .80@.85; New York, .90†; Norfolk, .65@.70; Portland, .90@1.05*; Portsmouth, N. H., .80@1.00*; Providence, 90*; Richmond, Va., .75; Saco, Me., 1.20*; Salem, Mass., .90*; Savannah, 1.00; Washington, .85.

From New York to:—Bath, Me., 80@90*; Beverly, .80@90*; Boston, .80*; Bridgeport, Conn., .65; Cambridge, Mass., .80*3c; Cambridgeport, .80*3c.; Chelsea, .80*; Com. Pt., Mass., .80*; E. Boston, .80*; E. Cambridge, .80*3c.; E. Greenwich, R. I., .75; Fall River, .80; New Bedford, .85; Newburyport, .95*; New Haven, .65; Newport, .75; New London, .70@75; Norwalk, Conn., .55@.60; Norwich, .75@80; Portland, .80*; Portsmouth, N. H., .90*; Providence, .80; Salem, .80*

From Baltimore to:—Bangor, Me., 1.00@1.10; Bath, 1.00@1.10; Boston, 1.00@1.10; Bridgeport, Conn., .85@.90; Brooklyn, .85; Charleston, .70@.80; Fall River, .90@1.00; Galveston 3.10@3 25; Gardner, Me., 1.00@1.10; New Bedford, .85; Newburyport, 1.25; New Haven, .85; New London, .85; New York, .85; Portland, 1.00 @1.10; Portsmouth, N. H., 1.00@1.10; Providence, .85; Quincy Point, 1.05; Richmond, Va., 70; Salem, Mass., 1.00@1.10; Savannah, 1.00; Somerset, .85@.90; Williamsburgh, N. Y., .85; Wilmington, 1.00.

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

MARKETS.

NEW YORK, Friday Evening, August 17.

Prices of Silver per ounce troy.

Aug	Sterling exchange	Lond'n Pence.	N. Y. Cents	Aug	Sterling exchange	Lond'n Pence.	N. Y. Cts.
11	4.87	42	91⅝	15	4.87	42	91⅝
13	4.87	42	91⅝	16	4.87	42	91⅝
14	4.87	42	91⅝	17	4.87	42⅛	91¾

Silver market steady, without special feature.

Foreign Bank Statements.—The governors of the Bank of England, at their weekly meeting, made no change in its rate for discount and it remains at 3 per cent. During the week the bank lost £149,000 bullion, and the proportion of its reserve to its liabilities was raised from 39·20 to 39 80 per cent, against an advance from 40·54 to 41·47 per cent in the same week of last year, when the rate for discount was 3 per cent. Thursday the bank of England gained £100,000 bullion on balance. The weekly statement of the Bank of France shows a gain of 350,000 francs gold and a gain of 350,000 francs silver.

The Secretary of the Treasury, in answer to an inquiry made by bullion dealers saying that the department was not buying, monthly, the amount of silver required by law, states that the amount of silver contracted for in July was over $2,000,000 worth, every ounce of which was delivered and paid for; and that the department will continue to purchase at the rate of at least $2,000,000 worth monthly.

Copper.—Nothing of the slightest interest has transpired in this market since we last reported, and we can only repeat that the whole situation being at present absolutely controlled by the French syndicate, other operators and speculators show no disposition to enter into competition with them, and this condition of affairs seems likely to continue for some considerable time to come. During the week about 450,000 pounds of Lake copper was bought by the representa-

tives of the syndicate at the now ruling quotation of 16 70 for Spot and 16·65 for August, and it is understood that they are ready to buy more at the figure. The closing prices for Lake descriptions are now: Spot, 16·70; August, 16·65; September, 16·60; October, 16·55; November, 16·50.

In outside brands the demand continues very good and all the offerings find a ready market.

Regarding the negotiations which are understood to have been proceeding between the syndicate and the Japanese smelters, we are advised that an agreement has not been arrived at owing to some difficulty with one of the body of smelters, and purchases can, therefore, still be made on the spot.

In London the variations in prices during the week have been quite insignificant, and quotations to-day are about the same as last week, viz., Chili bars, spot, £81 15s.; three months futures, £78.; G. M. B., £73 12s. 6d.

Messrs. Henry R. Mertin & Co., of London, advise by cable that the statistics of visible supplies show an increase of about 6000 tons for the first half of August.

The exports of copper from New York during the past week were as follows:

To Hamburg—	Copper.		Lbs.	
	Copper bullion.			
By S. S. Rugia	Bars	12	753	$1,300
To Havre—			Lbs.	
By S. S. La Normandie...	Pigs	754	11·,047	$16,000
To Liverpool—			Lbs.	
By S. S Celtic	Casks	45	56,250	$8,719
To Liverpool—	Copper Matte.		Lbs.	
By S. S. Celtic	Bbls.	201	225 000	$10,000
By S. S. City of Rome..	Sacks	3,031	350,024	18,000
	Ore.			
By S. S. Servia.....	Sacks	1,206	37,682	3,345

CONTRACT FORM FOR G. M. B. COPPER, LONDON.

The committee of the London Metal Exchange has decided upon the following form of contract and rules to guide buyers and sellers of "good merchantable" copper They were brought into force as official on July 30th.

LONDON, , 18 .

[CONTRACT J.] We have this day you about tons, more or less, of GOOD MERCHANTABLE COPPER of the descriptions of brands as fixed by the Committee of the London Metal Exchange at time of passing this contract. at £ per ton delivered in warehouse at London, Liverpool, or Swansea, any or either port in sellers' option; but subject to the restriction mentioned in rules 10 and 11.—If bar copper be delivered, a draft of 4 lbs per ton shall be allowed thereon —Warrant weights and agreed assays shall be taken.—Payment shall be made in cash in London against warrants, less 2½ per cent discount—Prompt.—Any dispute on this contract shall be settled by arbitration according to rule 2.

The code for contract J. is pretty much the same as that for Chili bars, but we may present rules 9 to 16 as having direct reference to the good merchantable brands:

9. On contracts for good merchantable copper with an open prompt of fourteen days, buyers shall, unless otherwise agreed, have the right to take up the warrants on any day before the prompt date, with allowance of interest at 5 per cent per annum, and the copper shall be free of rent for the unexpired portion of the prompt. Notice of intention to uplift must be given at latest by 12 noon on the day on which delivery of the warrants is required; if, however, sellers fail to deliver, in accordance with such notice, they shall allow interest as if the warrants had been duly delivered on the day required; but they shall not be entitled to more than one clear day's grace. Sellers failing to deliver by 3:30 P. M. on the day of grace shall become liable to rule No. 6.

10. Good merchantable bar copper (except Chili, which shall be weighed in drafts of five bars each as customary) shall be weighed in drafts of about 10 cwt. each, and warrants issued for 25 tons each. An assay certificate shall be attached to each warrant. Warrants for G.M. bar copper may not be tendered for fractional parts of 25 tons unless they together make up a quantity of 25 tons, and lie at one port.

11. Good merchantable refined copper shall be weighed in drafts of 10 cwt. each, and warrants issued for 5 tons each. An assay certificate shall be attached to each warrant for those foreign sorts which are only deliverable if the produce by wet assay be not less than 98 per cent. Warrants for G.M. refined copper may be tendered for fractional parts of 5 tons, provided they together make up that quantity, and are for the same brand, and the metal lies in the same warehouse. Every delivery of 25 tons G.M. refined copper shall lie at one port.

12. Chili-bar copper shall be sampled as customary, by boring one bar in every ten; other bar copper shall be sampled by boring two bars in every ton.

13. Foreign refined copper, specified on the list as deliverable with a produce of 98 per cent by wet assay, shall be sampled by boring four pieces in every ton.

14. On contracts for good merchantable copper, 1 per cent more or less on the gross weight may be delivered and at contract price; but, if the excess or deficiency exceed 1 per cent then the whole difference in weight, without deduction or draft, shall be settled at the mean official quotation of the committee of the Metal Exchange of the evening previous to the day of settlement. A delivery shall be accepted as good, so long as the deficiency or excess, as the case may be, shall not exceed 5 per cent on the gross weight tendered. If, however, an excess of more than 5 per cent be tendered, then buyers shall be entitled to take such excess at contract price, or reject such excess, at their option. In case of a deficiency of more than 5 per cent being tendered, the buyers shall have the option to limit their acceptances to the quantity tendered or to claim compensation for the loss sustained on account of quantity short tendered. If compensation be claimed, then the amount shall be arranged either by mutual consent, or (in case of non-agreement) by arbitration under Rule 2 at cost of sellers.

15. On contracts for good merchantable copper where assay certificates are required, such certificates shall be attached to all warrants on presentation; for Chili bars the custom on that description shall continue as heretofore. Should the bar assays be under 93 per cent Cornish assay, the copper shall not be considered a valid tender. A *pro rata* allowance shall be made on produces of bars running below 96 per cent down to and including 95 per cent, and a double *pro rata* allowance (from 96 per cent) on produces running below 95 down to and including 93 per cent. Refined copper, deliverable with a produce of 98 per cent wet assay, shall not be a valid tender if under that standard.

16. Good merchantable copper, available for delivery on contracts for that description, shall consist of one or more of the descriptions or brands sanctioned by the committee at the date of passing the contract.

The following is the official list of the various descriptions and brands deliverable as good merchantable copper, but the committee of the London Metal Exchange reserve the power of adding to or withdrawing from the list as they may think fit:

American Ingots.—Baltimore, Lake Superior, Orford. Bars—Arizona Copper Company, Copper Queen, Detroit Company, Old Dominion Company.

Australian Cakes.—E.A.C. Company, P.C. Company, Wallaroo. Ingots—E.A.C. Company, P.C. Company, Wallaroo, Cobar, Hope, Lloyd, N.G.E., W.B.C.

Chilian Bars.—Any good ordinary brand. Ingots—Lota, Urmeneta.

English tough, in cakes or ingots, best selected ingots, and electrolytic copper, manufactured by the following and bearing their recognized brands: Baxter, Bede, Bibby, Bolton, Broughton, Cape, Elliotts, Grange, Grenfell, Hills, Lambert, Landore, Logan, McKechnie, Nevill Druce, Newton Keates, Rio Tinto, Roberts, St. Helens, Tharsis, Vivian & Sons, Williams Foster. N. B.—The electrolytic must be of a minimum of 98 per cent conductivity.

German.—Tough Cake or Ingots—Best selected ingot copper, manufactured by the following and bearing their recognized brands: Mansfeld MR, Duisburg HDK, Hesse HOK. Also electrolytic of the Nord Deutsche Refinery Company, of a minimum of 98 per cent conductivity.

Japanese.—Bars, Refined Tiles, and Ingots—The bars must not be below 93 per cent Cornish assay; the refined tiles and ingots not below 98 per cent wet assay.

Tin.—In this market a pretty steady tone has ruled during the whole of the week up to this morning (Friday), when some symptoms of a relapse became apparent, the weakness being the result of lower quotations from London, where it is understood a leading operator has commenced to sell pretty freely. The business transacted during the week has not been very extensive, and our latest quotations are: Spot 20¼; August, 20¼; September, 20⅛.

In London prices have also declined to £92 15s. for spot, and £93 5s. for three months forward.

Lead.—Continued purchases by the leading operator in this metal has not brought about any further rise of importance, and it is understood that in order to keep the market from relapsing he has been compelled to buy in rather large quantities. These operations and manipulations may, of course, be continued for some considerable time to come, and if the parties interested in the raising of prices are strong enough financially to absorb what comes on to the market, a further advance in quotations may be brought about, but as consumption is not expanding to any great extent, and other operators show no inclination to help the boom, while production will certainly increase on any marked improvement in prices, we see a good many contingencies in the path of the consummation desired by the operators for the rise. To-day the market is a little quieter in tone, and the last quotations are: Spot, 4¾: August, 4¾; September, 4·40; October, 4·40. In London no change of importance has taken place during the week, and the last quotation received by cable is £12 17s. 6d.

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

Market is strong and the demand good. Sales for the week amount to 1000 tons, at prices ranging from 4·20@4 30.

Spelter.—Owing to an improvement in the demand without much being offered, prices are rather higher, and the quotations may now be given as 4·75.

Antimony still remains dull at 9⅝@9½ for Hallett's, and 12 for Cookson's.

Chemicals.—The better feeling prevailing in the chemical market at our last writing still continues, although the past week has not developed activity in any special lines of the trade. Dealers, as a rule, are making strenuous efforts to maintain prices, although it is said that in several instances concessions have been made for immediate purchases.

The Window Glass Manufacturers' Association met on Thursday at Pittsburgh, and, after considerable discussion, agreed not to start the furnaces until October 1st. This, of course, will delay the demand for chemicals used in the manufacture of glass. Moreover, before the glass furnaces went out of blast last spring, a number of the manufacturers placed their contracts for chemicals for fall delivery. Despite these adverse circumstances, our local dealers, as a rule are disposed to stick firmly to present rates, and, in some cases, to advance prices for future delivery.

Among the heavy chemicals, prices are unchanged. Dealers report a steady demand and a fair business.

Caustic soda ash, 48 per cent, is in little demand. Trade is purely of a jobbing character. We quote 1·30@1 35 for goods on the spot. Futures are nominally 1·22½@1·25, according to quantity and brand and date of delivery.

Carbonated soda ash, 48 per cent, is sold to meet present requirements only, and to a very limited extent at that. Futures are attracting a little attention, but actual transactions are small. We continue our quotations of 1·20@1·25 for future delivery, and 1·27½@1·35 for spot sales.

Caustic soda shows little change from the conditions noted in our report of last week. The demand for the article at the moment is not pressing, and so long as they can afford to wait, consumers are apparently determined to do so. Naturally this has far from a cheerful effect upon dealers in caustic soda, but they simply "bow to the inevitable" and make an effort to maintain present prices which are nominally for 60 per cent, 2·30@2·35 for large orders, and 2·37½@2·42½ for jobbing sales. For high test, 70 and 74 per cent, there is little inquiry. Although holders are still asking 2·17½@2·20 a tempting large order would cause these figures to be quickly shaded.

Bleaching powder is dull at the moment. The market contains few buyers and prices are merely nominal in New York at 1·87½@1·92½. In Boston these figures are largely shaded. Advices from abroad report bleach in steady demand at regular figures.

In the acid market there is little change to record. Save the action of the glass makers, there has been no event in manufacturing circles that would in any way affect the demand for acids.

Local dealers are doing only a jobbing trade. No large orders are being placed and dealers refuse to state, if they know, when an advance in prices is probable. At present the market is dull.

Sulphuric acid men refuse to be discouraged, even if business is delayed, and a prominent dealer continues to prophesy an advance in prices in the next six weeks.

Sulphuric acid, 66 degrees, remains at 90@95c. per cwt. for large lots, and $1@$1.10 for smaller quantities.

Acetic acid is dull. We hear of a few small sales at 2¼@2½c., according to quantity and brand.

Tartaric acid is attracting little attention, although business is of fair proportions at unchanged figures. We continue to quote ruling prices as follows: Lots of 3000 lbs. or more, 43c. per lb.; smaller quantities in barrels, 44c. per lb.; 50 lb. lots in boxes, 45c. per lb., and one cent advance on these figures for powdered.

Oxalic acid is lightly dealt in. The market shows no new developments during the past week, and prices remain at 6c. per lb. for lots of at least tons, and 6½@7c. per lb. for smaller quantities.

Muriatic acid is in slightly better demand, although prices show little change. We quote local prices per 100 lbs. as follows: 18 degrees, 1·15@1·20; 20 degrees, 1·30@1·50, and 22 degrees, 1·40@1 80.

Nitric acid is quiet at unchanged prices.

The fertilizing chemical market has relapsed to a state of comparative inactivity after a busy period of several weeks duration. In some instances, however, dealers are making special efforts to push trade and consequently they do not complain of the lack of business. It is extremely difficult to obtain predictions as to the future course of the market, but among dealers generally a hopeful opinion is expressed.

Ammoniates are scarce, and the demand continues good.

Prices show but little change. They are as follows: Dried blood (city), low grade, 2.35@2·37½ per unit; Western high grade, 2·35@2·40 per unit for ground material; tankage, high grade, $24@$25 50 per ton; low grade, $22.50@$23 per ton. Fish scrap, $25 per ton f.o.b. factory. Sulphate of ammonia, $3.15@$3.20 per cwt. Steamed bones, $20@$22 per ton. Charleston rock is $5 per ton for undried, and $6 per ton f.o.b. mines; Charleston rock, ground, $9.50@$9.75 ex steamer at New York.

Refuse bone-black is scarce, owing, it is said, to the action of the sugar trust in shutting down several refineries to decrease the production of sugar. This, of course, will decrease the stock of refuse black. We quote $17½@$19 per ton. Dissolved bone-black is 90c. per unit for available phosphoric acid, and acid phosphate; ·75@·80 per unit for available phosphoric acid.

Double manure salt is quiet. The demand is limited and the market featureless.

We continue to quote 1·15c. on a basis of 48 per cent potash.

High-grade sulphate of potash is quoted at 2·20c. on basis of 90 per cent.

Muriate of potash shows no change in price, and the market presents no new features. Quantities on the spot, as well as to arrive, are still held at 1·80.

Kainit is in fair and steady demand. Ocean freights are still high, and as they seem likely to remain so, dealers are disposed to advance prices for future shipment. The stock on the spot is small. Prices remain at $10 ex ship and $10.50 ex store. Futures are quoted at $9.25@$9.75, according to date of shipment.

Brimstone shows limited sales, while prices are as yet unchanged. The stock on the spot is small and, as our statistics of last week show, the quantity now afloat is not large, and the demand is likely to increase.

At present, however, we continue to quote $21 for best unmixed seconds on the spot, $19 for shipment and $20 to arrive. Nitrate of soda is in more demand

and prices are firmly maintained at 2c. to arrive and for shipment. Prices for quantities on the spot remain at 2·05@2·10.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Aug. 17.

There is no diminution of the better feeling in the iron market which we have noted for the past few weeks. Although there has been no general advance in prices, and no special tendency to such an advance, yet it is true that prices of most articles are much more firmly held in the face of a good prospective demand in the near future. Consumers are evidently satisfied that the "bottom" has been reached, and are beginning to feel around for a supply of the stock, which they will need for fall and winter work. Although much of the actual business transacted is in small lots, yet there are *bona fide* inquiries for larger lots, especially of pig iron, bar iron, iron and steel plates, and old rails.

The pig iron market is undoubtedly firmer. We have quoted No. 1 for several weeks past $17.50@$18.50, but at the present time there are no standard brands of No. 1 iron to be bought in this market at less than $18, and some bring $18.50. The Western pig iron market is decidedly stronger, one indication of this being in the recent advance of 75 cents per ton by the Tennessee Coal and Iron Company for their Western sales. Dealers generally profess to believe that prices of pig iron will be 50 cents to $1 per ton higher a month hence.

Scotch irons are likewise firmer. The demand, though not heavy, is still good. Glasgow prices are higher. This is due, in part, to a more active speculation in warrants.

Bessemer pig is almost lifeless, and there is no perceptible demand in the dull outlook of the steel rail trade. With American brands quoted nominally $16@$17.50 at furnace, according to quality, foreign business is out of the question.

Steel rails are now quoted $28 50@$29 at Eastern mills. There are plenty of "inquiries" for rails, but not many large orders from strong purchasers are on the market. During the week 9000 tons have been sold by Eastern mills to Southern roads, and there have been a few small sales besides. The Union Pacific Railroad has purchased 2000 tons from a Chicago mill, to be increased to 5000 tons, and other orders will soon be closed.

The demand for structural iron continues very good. Makers of beams and channels report a very good demand for building purposes, about equal to last year's.

The condition of the iron and steel plate trade shows some little improvement, although the demand is not sufficient to keep all the plate mills busy. Those mills which have an established reputation for good work have been steadily employed at fair prices.

The bar iron trade is more active. Some of the Lehigh mills, which have been comparatively idle, report plenty of orders. Prices, however, have not entirely recovered from the recent demoralization.

The Bessemer Merchant Steel Association met in New York on Thursday, and confirmed the existing schedules of prices. Old rails have been more quiet, with no considerable sales. Tees are pretty firmly held at $21. There are several good sized orders on the market.

Scrap iron is very dull. Some lots of foreign have been stored, as the price of importation could not be obtained.

Nails are dull and weak, carload lots having been sold as low as 1.85.

Quotations in full may be found in our weekly register of current prices.

Philadelphia. Aug. 17.

[From our Special Correspondent.]

Pig-iron buyers are more ready to purchase than they have been for some months, but nothing can be sold even for forward delivery except at the very lowest prices. Choice brands are, of course, to be excepted as always, but these happen to be so well sold up that those who would like to have them cannot get them. The weakness in irons has induced makers of Southern brands to offer at a little less than July figures. Several furnaces will be blown in as soon as the market warrants. Yesterday quite a number of inquiries for foundry were received. The mill demand is being covered only for present needs. A good deal of opinionizing is going on, but there is nothing in it. Several good offers have been made this week for foreign iron, and business will be closed, so brokers say, early next week. The manufacturers of steel blooms have booked more orders so far this month than all of last month, but prices do not show it. A heavier business is now on in muck bars, and full prices are paid for urgent wants. More business has developed in merchant bars than we looked for. A large number of buyers have been in market during the past few days making moderate purchases, and if the stacking up process continues there will be no further complaints. There are hopes expressed of an advance, but there is no room for it. Nails have begun to move more freely, and for best makes buyers have been paying a little more. Large supplies of skelp are being purchased at less than full prices. The makers of pipes and tubes report some improvements and good prospects for fall, especially for tubes. Sheet mill owners have been picking up a good deal of business. Plate iron is said to be strong and active, but it is due to low prices, and buyers are filling up. The merchant steel makers are all doing a good business. A little shading has been made on angles, tees and on steel rails. There are signs of several large orders, but no certainty of sales. Steel rails have been asked for the Southwest. Old rails are held too high for much business. Bridge plate orders runing into three hundred tons have been ordered. There is a better feeling all through, but not much actual increase in sales.

Pittsburg. Aug. 16.

[From our Special Correspondent.]

We can report a firm iron market, with increased inquiries for most descriptions of iron; sales for spot delivery are not very numerous for the best of all rea-

IMPORTS AND EXPORTS OF METALS AT NEW YORK AUGUST 5 TO AUGUST 15, AND FROM JAN. 1.

IMPORTS.

Spelter.	Week. Tons.	Year Tons.
American Metal Co.,Lt.	28	275
Friedensville Zinc Co.		24
Hendricks & Bros.		56
H. Lamarche's Sons	6	6
Lewisohn Bros.		33
J. Macy's Sons	28	28
Naylor & Co.		131
Osgood, F.		83
Perkins, C. L.		725
Pope's Sons & Co.		28
Total	62	1,388
Corres. date 1887	26	2,263
Zinc Sheets.	**Tons.**	**Tons.**
G. A. & E. Meyer		1
H. Lemanche's Sons		594
Milne & Co.		1
Naylor & Co.		81
Total		677
Nickel.	**Lbs.**	**Lbs.**
McCoy & Sanders	16,120	164,436
Total	16,120	164,436
Antimony.	**Casks.**	**Casks.**
Total	55	1,905
Corres. date 1887	35	2,355
Pig Lead.	**Tons.**	**Tons.**
Caswell, E. A.		46
N. Corwith & Co.		111
Hendricks Bros.	22	122
Total	22	289
Corres. date 1887	200	1,253
Tin.	**Tons.**	**Tons.**
Abbott & Co., Jere.		3,448
American Metal Co.	34	216
Birdwell & French		89
Crooke S. & R. Co.		131
Davol & Sons		8
Dickerson, Van Dusen		10
Fuoch, Edye & Co.		10
Hendricks Bros.		112
Knauth, W. & K.		21
Lewisohn Bros.		15
Muller, Schall & Co.	162	3,903
Naylor & Co.		1,014
Phelps, Dodge & Co.	112	615
Pope's Sons & Co		124
Schwarer Bros.		7
Thomsen & Co., A. A.	11	17
Thomson & Co., D.		181
Total	285	9,877
Corres. date 1887	719	7,345
Tin Plates.	**Boxes.**	**Boxes.**
American Metal Co.		301
Bridge & Beach Mfg.Co.		339
Bruce & Cook	1,105	70,200
Byrne, James		18,271
Central Stamping Co.		22,202
Coddington & Co., T B.	9,579	108,313
Corbierre, Fellows & S.		1,749
Cort & Co., N. L.	1,392	71,577
Cons. Fruit Jar Co.		849
Crooks & Co, Robert	2,127	42,199
De Mill & Co., H. R.	1,218	14,651
Dickerson, Van Dusen	5,536	167,113
Dolly, T. G. F.		112
Iron Clad Mfg. Co		119
Lalance & Grosjean		2,560
Lombard, Ayres & Co.		12,568
Merchant & Co.		12,108
Mersick & Co., C. S.		4,342
Morewood & Co., G.	2,371	28,460
Naylor & Co.		8,899
Newall Bros.		158
Phelps, Dodge & Co.	24,576	425,656
Potts, W. A., Son & Co.		573
Pratt Mfg. Co.	11,507	110,937
Saunders Bros.		330
Shepard & Co., Sidney		72,256
Stroud & Co		686
Taylor, N. & G.	160	455
Thomsen & Co., A. A.	1,748	87,548
Warren & Co		1,665
Wheeler & Co.	230	4,083
Whittemore & Co., H.	2,394	41,440
Wolff & Reesing		20,352
Wright & Sons, Peter		165
A. M. Underhill		21
Total	88,519	1,380,932
Corres. date 1887	26,233	1,242,799
Pig-Iron.	**Tons.**	**Tons.**
Abbott & Co, Jere		600
Austin, B. & Co		100
Baldwin Bros. & Co.		100
Bartlett & Co., N. S.	300	3,700
Crocker Bros.	773	7,773
Crooks & Co., R.		700
Dana & Co.		600
Downing & Co.		51
Drum'nd, McCall & Co.		20
Erie Despatch		250
Henderson Bros		1,375
Holt, H. N		50
Lee & Co., James		325
Milne & Co., A.	612	1,513
Naylor	640	5,437
Pierson & Co.		15
Page, Newell & Co.		13
Sanderson & Sons		2
Stetson & Co., G. W.		10,757
Tonsila, M. R.		120
Walbaum, W. H.		200
Williamson & Co., Jas.	300	3,100
Total	2,624	36,790
Corres. date 1887	2,579	99,487

Copper.	Week. Pounds.	Year. Pounds.
Lewisohn Bros. from Liverpool	50,000	161,824
Steel Sheets, Billets, Forgings, etc.	**Tons.**	**Tons.**
Abbott & Co., Jere.	14	1,778
Arkell, Jas.		17
Belcher, H. U.		11
Bowker, C. F.	12	243
Bruce & Cook		7
Carey & Moen		24
Carter, G. T.		273
Cohn, M.	9	138
Cooney, D. J.		20
Crooks, R. & Co.		682
Crousbey, H.		236
Dana & Co.		253
Downing & Co., R. F.	4	250
Henderson Bros.		31
Holt, H. N.		6
Hondolette & D.		106
Hugill, Chas.	16	147
Lalance & G. Mfg. Co.		245
Lazard Freres		50
Leng, J. S.		22
Lebenberg, N.		36
Littlejohn, Jas.		40
Lundberg, G.		100
Mersick & Co.	4	128
Milne & Co., A.	163	1,248
Montgomery & Co.		52
Moore's Son & Co.		25
Muller, Schall & Co.		5
Manas, J. & Son		10
Naylor & Co.	176	10,425
Newton & Shipman	5	55
Ogden & Wallace		241
Phelps, Dodge & Co.		3
Phœnix Steel Co.		20
Pierson & Co		694
Pilditch, F. S.	20	218
Power, C. W	3	50
Prosser, Thomas	226	2,363
Roebling's Sons, J. A.		350
Sanderson & Son		42
Shotts Iron Co.		15
Strouse & Co.		25
Temple & S.		8
Union Bridge Co		288
Wagner, W. F.	42	820
Walbaum, W. H.		2,479
Walschid, C. A.		
Wallace, W. H & Co.		41
Webb, J. B.		1
Wetherill & Co	3	5
Wheeler & Co., E. S.		12
Whiting, E. W.		11
Whitney & Co.		27
Wilson, J. G.		10
Whittemore & Co		6
Wolff, R. H	30	192
Wright's Sons & Co.		10
Total	731	24,593
Corres. date 1887	1,550	54,429
Bar-Iron.	**Tons.**	**Tons**
Abbott & Co., Jere	251	2,137
Abeel Bros.		3
Bacon & Co.		13
Hugh Cranshaw	1	1
Downing & Co.	10	149
Jacobus, E. Y.	3	15
Lilienberg, N.		5
Lundberg, Gustaf	150	599
Milne & Co., A.		95
Naylor & Co.	51	76
Ogden & Wallace		4
Page, Newell & Co.		122
Philip, C. M.		20
Stroud & Co	8	8
Wallace & Co., W. H.		16
Wilson, J. G.		7
Totals	423	3,270
Corres. date 1887	366	8,548
Steel & Iron Rods.	**Week. Tons.**	**Year. Tons.**
Abbott & Co., Jere.		6,096
American Screw Co		748
Bacon & Co.		109
Baldwin Bros. & Co.		53
Carey & Moen	46	581
Cohn, M.		60
Dana & Co.	500	2,318
Downing & Co., R. F.		192
Galpin, S. A.		2,122
Heyn, A	46	1,735
Hugill, Chas.		33
Jacobus, E. Y.		12
Lazard Freres		695
Leng, J. S.		17
Lilienberg, N.		100
Lundberg, Gustaf		120
Milne & Co., A.		1,408
Montgomery & Co.		65
Muller, Schall & Co.		150
Naylor & Co.	1,164	14,721
Newton, & Shipman		2
N. Y. Barb Wire Co.		20
Page, Newell & Co.		152
Perry & Ryer		100
Pierson & Co.		10
Pilditch, F. S.		11
Prosser, Thos		132
Roebling's Sons, J. A.		1,560
Sanderson & Son		67
Sheldon & Co., G. W.		11
Walschid C. A.		15
Washburn Mfg. Co.		35
Whittemore & Co.		1,705
Wilson, J. G.		26
Wolff & Co., R. H.	75	1,936
Total	1,331	37,117
Corres. date 1887	1,471	78,172

Old Rails.	Week. Tons.	Year Tons.
Baldwin Bros.		100
Bowening & Archibald.		100
Brown Bros. & Co.		668
Crossman & Bro., W. H		1,005
D., L. & W. R. R.		409
Frankfort, M.		100
Geisenheimer & Co.		100
Henderson Bros		537
Neumark & Gross		1,912
Stetson & Co., Geo. W.		230
Waltam & Co.		300
Winter & Smillie		80
Total		5,541
Corres. date 1887	1,920	110,522
Sheet Iron.	**Tons.**	**Tons.**
Coddington & Co.	73	1,378
Newton & S.		4
Wagner, W. F		40
Whitney & Co.		5
Total	73	1,427
Corres. date 1887	41	1,279
Scrap-Iron.	**Tons.**	**Tons.**
Bowring & Archibald.		100
Brown Bros. & Co.		20
Burgess & Co.		172
Crossman, W. H. & Co.		47
Geisenheimer & Co.		565
Gerhardt, P. T.		8
Muller, Schall & Co.		15
Neumark & Gross		321
Purdon & W.		75
Trowbridge & Co., D.		75
Ward & Co., J. E.		150
Total	91	1,648
Corres. date 1887		14,102
Charcoal Iron.	**Tons.**	**Tons**
Abbott & Co., Jere.		3
Bacon & Co		102
Downing & Co.		25
Lillenberg, N.	15	15
Lunberg, G.		16
Mersick & Co.		70
Milne & Co.		15
Muller, Schall & Co.	101	112
Naylor & Co.		9
Page, Newell & Co.		307
Sanderson & Son		1
Total	116	763
Spiegeleisen.	**Tons.**	**Tons.**
Abbott & Co., Jere.		205
Arkell, Jas.		78
Crocker Bros.	346	2,693
Dana & Co.	400	1,051
Geisenheimer & Co.		228
Jansen, J. A.		10,293
Naylor & Co.	520	8,287
Perkins, C. L.		2,443
Pierson & Co.		1,035
Total	1,266	26,313
Corres. date 1887	5,562	70,472
Iron Ore.	**Tons.**	**Tons.**
Cormack & Co.		1,022
De Flores, R.		7,478
Earnshaw, A.	456	6,013
Ennis & Co.		1,721
Johnston & Co		300
Naylor & Co.		3,706
Outerbridge & Co., A.E.	310	310
Wright, Chas. L. & Co.		1,630
Total	766	22,136
Corres. date 1887	450	29,668

EXPORTS.

Copper.	Week. Pounds.	Year. Pounds.
Abbott & Co	1,944,574	10,379,049
Amer. Metal Co.		4,968,727
Becker, & Co., H.		1,250
Bridgpt. Copper Co		112,000
Copper Queen		224,034
Crossman & Bro.	4,000	4,000
Herold, Emil		250,000
Ismay, J. Bruce		115,000
Jones, R. W.		189,984
Ledoux & Co.		110,276
Lewisohn Bros.		4,860,254
Lomal, F. A.		2,691,293
Mendel, S.		560,000
Muller, Schall		1,105,000
Neumark & Gross		120,143
Orford Co.	225,000	574,881
Parsons & Co.		206,250
Phelps, Dodge		230,664
Pope's Sons	56,250	1,338,780
Todd & Co.		112,026
Total	2,229,824	28,163,611
Corres. date 1887		8,020,209
Copper Matte.		
Abbott & Co		601,145
Amer. Metal Co.,		3,035,600
Ledoux & Co.		469,720
Lewisohn Bros.		1,126,822
Nichols & Co.		516,785
Wilm's, Terhune.	305,200	35,181,248
Total	305,200	40,931,318
Corres. date 1887		22,654,541

CURRENT PRICES.

CHEMICALS.

Acid—Acetic ....2⅜@2¼
Muriatic, 18°, per 100 lbs 1.20
Muriatic, 20°, per 100 lbs.... 1.35@1.50
Nitric, 36°, per 100 lbs ..... 4.50@5.00
Nitric, 42°, per 100 lbs.... .... 6.00
Oxalic.....6½@7
Sulphuric, 60°, per 100 lbs..... 90
Sulphuric, 66°, per 100 lbs 1.10
Alkali—36 p. c..... 1.10@1.15
48 p. c .....1.22½@1.25
Refined, 58°..... 1.15
Alum—Lump, per lb..... 1¾
Ground, per lb..... 2¼
Lump. per ton, Liverpool £5
Sulphate of Alumina, ℔ ton....£3 15
Aqua Ammonia—18°, ℔ lb..... 4
20°, ℔ lb..... 5
22°, ℔ lb..... 6¾
26°, ℔ lb..... 9¾
Ammonia—Sul., per 100 lbs. 3.00@3.50
Carb., per lb..... 7¾
Muriate, per lb..... 7
Arsenic—White, powdered, ℔ lb.3¼@3½
White, glass,..... .
Red. per lb 6½
White, at Plymouth, per ton ... £11 10
Asbestos—Am., p. ton.....$20@$100
Italian, p. ton, c. i. f. L'pool ...£18 0 0
Asphaltum—P. ton 13.00
Prime Cuban, ℔ lb .. .. 5@6c.
Hard, ℔ ton..... $28.00
Trinidad, refined, ℔ ton..... $30.00
Barytes—Sulph.. Am. prime white16.00
Sulph., foreign, floated, p. ton....19.00
Sulph., off color, p. ton 12.50
Carb., lump, f.o.b. L'pool, ton ..£6 0 0
No. 1, casks, Runcorn " "£4 10 10
No 2. bags, Runcorn " " 3 15 0
Bleach—Over 35 p.c., ℔ lb.1.82½@1.95
Borax—Per lb 7¾
Refined at Liverpool, per ton..... £31
Brimstone—*See Sulphur.*
Bromine—Per lb... 36
Cement—Rosendale, per bbl..... 1.00
Portland, American, per bbl..... 2.00
Portland, foreign, per bbl.... .... 2 25
Chalk—Per ton..... ..... 3.00
Precipitated, per lb..... 4
China Clay—English, per ton....18.50
Southern, per ton..... .....13.50
Chrome Yellow—Per lb 8
Cobalt—Oxide, per lb..... ... 270
Copper—Sulph. English Wks.,ton£23
Precip., Eng. Wks, unit.. ..fluctuating
Copperas—Common, per 100 lbs.$ 65
Best, per 100 lbs..... ... ... 1.00
Liverpool, per ton, in casks, £1 16 1.20
Cream of Tartar—Am. 99%....32@32¾
Powdered, 99 p c..... ..... 33½
Emery—Grain, per lb 4
Flour, per lb 2½
Feldspar—Ground, per ton.....14.00
Fuller's Earth—Lump, per bbl. 95
Powdered, per lb.. 2
Gypsum—Calcined, per bbl.. .... 1.25
Iodine—Resublimed..... 3.60
Kainit—Per ton..... .....11.50
Kaolin—*See China Clay.*
Lead—Red, per lb..... 6
White, American, in oil, per lb.... 6½
White, English. per lb 7½
Acetate, or sugar of.....13@13½
Lime Acetate—Amer. Brown.1.50@1.55
" Gray.2.37½@2.40
Litharge—Powdered, per lb ..... 6@6¼
English flake, per lb..... 9
Magnesite—Greek, per ton... ..10.00
Manganese—lump. c. i.f. L'pool.£2 15
Per unit, up or down..... ..... 1s. 6d.
Ground £5 10
Mercuric-Chloride—(*Corrosive Sublimate*) per lb 55
Mineral Wool—Per lb..... 2
Mica—In sheets according to size,
1st quality, ℔ lb.....25@$6 00
Phosphate Rock—S. Carolina,
per ton f. o. b. Charleston..... 5.00
Ground, ex vessel New York .9.50@ 9.60
Canadian Apatite, lump, f. o. b. at
shipping port, per unit..... ... 24
Phosphorus—Per lb..... 65
Plumbago—Ceylon, per lb.... 4@5
American, per lb ..... 5@7
London, per cwt..... .....£0 15 0
Potassium—Cyanide, per lb....39@41
Bromide, per lb..... 37
Chlorate, per lb..... .....15¼@15½
Carb. per lb..... 5
Caustic, per lb..... 7½
Iodide..... .....2.70@2.75
Muriate, per 100 lbs..... 1.77½@1.80
Nitrate, refined, per lb..... 6
Bichromate, per lb.... ..... 10½
Sulphate, per 100 lbs..... ..... 1.10
Yellow Prussiate, per lb..... 19
Red Prussiate, per lb... 42
Pumice Stone—Select lumps, lb. 3@5
Original cks., per lb..... ..... 1¾
Powdered, pure, per lb.. 2
Pyrites—Non-cupreous, p. unit, S. 14
Quartz—Ground, per ton 18.00
Rotten Stone—Powdered, per lb. 8½
Lump, per lb... 5
Eng., powdered, per ton £4
Lump, per ton..... ..... £5
Salt—Liverpool, ground per bbl. 70
Turk's Island, per bbl 25
Salt Cake—Per 100 lbs..... 50
Saltpeter—Crude, per lb..... ... 4½
Refined, per lb..... 6
Soda Ash—Carb.,48 % 100 lb...1.30 @1.35
Caustic, 48 %.... ..... 1.30 @1.35
High test..... ... 1.12½@1.15
Soda Caustic, 60%.....2.40@2.50
" " 70%..... 2.25
" " 74–5%..... 2.20
Sal, English, per 100 lbs..... ..1.15
Sal, American, per 100 lbs..... 1.15
Nitrate, per 100 lbs..... ..... 2.05
Strontium—Nitrate per lb..... 10½
Sulphur—Roll, per lb..... .... 1¾
Flour, per lb 2
Crude Brimstone, 2s., ℔ ton.... 22.00
Crude Brimstone, thirds, per ton 21.25
Talc—Ground French, per lb.. ... 1¼
Domestic, per lb..... 6
Domestic, per ton..... .....15 00
c. i. f. Liverpool, per ton..... .. £4 5 0
Tannin—Pure, per lb. .....
Vermillion—American, per lb... 50
English, per lb..... 65
Vitriol—(Blue), Ordinary, per lb.. 5½
Extra, per lb 6
Zinc Oxide—Am., Dry, per lb.... 4½
Antwerp, Red Seal, per lb..... 6@6½
Paris, Red Seal, per lb..... .....6½@7
* Spot.

BUILDING MATERIAL.

Bricks—Pale, per 1,000 ..... 2.25@2.75
Jerseys, per 1,000.. ..... 4.25@5.00
Up Rivers, per 1000..... ... 4.25@5.00
Haverstraw, per 1,000... . . 5.00@6.00
Front bricks, per 1,000, from.14.00
Building Stone—Amherst
freestone, per cu. ft., from.. 95@1.00
Brownstone, per cu. ft., from. 1.00@1.35
Granite, rough, ℔ cu.ft., from 45@1.25
Slate—Purple and green roofing, per 100 ft..... ..... 5.00@6.00
Red roofing, per 100 sq. ft.... 15.00
Black. roofing, per 100 sq. ft. 4.00@5.00

THE RARER METALS.

Aluminum—(Metallic), per lb...$5.00
Arsenic—Metallic. per lb..... 32
Barium—(Metallic), per lb..... .975.00
Bismuth—(Metallic), per lb..... 2.40
Cadmium—(Metallic), per lb....150.00
Calcium—(Metallic), per oz.....150.00
Cœsium—(Metallic)..... .....
Cerium—(Metallic). per oz..... .160.00
Chromium—(Metallic), per lb...200 00
Cobalt—(Metallic), per lb..... 6.00
Didymium—(Metallic), per oz...160.00
Erbium—(Metallic), per oz.... ...140.00
Gallium—(Metallic), per oz 3250.00
Glucinum—(Metallic) 4.50
Indium—(Metallic), per oz..... 158.00
Iridium—(Metallic), per lb.. ...700.00
Lanthanum—(Metallic), per oz.175.00
Lithium—(Metallic), per oz.....160.00
Magnesium—Per lb..... .. 4.00
Manganese—Metallic, per lb.... 1.10
Molybdenum—(Metallic), per oz. 6.00
Nickel—(Metallic), per lb..... .65
Niobium—(Metallic), per oz.....128.00
Osmium—(Metallic), per lb 640.00
Palladium—(Metallic), per lb...512.00
Platinum—(Metallic), per lb....128.00
Potassium—Metallic, per oz.... 2.00
Rhodium—(Metallic), per lb....512.00
Ruthenium—(metallic), per oz.112.00
Rubidium—(Metallic), per oz...200.00
Selenium—(Metallic), per oz.... 3.00
Sodium—(Metallic) per lb. .. 4.50
Strontium—(Metallic), per oz..128.00
Tantallum—(Metallic) per oz....144.00
Telurium—(Metallic) per oz.... 9 00
Thallium—(Metallic) per oz..... 3.00
Titanium—(Metallic) per oz....32.00
Thorium—(Metallic) per oz....272.00
Tungsten—(Metallic) per oz..... 1.25
Vanadium—(Metallic), per oz..320.00
Yttrium—(Metallic), per oz 144.00
Zirconium—(Metallic), per oz..240.00

METALS.

Aluminum—
Bronze (10 %), ℔ D..... 46c.
Copper—
Lake Ingot, Spot, ℔ D.... 16·70@16·80c.
Electrolytic, ℔ D..... 16·25c.
Casting Brands, ℔ D.. 15⅝@15·50c.
Chili Bars, London, ℔ ton..... £81 15s.
Sheet Copper (according to
size), ℔ D.....25 @38c
Lead—
Domestic, Common, Spot.. 4·40@4·45c.
Foreign..... 4 75@4 80c.
Sheet. ℔ D, net .....6.75@6·80c. net
Pipe, ℔ D..... 6¼c. "
Tin lined Pipe, ℔ D..... 12c. "
Shot, ℔ D..... 6½@ 7¼c
Tin—
Tin Plates .... 14s. 6d.
Tin Spot in London. £93
Pig tin, spot in N. Y., ℔ D.. 21·50c.
Zinc—
Domestic spelter, ℔ D..... .4·75@4·80c.
Foreign spelter, ℔ D... .... 5·40@5·50c.
Silesian, ton..... £17
Sheet, American, ℔ D ..... 6@6¼c.
Antimony—Hallet's, per lb.. 9⅝@9½c.
Cookson's, per lb..... .. 12
Star Antimony..... .... £38
Quicksilver—Per lb.....61@63c.
London, ℔ flask..... .....£7@£7¼

IRON AND STEEL.
New York Prices.

American Pig-Iron.—At tidewater.
No. 1 X ....$18.00@$18.50
No. 2 X..... .. ....$17.00@ 17.50
Forge..... ....$16.00@.. ..
Scotch Pig—Coltness... $20.25@ .....
Clyde ..... 18.50@ .....
Dalmellington..... 18 50@.....
Summerlee..... ..... @ .....
Shotts... ..... 19.50@ 20.00
Langloan ..... 19.50@ .. ..
By Cable to-day to the Metal Exchange :
Scotch Warrants..... .40s. 0d.
Coltness, at Glasgow ..... .48s. 0d.
Langloan, at Glasgow..... .45s. 6d.
Summerlee, at Glasgow..... .48s. 6d.
Gartsherrie, at Glasgow .... .45s. 9d.
Glengarnock, at Ardrossan..... 44s. 0d.
Dalmellington, at Ardrossan..... 41s. 6d.
Eglinton, at Ardrossan ... .40s. 0d.
Bessemer Pig—
Foreign, nominally..... .....$19.00
Domestic .... 16@17.50
Spiegeleisen—
German, 20 per cent..... .....$26.50
English, 20 " " .....$27.00@ 27.50
" 30 " " ..... 31.00@ 31.50
Ferro Manganese, 80%..... 49.50@ 50.00
Steel Blooms, nominally ....
Steel Billets, " 28.50@ 29.00
Steel Nail Slabs, " 29 50@ .....
Steel Wire Rods, " 46.00@ .....
Steel Rails—
Heavy sections, at mill....$28.50@ 29.00
Light " " .... 30.50@ 34.50
Structural Iron and Steel—
Bridge Plate, at mill.. .....1·9 @2c.
Angles, at mill ..... 2·00@2·10c.
Tees, at mill..... ..... 2·40@2·50c.
Steel Angles, at mill.... ...2·2 @2·3c.
Beams and Channels, on wharf, 3·3c. base
Steel Plates—
Tank and Ship, on wharf.....2·25@2·4
Shell, on wharf..... ....2·4 @2·6
Flange, " ..... 2·60 @2·75
Fire-Box, on wharf.....3 @3·50
Iron Plates—
Common tank, on wharf....1·9@2·0c.
Refined, on wharf..... 2·1@2·3c.
Shell, " ..... 2·1@2 3c.
Flange, " ..... 3·4@3·5
Extra flange, on flange.....3·5@3·75
Bar Iron—
Refined..... ..... 1·7@1·9c. "
Common ..... 1·5@1·6c. "
Merchant Steel—
American tool ..... 8½@10c.
Special grades..... 13 @20c.
Crucible machinery..... 5 @6c
" spring..... ..... 4½c.
Bessemer machinery..... 2·2@2·5c
" spring. . ..... 2·7@2·9c.
Cast-Iron Pipe—
According to size..... $25 00@$32.00
Wrought-Iron Pipe—nominally—
Butt-Welded, Plain and Tarred,57½% disc;
Galv., 50% disc.
Lap-Welded, Plain and Tarred,67½% disc ;
Galv., 55% disc.
Boiler Tubes—Per cent disc 62½%
Rail Fastenings—
Spikes..... ....2·1 @2·15c. delv'd
Angle Fish-bars..... @1·9c.
Bolts and Sq. Nuts.....2·7 @2·8c
" Hex. " .....3 @
Wrought Scrap—
Foreign, *ex store*.. ..... @
No. 1 Yard *to vessel*..... 18.00@
Cast Scrap .... 15.50@ 16.50
Old Car Wheels..... .... 18.00@
Old Rails—Tees .... 21.00@
—Doubles ..... @
Nails—In car-load lots. .. 1·85@1·90c.
—From store .... 2·00@

Louisville Prices.

Hot Blast Irons—
So. Coke, No. 1.....$16.00@$16.50
" " No. 2..... 15.00@ 15 50
" " No. 2½ ..... 14.50@ 15.00
Mahoning Valley (Lake Ore
Mixture) ..... 18.00@ 18.50
So. Charcoal, No. 1..... 17.00@ 17.50
" " No. 2..... 16.00@ 16.50
Missouri Charcoal No. 1.... 19.00@ 19.50
" " No. 2.... 18.50@ 19.00
Forge Irons—
Neutral Coke..... .....$13.50@$14.25
Cold Short ..... 13.25@ 13.75
Mottled..... 12.25@ 12.75
Car Wheel and Malleable Irons—
Southern (standard brands).$22.00@$24.00
" (other brands)..... 18.00@ 18 50
Lake Superior..... 21.50@ 22.50

Pittsburg Prices.

Coke or Bituminous Pig—
Foundry No. 1..... .....$16.75@17.00
Foundry No. 2..... ..... 15.75@16.00
Gray Forge No. 3..... ..... 14.75@15.00
" " No. 4.. ... ... 14.35@14.50
White .... 13 75@14.25
Mottled..... ..... 13.75@14.25
Silvery .... 16.50@18.00
Bessemer..... ..... 17.25@17.50
Low Phos .... 21.75@22.00 cash
Charcoal Pig—
Foundry No. 1. .... 23.50@24.50
Foundry No. 2..... . . 22.00@24.00
Cold-Blast..... ..... 25.00@27.00
Warm-Blast..... ..... 24.00@25.00
20 p. c. Spiegel..... ..... 27.50@ ...
Muck-Bar..... ... . 27.00@27.50
Steel Blooms..... ..... 28.50@ ....
Steel Slabs .... 2⅜ 50 at works
Steel Crop Ends.... ..... 18.00@18.50
Steel Bloom Ends..... 17.50@17.75
Ferro Manganese, 80%..... 51.00@ ....
Steel Billets..... 28.75@29.00 at works
Old Iron Rails..... .. 21.00@21.50
Old Steel Rails..... ..... 19.00@ ...
No. 1 W. Scrap..... ..... 19.00@20.00
No. 2 W. Scrap..... ..... 17.50@18.00
Steel Rails..... ..... *31.50@32.00
" light sections ..... *32.00@33.00
Bar Iron., nominal..... 1.75@ 1.80
Nails .... $1.90 usual discount
Steel Nails..... ..... .$1.90
Two per cent off for cash.
* At works.

Philadelphia Prices.

Foundry No. 1..... ..... $18.00@19.00
Foundry No. 2..... ..... 17.00@18 00
Gray Forge..... ..... 15.50@16.50
Bessemer Pig..... ..... 19.50@20.00
Steel Rail Blooms..... ..... 29.50@nom.
Foreign Bessemer..... ..... 19.50@20.00
Spiegeleisen..... ..... 26.50@27.00
Scrap, Selected..... ..... 22.00@24.50
No. 1 .... 21.00@20.00
Cargo Scrap..... ..... 21.00@20.50
Muck-Bars..... ..... 27.50@ ....
Merchant Iron..... ..... 1.75@ 1.95
Plate Iron..... ..... 2.00@ ...
Tank Iron .... 2.00@ 2.10
Skelp Iron..... ..... 1.80@ 1.90
Angles..... ..... 2.00@ 2.10
Beams and Channels..... .. 3.30.@...
Nails .... 1.90@ 2.00
Steel Rails..... ..... 30.00@31.00
Old Rails..... ..... 21.00@22.00
Best refined..... .....2@2·1c. baser

STOCK MARKET QUOTATIONS.

Baltimore, Md.

Company.	Bid.	Asked.
Atlantic Coal....	1.35	1.75
Balt. & N. C.....	....	.40
Big Vein Coal..	....	....
Conrad Hill . ..	.07	.1
Diamond Tunnel	....	....
George's Crk. C.	100¼@101	103¼@103½
Lake Chrome..	.05	....
N. State, Baito..	.20	.30
Ore Knob	....	.09@ .11
Silver Valley....	.88	1.00@1.05

Highest and lowest prices bid and asked during the week ending August 16th.

Birmingham, Ala.

Company.	Bid.	Asked.
Ala. Conn. C..	....	25
Bir. Min. & Mfg.	...	190 @192½
Bir. Fur. & Mg.	....	18¼
Broken Arrow C. & M...	....	14⅞@ 15
Decat. L. Imp. & Fur....	12 @13¼	13.20@ 14¼
DecaturMin. L.	....	23 @ 26
Enterprise Mfg. Co.....	35	50
Jagger-Townsley C & C.Co.	....	11
Mag-Ellen C. & Mg	50 @60	...
No Bus. Crk., C. & Mg.....	5	7½@ 12½
Pioneer M. & Mfg	...	...
Sloss I. & S.. ..	12 @16	13¾@ 17
* Sloss I. & S..	76 @77¾	78½
Sheffield C. & I.	95	96 @102
Tenn. C. & I. Co.	27	....
*William son Iron Co....	...	....
WoodstockS&I	49½@50	52 @ 55

* Bonds.

Highest and lowest prices bid and asked during the week ending August 11th.

Pittsburg, Pa.

Company.	H.	L.	Closing
Allegegheny Gas .	35.00	35.00	35.00
Bridgewater Gas..	75.00	70.00	72.00
Charlotte Mg. Co..	.....	.....	.....
Chartiers Val. Gas.	55.00	53.00	53.63
Columbia Oil Co..	4.00	3.50	4.00
Consignee Mg. Co.	.....	.....	.....
Forest Oil Co.....	.....	.....	. . .
Gogebic Iron Syn..	.....	.....	.....
Iron City Mining.	.....	.....	.....
Kittanning Gas....	.....	.....	.....
La Noria Mining ..	2.00	1.50	1.63
Lustre Mining....	.....	.....	.....
M't'turers' Gas....	.....	.....	.....
Nat. G. Co. of W. Va.	60.00	60.00	60.00
N. Y. & C. Gas Coal	.....	.....	.....
N. Y. & Westmoreland G., C. & C..	.....	.....	.....
Ohio Valley Gas ..	41.00	40.00	40.00
Pennsylvania Gas.	.....	.....	.....
People's Nat. Gas.	.....	.....	.....
Philadelphia Co...	46.50	45.50	46.50
Pine Run Gas.....	.....	.....	.....
Pittsburg Gas.....	60.00	60.00	60.00
Royal Gas.....	.....	.....	...
Silverton Mining..	2.00	2.00	2.00
South Side Gas...	.....	.....	.....
Tuna Oil Co.....	59.00	58.00	59.00
Washington Oil...	49 00	48.00	48.00
W't'h'se Air-Brake	116.00	116.00	116.00
West'house Brake	60.13	60.00	60.13
Westmoreland & Cambria Gas..	46.00	46.00	46.00
Wheeling Nat. Gas.	27.00	26.00	26.88
Yankee Girl Mg....	.....	.....	.....

Highest and lowest prices bid and asked during the week ending August 16th.

Foreign Quotations.

London. August 4.

Company.	Highest.	Lowest.
Alturas Gold, Idaho...	13s.	12s.
Arizona Copper, Ariz..	15s. 6d.	15s.
Birdseye Creek, Cal....	£¾	£⅛
Carlisle, N. Mex	17s. 6d.	16s. 6d.
Centennial, Cal.	7s. 6d.	5s.
Colorado United, Colo..	1s	2s.
Columbian, S. A.....	£1 11-16	£1 9-16
Denver Gold, Colo.....	1s. 6d.	1s.
Dickens Custer, Idaho.	6s. 6d.	6s.
Eberhardt, Nev	4s	6d.
El Callao, Venezuela....	£2¼	£1⅞
Empire, Mont	18s.	16s.
Flagstaff, Utah.....	4s. 6d.	3s. 6d.
Garfield, Nev.....	16s.	14s.
Gold Hill, N. C.....	1s. 6d.	1s.
Idaho.....	14s. 6d.	13s. 6d.
Ilex, Cal.....	17s.	15s.
Josephine, Cal	7s. 6d.	5s. 6d
Kohinoor, Colo.....	3s. 6d.	2s. 6d.
Lady Franklin N. Mex .	6s.	4s.
Mason & Barry, Portugal	£9¼	£9
Montana Lt., Mont	£1⅝	£1½
New California, Colo...	5s. 6d.	5s
New Emma, S., Utah...	6s.	5s. 5d.
New Hoover Hill, N. C.	2s.	1s. 6d.
New La Plata, Colo...	2s.	1s. 6d.
Pittsburg Cons., Nev...	27s. 6d.	22s. 6d.
Plumas Eureka, Cal....	£1	£15-16
Quebrada, Venezuela...	£4¾	£4¼
Richmond Con., Nev...	£4	£3½
Ruby & Dunderberg, Nev	3s.	2s. 6d.
Russell Gold, N. C.....	4s.	3s.
Sierra Buttes, Cal.....	£⅝	£½
Stanly, N. C.....	10s.	5s.
Tolima, Colombia, S.A.	£2¼	£1¾
Union Gold, Colo.....	2s.	1s.
U. S. Placer, Colo.....	£¾	£⅝
Viola Lt., Idaho	18s. 6d.	17s. 6d.

	*Paris.**	August 2.
El Callao.....	53.75	53.75
Golden River....	405	405
Lexington.	80	80
" parts..... .	4.00	4.00
Rio Tinto.....	500	500
" obligations...501.25		501.25
" " 2d.498.75		498.75
Tharsis	132.50	132.50

* Francs.

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total levied.	Date and amount of last			Dividends. Total paid.	Date and amount of last		
1	Adams, S. L.	Colo.	$1,500,000	150,000	$10	*				$555,000	Jan.	1887	.15
2	Alice, S. C	Mont	10,000,000	400,000	25	*				750,000	Sept	1888	.06¼
3	Alturas, G	Idah.	1,500,000	300,000	5					95,000	Sept	1886	50
4	Amy & Silversmith, S.	Mon.		341,419						247,530	Aug.	1887	12½
5	Atlantic, C.	Mich	1,000,000	40,000	25	$280,000	Apl.	1875	$1.00	480,000	Aug.	1888	1.50
6	Argenta, S	Nev.	10,000,000	100,000	100	325,000	July	1885	.10	40,000	Feb.	1880	20
7	Aurora, I.	Mich	2,000,000	100,000	20					155,000	Oct.	1887	1.87½
8	Bassick, G. S.	Colo.	10,000,000	100,000	100	*				400,000	Mar.	1884	1.00
9	Belle Isle, S.	Nev.	10,000,000	100,000	100	145,000	Feb	1887	.20	300,000	Dec.	1879	.25
10	Belcher, G. S.	Nev.	10,400,000	104,000	100	2,718,000	July	1888	.50	15,397,200	Apl	1876	1.00
11	Bellevue Idaho, S. L.	Idah.	1,250,000	125,000	10	57,500	Nov.	1887	.2	187,500	Jan	1887	10
12	Black Bear, G.	Cal.	3,000,000	30,000	100	82,500	Dec.	1884	.25	895,000	May	1883	.20
13	Bodie Con., G. S.	Cal.	10,000,000	100,000	100	450,000	Feb.	1888	.50	1,295,000	Apl.	1885	.50
14	Bonanza Developm't	C & M	3,000,000	300,000	10					135,000	Oct.	1882	.15
15	Bonanza K'g, Cons. S.	Cal.	1,000,000	100,000	10	*				185,000	Feb.	1885	.10
16	Boston & Mont, G.	Mont	2,500,000	250,000	10	*				520,000	Jun	1886	.15
17	Boston & Mont., C. S	Mont	2,500,000	100,000	25	*				200,000	July	1888	2.00
18	Breece, S.	Colo.	,000,000	200,000	25	*				2,000	Feb.	1880	.01
19	Brooklyn Lead, L. S.	Utah	500,000	50,000	10					127,000	July	1887	.05
20	Bulwer, G.	Cal	10,000,000	100,000	10	80,000	May	1888	.20	175,000	Jan.	1884	.10
21	Caledonia, G.	Dak.	10,000,000	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				30,850,000	Sept	1888	5.00
23	Carbonate Hill, S. L.	Colo.	2,000,000	200,000	10	*				80,000	Apl.	1884	.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	1,890,000	Aug.	1888	1.50
28	Christy, S.	Utah	10,000,000	100,000	100					10,000	Jun.	1885	.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	*				323,750	Aug.	1888	.05
31	Confidence, S. L.	Nev.		24,960		287,440	Apl.	1887	.50	174,720	Aug.	1888	1.00
32	Cons. Cal. & Va., G. S.	Nev.	21,600,000	216,000	100	108,000	Jan.	1885	.20	2,116,800	Aug.	1888	.50
33	Con. Gold Mining, G.	Ga.	500,000	100,000	5	*				108,000	Nov.	1888	02
34	Contention, S.	Ariz.	12,500,000	250,000	50					†2,587,000	Dec.	1884	.25
35	Crescent, S. L. G.	Utah	15,000,000	600,000	25					210,000	Aug.	1886	.05
36	Crown Point, G. S.	Nev.	10,000,000	100,000	100	2,775,000	Apl.	1888	.50	11,588,000	Jan.	1875	2.00
37	Daly, S. L.	Utah	3,000,000	150,000	20					712,500	Aug.	1888	.25
38	Deadwood-Terra, G.	Dak.	5,000,000	200,000	25	*				§1,000,000	Nov.	1887	.10
39	Derbec B. Grav., G. S.	Cal.	10,000,000	100,000	100	90,000	Dec.	1881	.10	180,000	May	1887	.10
40	Dunkin, S. L.	Colo.	5,000,000	200,000	25	*				335,000	July	1888	.05
41	Eclipse	Colo.	100,000	100,000	1					20,000	Nov.	1887	.10
42	Elkhorn, G. S.	Mont	1,000,000	100,000	10	50,000	July	1883	.50	170,000	July	1887	.05
43	Empire Lt., G.	Mont	500,000	100,000	5					70,500	Oct.	1887	.37½
44	Eureka Con., G. S. L.	Nev.	5,000,000	50,000	100	600,000	July	1886	1.00	4,918,500	July	1888	.25
45	Evening Star, S. L.	Colo.	500,000	50,000	10	*				1,400,000	Nov	1883	.50
46	Excelsior, G.	Cal.	10,000,000	100,000	100	560,000	Sept	1885	1.00	875,000	Oct.	1880	.25
47	Father de Smet, G.	Dak.	10,000,000	100,000	100	200,000	Nov	1878	1.00	1,125,000	Dec.	1885	.20
48	Franklin, C.	Mich	1,000,000	40,000	25	220,000	Jun.	1871		720,000	July	1888	2.00
49	Freeland, G. S. C.	Colo.	5,000,000	200,000	25	*				190,000	July	1886	.10
50	Fresno Enterprise, G	Cal.	5,000,000	100,000	50		Mch	1883	.10	110,000	July	1882	.10
51	Garfield Lt., G. S.	Nev	500,000	100,000	5					85,000	Apl.	1888	.12½
52	Golconda, G. S.	Idah.	1,000,000	100,000	10					120,000	May	1888	.60
53	Gould & Curry, G. S.	Nev.	10,800,000	108,000	100	5,301,000	Jun.	1888	.50	3,826,800	Oct.	1870	10.00
54	Grand Central, S.	Ariz.	1,000,000	100,000	10					625,000	Dec.	1882	.25
55	Grand Prize, S.	Nev.	10,000,000	100,000	100	570,000	Apl.	1886	.50	495,000	Mar.	1884	.25
56	Granite, S.	Colo.	125,000	125,000	1					6,250	May	1883	.01
57	Granite Mountain, S.	Mont	10,000,000	400,000	25					4,500,000	July	1888	.25
58	Green Mountain, G.	Cal.	1,250,000	125,000	10	*				212,000	Nov.	1881	.07½
59	Hale & Norcross, G. S	Nev.	11,200,000	112,000	100	5,086,000	July	1887	.50	1,822,000	Aug.	1888	.50
60	Hall-Anderson, G.	N. S.	150,000	150,000	1					7,000	Jan.	1882	.05
61	Hecla Con., S. G. L. C.	Mont	1,500,000	30,000	50					1,182,500	July	1888	.50
62	Hel'a Mg & Red, G. S. L	Mont	3,315,000	663,000	5	*				197,970	July	1886	.06
63	Holmes, S.	Nev.	10,000,000	100,000	0	300,000	Sept	1885	10	75,000	Apl.	1886	.25
64	Holyoke, G.	Idah.	200,000	200,000	1					27,000	Feb.	1883	.10
65	Homestake, G.	Dak.	12,500,000	125,000	100	200,000	July	1878	1.00	4,193,750	Aug.	1888	.20
66	Honorine, S. L.	Utah	500,000	250,000	2	25,000	Jun.	1883		125,000	Sept	1887	.05
67	Hope, S.	Mont	1,000,000	100,000	10	*				233,252	Apl.	1888	.25
68	Horn-Silver, S. L.	Utah	10,000,000	400,000	25	*				4,000,000	Nov.	1884	.50
69	Hubert, G.	Colo.	500,000	50,000	10	*				234,000	July	1888	.08
70	Idaho, G.	Cal.	310,000	3,100	100					4,943,500	Aug.	1888	10.00
71	Ideal, S. L.	Colo.	1,500,000	50,000	10					15,000	Oct.	1886	.05
72	Illinois, S	N. M.	100,000	100,000	1	*				25,000	Jan.	1887	.25
73	Independence, S.	Nev.	10,000,000	100,000	100	340,000	Oct	1886	.20	225,000	Sept	1879	.25
74	Indian Queen, S.	Nev.	250,000	125,000	2					368,750	July	1883	.03
75	Iron Hill, S.	Dak.	2,500,000	250,000	10	111,250	Jun	1888	.04	156.25	Nov.	1887	.07½
76	Iron-Silver, S. L.	Colo	10,000,000	500,000	20	*				2,300,000	July	1888	.20
77	Jackson, G. S.	Nev	5,000,000	50,000	100	10,000	Nov	1880	.20	45,000	Oct.	1886	.10
78	Jay Gould	Mont	2,000,000	400,000	5	*				267,000	Jun.	1888	.09
79	Jocuistita, S.	Mex.	2,500,000	250,000	10					1,200,000	Feb.	1885	.50
80	Jumbo, G.	Colo	2,000,000	200,000	10					35,000	Oct.	1887	.02½
81	Kentuck	Nev.	3,000,000	30,000	100	342,000	Nov	1881	.30	1,350,000	Dec.	1886	.10
82	La Plata, S. L.	Colo	2,000,000	200,000	10	*				610,000	Sept	1882	.30
83	Leadville Cons., S. L.	Colo	4,000,000	400,000	10	*				423,000	Apl.	1887	.05
84	Lexington, G. S.	Mont	4,000,000	40,000	100	*				565,000	Jan.	1885	2.00
85	Little Chief, S. L.	Colo	10,000,000	200,000	50	*				800,000	July	1888	.10
86	Little Pittsburg, S. L	Colo.	20,000,000	200,000	100	*				1,050,000	Mch.	1880	50
87	Manhattan, S.	Nev	5,000,000	50,000	100	250,000	Dec	1887	1.00	437,500	Feb	1886	.25
88	Marion Bullion, G	N. C	500,000							15,000	Jan.	1886	
89	Martin White, S.	Nev.	10,000,000	100,000	100	1,150,000	Mar	1886	.25	140,000	Dec.	1886	.25
90	Mary Murphy, G. S.	Colo.	350,000	3,500	100	*				122,500	Feb.	1888	5.00
91	Minnesota, C.	Mich	1,000,000	40,000	25	420,000	Apl	1886	1.00	1,820,000	Mar.	1876	
92	Mono, G.	Cal.	5,000,000	50,000	100	616,000	Sept	1887	.50	12,500	Mar.	1886	.25
93	Montana, Lt., G. S.	Mont	3,300,000	660,000	5	*				2,010,96-	Apl.	1888	.25
94	Morning Star, S. L.	Colo	1,000,000	100,000	10					775,000	Mar.	1888	.25
95	Moulton, S. G.	Mont	2,000,000	400,000	5	*				380,000	Dec.	1887	.07½
96	Mount Pleasant, G.	Cal.	150,000	150,000	1	*				150,000	Feb.	1887	.30
97	Mt. Diablo, S.	Nev	5,000,000	50,000	100	137,500	Jun	1880	2.00	110,000	July	1888	.20
98	Napa, Q	Cal.	700,000	100,000	7					290,000	Jan.	1883	.10
99	Navajo, G. S.	Nev.	10,000,000	100,000	100	485,000	Apl	1888	.30	325,000	Feb.	1885	.25
100	N. Hoover Hill, G. S.	N. C	300,000	120,000	2½	*				30,000	Dec.	1885	.06¼
101	Northern Belle, S.	Nev.	5,000,000	50,000	100	425,000	Jan.	1884	8.00	2,400,000	Apl.	1883	50
102	North Belle Isle, S.	Nev.	10,000,000	100,000	100	250,000	Mar	1887	.50	230,000	May	1888	.50
103	Ontario, S. L.	Utah	15,000,000	150,000	100					9,350,000	July	1888	.50
104	Ophir, G. S.	Nev.	10,000,000	100,000	100	4,059,440	Aug	1887	.50	1,595,800	July	1882	1.00
105	Original, S. C	Mont	1,500,000	60,000	25	*				120,000	Apl.	1888	.05
106	Osceola, C.	Mich	1,250,000	50,000	25	480,000	Apl	1876	1.00	1,172,500	Sept	1888	1.00
107	Oxford, G.	N. S.	125,000	125,000	1	*				33,500	Oct.	1885	.02
108	Paradise Valley, G. S	Nev.	10,000,000	100,000	100	62,000	Apl	1888	.15	150,000	Apl.	1887	.10
109	Parrott, C.	Mont	1,800,000	180,000	10					210,000	July	1888	.20
110	Peacock, S. G. C.	N. M	2,000,000	200,000	10	*				60,000	Nov.	1886	
111	Pleasant Valley, G. S.	Cal.	10,000,000	100,000	100	10,000	Mar	1884	.10	30,000	Dec.	1882	.05
112	Plutus, G. S. C. L.	Colo	2,000,000	200,000	10	*				20,000	Feb.	1886	.10
113	Plymouth Con., G.	Cal.	5,000,000	100,000	50	*				2,280,000	Feb.	1888	.40
114	Prussian, S. L.	Colo.	1,500,000	150,000	10					132,000	Jan	1883	.10
115	Quicksilver, pref., Q.	Cal.	4,300,000	43,000	100					1,417,692	July	1888	1.50
116	" com., Q.	Cal.	5,700,000	57,000	100					151,000	July	1882	.40
117	Quincy, C.	Mich	1,000,000	40,000	25	200,000	Dec	1862		4,970,000	Aug.	1888	5.00
118	Richmond, S. L.	Nev.	1,350,000	54,000	25	*				4,312,587	Jun.	1887	1.25
119	Ridge, C.	Mich.	500,000	20,000	25	219,939	Mar	1886	.50	99,785	Feb.	1880	.50
120	Rising Sun, S.	Dak.	750,000	150,000	5	*				52,000	May	1881	.07½
121	Robinson Con., S. L.	Colo.	10,000,000	200,000	50	*				585,000	Mar.	1886	.05
122	Robert E. Lee, S. L.	Colo	10,000,000	500,000	20					100,000	Dec.	1882	.50
123	Rooks, G.	Vt.	500,000	50,000	10	*				61,000	Apr	1885	.30
124	Savage, S.	Nev.	11,200,000	112,000	100	6,380,000	Aug	1888	.50	4,460,000	July	1869	3.00
125	Security L. Mg., Mfg.	Colo	1,000,000	100,000	10	*				50,000	July	1884	
126	Shoshone, G.	Idah	150,000	150,000	1					7,500	Apl	1883	.01
127	Sierra Buttes, G.	Cal.	2,225,000	122,500	10					1,492,557	Apl.	1888	.12½
128	Sierra Nevada, G. S.	Nev.	10,000,000	100,000	100	6,125,000	July	1888	.25	102,000	Jan.	1871	1.00
129	Silver Cord, G. S. L.	Colo.	5,000,000	500,000	10					225,000	Nov.	1888	.25
130	Silver King, S.	Ariz.	10,000,000	100,000	100	50,000	Jun.	1888	.50	1,950,000	July	1887	.25
131	Silverton, G. S. L.	Colo.	2,000,000	200,000	10	*				80,000	Nov.	1886	.02
132	Small Hopes Cons., S.	Colo.	5,000,000	250,000	20	*				3,112,500	Dec.	1887	.20
133	Smuggler, S. L.	Colo.	600,000	60,000	10					66,700	Aug.	1883	.25
134	Socorro, C.	N. M.	250,000	2,500	100					4,000	Mch	1882	.00⅜
135	Spring Valley, G.	Cal.	200,000	200,000	1	50,000	Oct.	1886	.25	50,000	Jan	1881	25
136	Standard, G. S.	Cal.	10,000,000	100,000	100	25,000	Oct.	1884	.25	3,595,000	Jun.	1888	.05
137	Stormont, S	Utah	500,000	500,000	1	*				155,000	Nov	1881	.05
138	St. Joseph, L	Mo.	1,500,000	150,000	10	*				844,000	Dec	1887	.20
139	Surinam, G.	D. G.	3,000,000	600,000	5					105,000	Nov	1887	.05
140	Swansea, G	Colo.	600,000	60,000	10	*				9,000	Apl.	1888	.02½
141	Syndicate, G.	Cal.	10,000,000	100,000	100	38,729	July	1882	.15	48,308	Sept	1885	.10
142	Tamarack, C.	Mich.	1,000,000	40,000	25	520,000	Apl.	1885	3.00	240,000	July	1888	3.00
143	Tip Top, S	Ariz	10,000,000	100,000	100	250,000	Sept	1883	.25	100,000	Nov.	1881	.20
144	Tombstone, G. S. L.	Ariz	12,500,000	500,000	25	*				1,250,000	Apl.	1882	.10
145	United Verde, C.	Ariz.	3,000,000	300,000	10	*				97,500	Feb.	1884	.20
146	Valencia, M	N. H.	150,000	1,500	100	*				37,500	Apl	1886	2.50½
147	Viola Lt., S. L.	Idah.	750,000	150,000	5	*				222,500	Dec.	1887	.12
148	Yankee Girl	Colo.	2,500,000	250,000	10					1,275,000	July	1887	.10
149	Yellow Jacket, G. S.	Nev.	12,000,000	120,000	100	5,448,000	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.	Date & am't of last.		
1	Agassiz Cons., S. L.	Colo.	$2,500,000	50,000	$50	*			
2	Allouez, C.	Mich	2,000,000	80,000	25	$657,000	Jun	1888	1.00
3	Alpha Con., G. S.	Nev.	3,000,000	30,000	100	536,250	Jan.	1888	87½
4	Alta, S.	Nev.	10,080,000	100,800	100	2,191,200	May	1888	.50
5	Amador, G.	Cal.	400,000	200,000	2	*			
6	American Flag, S.	Colo.	1,250,000	125,000	10	300,000	Jun	1877	.50
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	Bechtel Con., G.	Cal.	10,000,000	100,000	100	173,500	Jan.	1883	.10
12	Belmont, S.	Nev.	5,000,000	50,000	100	735,000	Apl.	1886	.10
13	Best & Belcher, G. S	Nev.	10,080,000	100,800	100	2,029,390	Jun.	1888	.25
14	Big Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*			
15	Bi-Metallic, S.	Mon.	5,000,000	200,000	25	*			
16	Black Oak, G.	Cal.	3,000,000	300,000	10	*			
17	Boston Con., G.	Cal.	10,000,000	100,000	100	170,000	Nov	1883	.25
18	Bremen, S.	N. M	5,000,000	500,000	10	*			
19	Brunswick, G.	Cal.	2,000,000	400,000	5	*			
20	Bullion, G. S.	Nev.	10,000,000	100,000	100	4,007,000	Aug.	1888	.50
21	Bye and Bye	Ariz.	1,000,000	100,000	10	*			
22	Calaveras, G.	Cal.	500,000	500,000	1	*			
23	Carisa, G.	Wy.	500,000	100,000	5	*			
24	Carupano, G. S. L. C.	Ven.	200,000	100,000	2	*			
25	Cashier, G. S.	Colo.	500,000	250,000	2	*			
26	Cen. Contin'l, G. S. L.	C. & A	2,000,000	200,000	10	*			
27	Charles Dickens, G. S.	Idah.	1,250,000	250,000	5	*			
28	Cherokee, G.	Cal.	1,500,000	150,000	10				
29	Chollar, S.	Nev.	11,200,000	112,000	100	1,284,000	July	1888	.50
30	Cinnamon Mt., G. S.	Colo.	750,000	150,000	5				
31	Cleveland, T.	Dak.	1,000,000	500,000	2	*			
32	Comstock, G. S.	Nev.	10,000,000	100,000	100	30,000	Mar.	1887	.15
33	Con. Imperial, G. S.	Nev.	5,000,000	50,000	100	1,175,000	Sept	1887	.25
34	Con. Pacific, G.	Cal.	6,000,000	60,000	100	177,000	Sept	1887	.10
35	Cons. Silver, S	Mo.	2,500,000	250,000	10				
36	**Cop. Queen Cons, C.	Ariz.	1,400,000	140,000	10				
37	Courtlandt	Colo.	500,000	50,000	10				
38	Crescent, S. L.	Colo.	3,000,000	300,000	10	*			
39	Crocker, S.	Ariz.	10,000,000	100,000	100	105,000	Feb.	1888	.20
40	Crowell, G.	N. C.	500,000	500,000	1				
41	Dahlonega, G.	Ga.	250,000	250,000	1	*			
42	Dandy, S.	Colo.	5,000,000	500,000	10				
43	Dardanelles, G.	Cal.	1,000,000	100,000	10				
44	Decatur, S.	Colo.	1,500,000	300,000	5	*			
45	Denver City, S. L	Colo.	5,000,000	500,000	10	*			
46	Denver Gold, G.	Colo.	300,000	60,000	5				
47	Durango, G.	Colo.	500,000	500,000	1	*			
48	Eastern Dev. Co., Lt.	N. S.	1,500,000	150,000	10	990,000	Mar.	1886	1.00
49	El Cristo, G. S.	U.S.C	1,000,000	500,000	2				
50	El Dorado, G	Cal.	1,000,000	250,000	4	*			
51	El Talento, G.	U.S.C	1,000,000	500,000	2				
52	Empire, S.	Utah	10,000,000	100,000	100	*			
53	Eureka Tunnel, S. L.	Nev.	10,000,000	100,000	100	*			
54	Exchequer	Nev	10,000,000	100,000	100	770,000	Feb.	1888	.20
55	Found Treasure, G. S.	Nev.	10,000,000	100,000	100	18,030	July	1888	.06
56	Gogebic I. Syn., I	Wis.	5,600,000	200,000	25				
57	Gold Cup, S.	Colo.	500,000	500,000	1	*			
58	Golden Era, S.	Mon.	2,000,000	200,000	10	*			
59	Gold Placer, G.	Colo.	5,000,000	200,000	25	229,314	Dec.	1885	.25
60	Gold Rock, G.	Cal.	1,000,000	500,000	2	*			
61	Goodshaw, G.	Cal.	10,000,000	100,000	100	*			
62	Grand Belt, C.	Tex.	12,000,000	120,000	100				
63	Grand Duke	Colo.	800,000	80,000	10				
64	Great Remance, G.	U.S.C	1,000,000	500,000	2	*			
65	Gregory-Bobtail, G.	Colo.	550,000	550,000	1	*			
66	Gregory Con., G.	Mon.	3,000,000	300,000	10				
67	Harlem M. & M. Co, G.	Cal.	1,000,000	200,000	5				
68	Head Cent. & Tr. S. G	Ariz.	10,000,000	100,000	100				
69	Hector, G.	Cal.	1,500,000	300,000	5				
70	Highland, C.	Mich	500,000	25,000	25				
71	Hollywood	Cal.	200,000	100,000	2				
72	Hortense, S.	Colo.	2,000,000	200,000	10				
73	Huron, C	Mich	1,000,000	40,000	25	280,000	May	1887	3.00
74	Iron Gold & Silver, S	N. M.	2,000,000	200,000	10	*			
75	Ironton, I.	Wis.	1,000,000	40,000	25				
76	Iroquois, C	Mich	1,250,000	50,000	25				
77	J. D. Reymert	Ariz.	10,000,000	100,000	100	*			
78	Julia Cons., G. S.	Nev.	11,000,000	110,000	100	1,650,000	Apl.	1887	.10
79	Kearsarge, C.	Mich	1,250,000	50,000	25	190,000	Oct.	1887	1.00
80	Laclede	N. M.	2,000,000	200,000	10	*			
81	Lacrosse, G.	Colo.	1,000,000	100,000	10	*			
82	Lee Basin, S. L.	Colo.	5,000,000	500,000	10	*			
83	Lochiel, S.	N. M.	2,000,000	200,000	10	*			
84	Lucerne, S.	Colo.	5,000,000	500,000	10	*			
85	Mammoth Bar., G.	Cal.	10,000,000	100,000	100	50,000	Dec.	1881	
86	May Belle, G.	Cal.	10,000,000	100,000	100	84,000	Mar.	1884	.15
87	Mayflower Gravel	Cal.	1,000,000	100,000	10	375,000	July	1888	.50
88	Medora, G.	Dak.	250,000	250,000	1				
89	Mexican, G. S	Nev.	10,000,000	100,000	100	2,725,760	Aug.	1888	.25
90	Middle Bar G.	Cal.	400,000	200,000	2	*			
91	Mize & Starr, S. L.	Colo.	1,000,000	200,000	5	*			
92	Monitor, G.	Colo.	100,000	100,000	1	*			
93	Moose Silver, S.	Colo.	3,000,000	300,000	10				
94	Native, C.	Mich	1,000,000	40,000	25				
95	Neath, G.	Colo.	1,000,000	100,000	10				
96	Nevada Queen, S.	Nev	10,000,000	100,000	100	130,000	Dec.	1887	.50
97	New Germany, G	N. S.	100,000	100,000	1	*			
98	New Pittsburg, S. L	Colo.	2,000,000	200,000	10	*			
99	North Standard, G.	Cal.	10,000,000	100,000	100	20,000	Nov		
100	Noonday	Cal.	600,000	60,000	10	208,000	Dec.	1881	.10
101	Oneida Chief, G.	Cal.	500,000	125,000	4	*			
102	Oriental & Miller, S.	Nev.	10,000,000	400,000	10				
103	Osceola, G.	Nev.	5,000,000	50,000	25	*			
104	Overman, G. S.	Nev.	11,520,000	115,200	100	3,737,180	Aug.	1887	.25
105	Park, S.	Utah	2,000,000	200,000	100				
106	Peer, S.	Ariz.	10,000,000	100,000	10	125,000	Nov.	1886	.10
107	Peerless, S.	Ariz.	10,000,000	100,000	100	345,000	Apl.	1888	.25
108	Phœnix	Ariz.	500,000	500,000	100				
109	Phœnix, G. S.	Ark.	5,000,000	200,000	1	*			
110	Phœnix Lead, S. L.	Colo.	100,000	100,000	25	*			
111	Pilgrim, G.	Cal.	600,000	300,000	1	*			
112	Potosi, S.	Nev.	11,200,000	112,000	2	1,349,600	July	1885	.50
113	Proustite, S.	Idah	250,000	250,000	100	*			
114	Puritan, S. G.	Colo.	1,500,000	150,000	1	*			
115	Quincy	Colo.	3,000,000	300,000	10				
116	Rappahannock, G. S.	Va.	250,000	250,000	10	*			
117	Red Elephant, S.	Colo.	500,000	500,000	1	*			
118	Ropes, G. S.	Mich	2,000,000	80,000	1	103,200	July	1887	.50
119	Russell, G	N. C.	1,500,000	300,000	25				
120	Sampson, G. S. L.	Utah	10,000,000	100,000	5	288,157	July	1888	1.06
121	San Sebastian, G.	San. S	1,600,000	320,000	5	*			
122	Santiago, G.	U.S.C	400,000	1,200,000	2	*			
123	Security, S.	Colo.	10,000,000	1,000,000	10				
124	Sheridan	N. M.	2,000,000	200,000	10				
125	Silver Queen, C.	Ariz.	5,000,000	200,000	25	*			
126	South Bulwer, G	Cal.	10,000,000	100,000	100	100,000	May	1881	.25
127	South Hite	Cal.	10,000,000	100,000	100	195,000	Jan.	1885	.05
128	South Pacific	Cal.	500,000	100,000	5				
129	Stanislaus, G.	Cal.	2,000,000	200,000	10				
130	State Line, S.	Nev.	250,000	250,000	1				
131	St. Kevin, G. S.	Colo.	100,000	100,000	1	*			
132	St. Louis & Mex., S.	Mex.	5,000,000	500,000	10	*			
133	St. Louis & St. Elmo	Colo.	2,000,000	200,000	10				
134	St. L. & St. Felipe, G. S.	Mex.	1,500,000	150,000	10				
135	St. L. & Sonora, G. S.	Mex.	1,500,000	150,000	10				
136	St. Louis-Yavapai	Ariz.	3,000,000	300,000	10	*			
137	Sunday Lake, I.	Mich	1,250,000	50,000	25				
138	Sullivan, G. S. L.	Me.	500,000	100,000	5	125,000	Dec.	1882	.25
139	Sutro Tunnel	Nev.	20,000,000	2,000,000	10				
140	Taylor-Plumas, G.	Cal.	1,000,000	200,000	5	10,000	Feb.	1888	.03
141	Tioga Cons., G.	Cal.	10,000,000	100,000	10	295,000	May	1888	.10
142	Tornado Cons. G. S.	Nev.	100,000	100,000	1	*			
143	Tortilita, G. S.	Ariz	1,000,000	100,000	2	*			
144	Tuscarora, S.	Nev.	10,000,000	500,000	100	110,000	Oct.	1881	.15
145	Union Con., G. S.	Nev.	10,000,000	100,000	100	2,185,000	Nov.	1887	.50
146	Utah, S.	Nev.	10,000,000	100,000	100	95,000	May	1888	.25
147	Washington, C.	Mich	1,000,000	40,000	25				
148	West Granite Mt., S.	Mon.	5,000,000	500,000	10	*			
149	Zelaya, G. S.	C. A.	600,000	300,000	2	*			

G. Gold. S. Silver. L. Lead. C. Copper. * Non-assessable. † This company, as the Western, up to Dec. 10th, 1881, paid $1,400,000. ‡ 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., 1884, the California had paid $31,320,000 in dividends, and the Con. Virginia, $42,390,000. ** Previous to the consolidation of the Copper Queen with the Atlanta, Aug., 1885, the Copper Queen had paid $1,250,000 in dividends.

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Aug. 11.		Aug. 13.		Aug. 14.		Aug. 15.		Aug. 16.		Aug. 17		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Adams, Colo.	....	....	....	....	2.50	....	....	....	....	....	....	....	80
Alice, Mont	....	....	....	....	....	....	....	....	....	....	....	....	.....
Argenta, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Bassick, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Belcher, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Belle Isle, Nev.	....	....	....	....	....	....	....	....	.35	.30	....	....	600
Bodie Cons., Cal.	1.35	....	1.45	1.40	1.35	....	....	....	....	....	1 45	....	900
Breece, Colo	....	....	....	....	.28	....	....	....	....	....	....	....	500
Bulwer, Cal	....	....	.75	....	....	....	....	....	....	....	....	....	300
Caledonia, Dak	....	....	....	....	....	....	....	....	....	....	....	....	.....
Central, Mich	....	....	....	....	....	....	....	....	....	....	....	....	.....
Chollar, Nev	....	....	2.00	....	....	....	1.95	....	....	....	....	....	200
Chrysolite, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Colorado Cent'l, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cons. Cal. & Va., Nev.	7.00	....	7 50	....	7.50	7.38	7.63	7.50	7.50	....	9 00	8.00	1,270
Crown Point, Nev	....	....	3 45	....	....	....	....	....	....	....	....	....	100
Deadwood, Dak.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Dunkin, Colo.	....	....	....	....	.90	.88	....	....	....	....	....	....	1,800
Eureka Cons., Nev	4.75	....	4.00	....	4 30	....	....	....	....	....	....	....	300
Father de Smet, Dak	....	....	....	....	....	....	....	....	....	....	....	....	.....
Freeland, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Gould & Curry, Nev.	....	....	2.55	....	....	....	....	....	....	....	....	....	150
Grand Prize, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Green Mountain, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hale & Norcross, Nev	....	....	5.00	....	....	....	4 65	....	4.60	....	5.25	4.80	9 0
Holyoke, Idaho	....	....	....	....	....	....	....	....	....	....	....	....	.....
Homestake, Dak.	....	....	....	....	11.00	....	10.00	....	....	....	....	....	22
Horn-Silver, Ut.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Iron Hill, Dak.	....	....	....	....	.25	....	....	....	....	....	....	....	500
Iron Silver, Colo.	3 50	....	....	....	....	....	....	....	....	....	....	....	50
Leadville C., Colo.	.35	.30	.35	....	.40	....	....	....	....	....	....	....	1,700
Little Chief, Colo.	....	....	....	....	....	....	....	.23	....	.23	.21	....	2,500
Little Pittsburg, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Martin White, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mono, Cal.	....	....	....	....	....	....	....	....	....	.95	....	....	400
Mount Diablo, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Navajo, Nev.	....	....	....	....	1.65	....	....	....	....	....	....	....	100
North Belle Isle, Nev.	....	....	....	....	....	....	2.65	....	....	....	....	....	100
Ontario, Ut.	33.00	....	....	....	....	....	33.00	....	....	....	....	....	18
Ophir, Nev.	....	....	....	....	....	....	4 70	....	....	....	....	....	150
Plutus, Colo.	1.05	....	1.05	....	1.05	....	1.10	1.05	....	....	1.10	....	2,100
Plymouth, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Quicksilver Pref., Cal	....	....	....	....	....	....	....	....	....	....	38 00	....	100
" Com., Cal	....	....	....	....	....	....	10.88	....	....	....	....	....	100
Robinson Cons., Colo.	....	....	....	....	....	....	....	....	....	....	85	....	100
Savage, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sierra Nevada, Nev.	....	....	....	....	2.50	....	....	....	....	....	....	....	100
Silver King, Ariz.	†1 25	....	2.40	2.25	2 45	2.25	....	....	2.45	2.25	2.40	....	1,500
Silver Mg. of L. V.	....	....	....	....	.90	.49	....	....	....	....	....	....	1,300
Small Hopes, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Standard, Cal.	....	....	....	....	....	....	....	....	1.05	....	....	....	300
Stormont, Utah	....	....	....	....	....	....	....	....	....	....	....	....	.....
Yellow Jacket, Nev.	....	....	....	....	....	....	3,30	....	....	....	....	....	100

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Aug. 11		Aug. 13		Aug. 14.		Aug. 15.		Aug. 16.		Aug 17.		SALES
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alta, Nev.	....	....	....	....	1.20	....	....	....	....	....	....	....	100
Amador, Cal.	2.15	....	2.15	....	2.15	....	2.15	....	2.15	....	2.15	....	2,100
Am'can Flag, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Astoria, Cal.	.24	....	.35	.24	.25	.24	.35	.24	.24	....	.24	..	8,500
Barcelona, Nev.	1.00	..	....	....	1.00	....	....	....	1.00	....	....	....	1,300
Bechtel Con., Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Best & Belcher, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Brunswick, Cal.	....	....	....	....	....	....	....	....	.10	....	....	....	100
Buffalo Iron Min'g.	....	....	8.00	....	8.00	....	....	....	....	....	....	....	300
Bullion, Nev.	....	....	1.10	....	....	....	1.10	....	....	....	1.25	....	700
Carupano, Venez.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cashier, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Castle Creek, Id.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cleveland, Dak.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Commonw'th, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Confidence, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Con. Imperial, Nev	....	....	....	....	....	....	.30	....	....	....	....	....	1,000
Con. Pacific	....	....	....	....	....	....	....	....	....	....	....	....	.....
Denver City, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Eastern Oregon	....	....	....	....	....	....	....	....	....	....	....	....	.....
El Cristo, U. S. Col.	.95	....	....	....	....	....	....	....	....	....	....	....	100
Exchequer, Nev.	....	....	.95	....	....	....	1.00	....	....	....	1.10	....	1,000
Found Treas'e, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hector, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hollywood, Cal.	.40	.39	.39	....	.40	.39	.40	.39	.40	....	.40	.39	7,100
Huron, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Julia, Nev.	....	....	.45	....	50	....	.50	....	....	....	.50	....	1,300
Kingst'n & Pemb'ke	....	....	....	....	....	....	....	....	....	....	....	....	.....
Kossuth, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Lacrosse, Colo	....	....	....	....	.10	....	....	....	....	....	....	....	100
Lee Basin, Colo	....	....	.80	....	....	....	....	....	....	....	....	....	400
Mexican, Nev.	....	....	2 55	....	2 35	....	....	....	....	....	3 10	....	400
Middle Bar, Cal.	.44	....	.44	....	.44	....	44	....	....	....	44	....	3,700
Moniter, Colo.	.12	.10	....	....	....	....	....	....	....	....	....	....	1,000
N'th Standard, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Phœnix Lead, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Phœnix of Ark.	....	....	....	....	....	....	.25	....	....	....	....	....	300
Potosi, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	100
Proustite, Idaho	....	....	1.00	....	1.00	....	1 00	....	....	....	.11	....	1,400
Rappahannock, Va.	.11	....	.11	....	.11	....	.11	....	....	....	.11	....	3,700
San Sebastian, S'n S	....	....	....	....	....	....	....	....	....	....	....	....	.....
Santiago, U. S. Col.	....	....	....	....	....	....	....	....	3.50	3 30	3.75	3.60	1,700
*Security, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Shoshone, Idaho	.13	....	13	....	.13	....	.13	....	.13	....	.13	....	4,700
Silver Cliff, Colo	....	....	.07	....	....	....	....	....	....	....	....	....	100
Silver Cord, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver Queen, Ariz.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sutro Tunnel, Nev.	.09	....	.08	....	....	....	.08	....	.08	....	.11	.09	12,300
Sutter Creek, Cal.	1.10	....	1.15	1.10	1.10	....	1.15	....	....	....	1.15	1.10	2,500
Taylor Plumas, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Tornado, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Union Cons., Nev.	....	....	....	....	2.45	....	....	....	....	....	....	....	100
Utah Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....

Dealt in at the New York Stock Ex. Unlisted Securities †Asse-sment unpaid. Dividend shares sold, 18,340. Non-dividend shares sold, 56,000. Total New York, 74,340.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY	Aug. 10.		Aug. 11.		Aug. 13.		Aug. 14.		Aug. 15.		Aug. 16.		SALES.
Atlantic, Mich.	....	....	....	....	....	....	....	....	....	....	16.75	....	50
Bodie, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Bonanza Developm't	1.56	....	1.75	....	1.63	....	1.75	1.56	1.63	1.56	1 63	....	1,300
Boston & Mont., Mont	....	....	....	....	....	....	....	....	....	....	....	....	.....
Breece, Colo.	.30	....	.31	....	.30	....	....	....	....	....	....	....	1,000
Calumet & Hecla	273	....	..	..	267	....	266	265	..	....	268	....	31
Catalpa, Colo.	....	....	....	....	.20	....	.20	.18	....	....	....	....	750
Central, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Chrysolite, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Con. Cal. & Va., Nev.	....	....	....	....	....	....	7.75	....	....	....	....	....	12
Dunkin, Colo.	87½	....	....	....	....	....	....	....	....	....	....	....	100
Enterprise	....	....	....	....	....	....	....	....	....	....	....	....	.....
Eureka, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Franklin, Mich.	20.13	19.88	20.00	....	20.00	19.75	19.75	....	19.88	....	20.00	19.75	1,096
Hale & Norcross, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Honorine, Utah	....	....	....	....	....	....	....	....	....	....	....	....	.....
Little Chief, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Little Pittsburg, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Martin White, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mono, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Napa, Cal.	....	....	1.88	....	1.88	....	....	....	1.88	....	....	....	200
Osceola, Mich.	21.00	....	21.00	....	20.50	20.00	20.00	....	....	....	20.50	....	243
Pewabic, Mich.	3.00	....	....	....	....	....	....	....	....	....	....	....	50
Quincy, Mich.	72.50	....	....	....	....	....	73.50	73.00	....	....	73.00	....	56
Ridge, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sierra Nev., Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver King, Ariz.	....	....	....	....	....	....	2.40	....	....	....	....	....	60
Standard, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Tamarack, Mich.	165	....	165	..	....	....	164½	....	164	163½	164	....	42

NAME OF COMPANY.	Aug 10.		Aug. 11.		Aug. 13.		Aug. 14.		Aug. 15.		Aug. 16.		SALES.
Alloues, Mich.	2.50	....	*2.88	2.75	*3.00	2.75	....	....	2.75	..	2.75	....	1,250
Arnold, Mich.	....	....	....	..	....	..	....	....	....	....	....	....	.....
Aztec, Mich.	....	....	12½	..	....	..	....	....	....	....	....	....	500
Bos. & Mont., Mont.	49.50	....	49.75	49.00	....	....	49.00	....	49.50	....	49.00	48.75	268
Brunswick, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Contentment	....	....	....	....	....	....	....	....	3.00	....	....	....	500
Crescent, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cusi, N. Mex.	.09	....	.09	....	....	....	....	....	....	....	....	....	900
El Cristo, U.S. Col	....	....	....	....	....	....	....	....	....	....	....	....	.....
Everett	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hanover, Mich.	....	....	....	....	....	....	....	....	37½	....	37½	....	400
Humboldt, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hungarian, Mich.	....	....	....	....	....	....	....	....	....	....	.14	....	100
Huron, Mich.	5.00	....	5 00	....	....	....	....	....	....	....	....	....	.....
Kearsarge, Mich.	6.25	....	6.50	....	6 75	....	6 75	....	5.00	....	5.00	....	500
Mesnard, Mich.	.50	....	.60	.50	.50	....	.50	....	6 63	....	....	....	524
National, Mich.	3 00	2.75	....	....	....	....	....	....	....	....	....	....	1,200
Native, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	400
Oriental & M., Nev.	.09	....	....	....	....	....	....	....	.10	....	....	....	.....
Rappahannock, Va.	....	....	.11	....	.10	....	.11	....	.11	....	....	....	1,000
Royal, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	1,700
Security, Colo	....	....	....	....	....	....	....	....	.10	.09	.10	....	.....
Shoshone Idaho	.13	.12	.13	....	.13	....	....	....	.13	....	.13	....	1,900
South Side, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	1,100
Sullivan.	.35	....	.35	....	.35	....	.35	....	.35	....	....	....	.....
Sutro Tunnel, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	1,000
Taylor Plumas, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Washington	....	....	....	....	....	....	....	....	....	....	....	....	.....
Winthrop, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....

* Assessment paid. Boston: Dividend shares sold, 5,590. Non-dividend shares sold, 13,178. Total Boston, 18,768.

COAL STOCKS.

NAME OF COMPANY.	Par val. of sh'rs.	Aug. 11.		Aug. 13.		Aug. 14.		Aug. 15.		Aug. 16.		Aug. 17.		Sales.
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Barclay Coal	....	†16	....	†16	....	†16	....	†16	....	†16	....	....	....	
Buck Mt. Coal	....	*¼	....	*¼	....	*1	....	*¼	....	*¼	....	....	....	
Ches. & O. RR.	100	....	....	....	....	....	....	....	....	....	....	....	....	
Chic. & Ind. Coal RR.	100	....	....	....	....	....	....	....	....	....	....	....	....	
Do. pref.	100	....	....	....	....	....	....	....	....	....	....	....	....	
Col. & Hocking Coal	100	23¾	....	24	....	24	23½	24	....	....	....	....	....	460
Col., C. & I	100	....	....	37½	37	37	36¾	37	36½	36½	....	....	....	1,400
Connellsville Gas Coal	....	....	....	....	....	....	....	....	....	....	....	....	....	
Consol. Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	
Del. & H. C.	100	117⅝	117½	119	118	118	117⅝	118½	117⅝	118⅝	118	117⅝	117	7,685
D., L. & W. RR.	50	137½	137⅝	138⅝	137⅝	138½	137⅝	138½	137⅛	138¾	137¾	138¼	137¼	67,265
Hocking Valley	100	27	....	28⅝	27	28¾	27½	28⅝	27¼	28	....	27⅞	27¾	6,175
Hunt. & Broad Top	....	....	....	....	....	....	....	....	....	....	....	....	....	
Do. pref.	....	....	....	39¾	....	40	39¾	....	....	....	....	....	....	397
Lehigh C. & N.	50	....	....	49	....	48⅞	48½	48¾	48½	....	....	....	....	187
Lehigh Valley RR.	50	53½	53½	54	53¾	54	53⅞	54	....	54	53⅞	....	....	2,621
Mahoning Coal RR.	100	....	....	....	....	....	....	....	....	....	....	....	....	
Do. pref.	....	....	....	....	....	....	....	....	....	....	....	....	....	
Marshall Con. Coal	100	....	....	....	....	14	....	13	....	....	....	....	....	150
Maryland Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	
Montauk Coal	50	....	....	....	....	....	....	....	....	....	....	....	....	
Morris & Essex	100	....	....	....	....	144½	144	144	....	....	....	....	....	140
New Central Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	
N. J. C. RR.	50	88¼	87¾	88¼	87¾	88	87	88⅝	87	88⅝	87¾	87¾	87	21,715
N. Y. & S. Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	
N. Y., Susq. & Western	100	9½	....	9⅝	9	9¾	....	10	9½	9⅞	9½	9⅝	9½	5,032
Do. pref.	100	33	32¾	33½	32¾	33⅝	....	34	32⅝	33⅝	33½	33½	33	11,760
N. Y. & Perry C. & I.	100	....	....	....	....	....	....	....	....	....	....	....	....	
Norfolk & Western R.R.	100	....	....	....	....	....	....	18½	....	18¾	....	....	....	150
Do. pref.	50	50½	50⅛	50¼	50⅛	49⅞	....	50¼	49¾	50	....	50	49⅝	3,436
Penn. Coal	50	....	....	....	....	....	....	....	....	....	....	....	....	
Penn. Gas Coal	....	†49¼	....	....	....	....	....	....	....	....	....	....	....	
Penn. RR.	50	54⅝	....	54⅝	54¼	54⅝	54¼	54⅜	54¼	54½	54⅜	....	....	3,127
Ph. & R. RR.**	50	69	67¾	68⅞	68⅛	68¼	67½	68¾	67½	68¾	68½	68⅜	67¼	137,564
Tennessee C. & I. Co.	100	28¼	....	28¼	28	28⅞	28	29	28¼	29⅛	29	29¼	28¾	5,562
Westmoreland Coal	100	†68	....	†68	....	†67⅞	*67	†68	*67	....	....	....	....	
Whitebreast Fuel Co.	....	....	....	....	....	....	....	....	....	....	....	....	....	
Wyoming Valley Coal	....	†46½	*45½	*45½	....	....	....	....	....	....	....	....	....	

*Bid. †Asked.
**Of the sales of this stock, 74,571 were in Philadelphia, and 62,993 in New York. Total sales, 274,876.

San Francisco Mining Stock Quotations.

COMPANY.	CLOSING QUOTATIONS. Aug. 10.	Aug. 11.	Aug. 13.	Aug. 14.	Aug. 15.	Aug. 16.
Alpha	....	....	....	....	....	....
Alta	1.10	1.05	1.10	1.10	1.10	1.10
Belcher	....	....	....	....	....	....
Belle Isle	.35	.30	.35	.35	....	....
Best & Bel.	2.75	3.00	3.10	3.00	3.05	3.40
Bodie	1.30	1.25	1.30	1.75	1.30	1.30
Bulwer	....	.50	.65	.65	.55	.60
Challar	1.80	1.80	1.80	1.85	1.80	1.90
C'm'weal'h	4.00	4.00	4.10	4.20	4.25	4.30
Con. C. & V	6.62½	7.00	7.12½	7.12½	7.12½	7 75
Con. Pac.	....	....	....	....	....	....
Crown Pt.	2.70	3.00	3.10	3.10	3.15	3.35
Eureka C.	4.25	4.25	....	....	....	....
Gould & C.	2.20	2.45	2.30	2.35	2.40	2.55
Grd. Prize.	1.20	1.20	1.40	1.40	1.10	1.15
Hale & N.	3.85	4.00	4.55	4.40	4.45	4.55
Mexican	2.15	2.35	2.35	2.25	2.30	2.60
Mono	.80	.85	.90	.75	....	....
Mt. Diablo	....	....	....	....	....	....
Navajo	1.55	....	1.55	1.60	....	....
Nev. Queen	4.35	4.45	4.60	4.60	4.40	4.60
N. Belle I.	2.25	2.25	2.35	2.50	2.50	2.40
Ophir.	4.30	4.50	4.55	4.40	4.50	4.90
Potosi.	1.50	1.70	2.15	2.05	2 05	2.20
Savage	1.85	2.05	2.15	2.10	2.05	2.15
Scorpion	....	....	....	....	....	....
Sierra Nev	2.30	2.45	2.40	2.45	2.45	2.70
Sutro Tun.	....	....	....	....	....	....
Tip Top	....	....	....	....	....	....
Union Con.	2.20	2.45	2.35	2.35	2.50	2.80
Utah	.90	1.00	1.05	.95	1.00	1.10
Yellow Jkt.	2.95	3.15	3.25	3.05	3.10	3.50

sons. The stock in this and the furnaces tributary to this market have been well sold up during the past two weeks, and a considerable amount of the iron sold is now being made at various furnaces and will be delivered as fast as possible. This is certainly a healthy outlook, so far as the fall trade is concerned. Not for many years has the stock in this market been sold up so close. One of the leading brokers remarked that sales were restricted, owing to the scarcity of iron wanted, this is, no doubt, the situation with most of them. Parties well informed do not hesitate to express the opinion that a large amount of work will be placed before the coming of cold weather, and that the fall and winter productions of mills, shops and factories will be heavy. One reason for this confidence is that considerable business has been held back since July 1st. For some time past concessions have not been heard of, nor will they be for some time to come, unless all signs fail. Gray mill and Bessemer seemed to be most fancied, with sales reported above rates current last week. Steel bloom, billets and nail slabs are held firmly at quotations. Muck bar firm, with some large operations for September and October delivery. One sale includes 5000 tons; this shows confidence in the future. Scrap material is firm and held for an advance. The coke question is still unsettled; furnace men have no fault to find with dollar coke and are not anxious for a settlement. A new syndicate is being talked of; so far, it has ended where it began.

Coal and Coke Smelted Lake Ore.

2000 Tons Bessemer	17 25 cash.
2000 Tons Bessemer	17.50 cash.
1800 Tons Gray Mill	14.75 cash.
1400 Tons Bessemer	17.50 cash.
1000 Tons Gray Mill	14.70 cash.
1000 Tons Bessemer	17.50 cash.
1000 Tons Gray Forge, Extra	15 25 cash.
1000 Tons Gray Forge	15.10 cash.
1000 Tons Bessemer	17.50 cash.
1000 Tons Bessemer	17.25 cash.
300 Tons Mill	14 50 cash.

Coke, Native Ore.

300 Tons Gray Forge	14.50 cash.
300 Tons Gray Forge	15.00 4 mo.
150 Tons Gray Forge	15.00 4 mo.
200 Tons Gray Forge	14.50 cash.
100 Tons Silvery	16 25 cash.

Charcoal.

50 Tons No. 3 Foundry	23.00 4 mo.
50 Tons Cold Blast	26 00 4 mo.

Muck Bar.

1500 Tons Neutral September and October	27 50 cash.
1000 Tons Neutral September and October	27.50 cash.
1500 Tons Neutral September and October	27.50 cash.
1000 Tons Neutral September and October	27.50 cash.
500 Tons Spot	26.75 cash.

Steel Slabs and Billets.

1000 Tons Billets	29.00 cash.
1000 Tons Billets	29.00 cash.
500 Tons Billets	29.00 cash.
500 Tons Billets	29.25 cash.
1000 Tons Nail Slabs	28.50 cash.

Steel Crop and Bloom Ends.

300 Tons Bloom Ends	18.10 cash.
200 Tons Bloom Ends	17.80 cash.
350 Tons Crop Ends	18.00 cash.

Old Iron Rails.

500 Tons American Ts	21.50 cash.

Scrap Material.

200 Tons O. H. Heavy Steel Scrap..Gross	18.00 cash.
200 Tons No. 1 Wrought Scrap.....Net	20.00 cash.
100 Tons No. 1 Wrought Turnings..Net	13.00 cash.
100 Tons Cast Borings.....Gross	12.00 cash.

FINANCIAL.

NEW YORK, Friday Evening, Aug. 17.

The business in the mining share market has been small during the past week, and does not promise to increase until the fall, when the long talked of boom is expected to make its appearance.

We learn of a number of mines, notably two in Mexico, having recently been sold here privately, and, in fact, a good deal of money is going in mining, but it is not through the stocks on the Exchange. It would seem that the company of wildcats drives honest investors and investment stocks off the Exchange, a point worth the consideration of its managers.

Security is still resting from its "laurels." Silver is quoted at 7c. Iron Silver sold at $3.50. Robinson Consolidated at 85c. Plutus continues to show considerable business at from $1.05@$1.10. Little Chief is quiet at from 21@23c. Leadville advanced from 30 @40c. Dunkin sold at from 88@90c. Breece at 28c. Monitor at 10@12c. Lee Basin at 80c. Lacrosse at 10c.

Barcelona, which, previous to the last two weeks, has been the leading feature in the Nevada stocks, has been quiet, and declined from $1 to 80c., with sales of only 1300 shares.

Sutro Tunnel shows but little life, the transactions amounting to only 12,300 shares, which sold at prices ranging from 8@11c.

The Comstocks are quiet, notwithstanding the fact that some of the companies are paying large dividends, and that the work at the different mines is being pushed vigorously, and it is stated with good results. Union Consolidated is quoted at $2.45. Mexican advanced from $2.35 to $3. Julia was firm at 50c. Exchequer went from 95c. to $1.10. Consolidated Imperial sold at 30c. Bullion at from $1.10 to $1.25. Alta at $1.20. Chollar declined from $2@$1.95. Consolidated California & Virginia opened at $7 on Saturday, but to-day advanced to $9. Crown Point is quoted at $3.45. Gould & Curry at $2.55. Hale & Norcross declined from $5@$4.60, but to-day went to $5.25. Ophir is firm at $2 65. Sierra Nevada at $2.50, and Yellow Jacket at $3.30.

The Tuscaroras are neglected. Navajo is selling at $1.65. Belle Isle at from 30 to 35c. North Belle at $2.65.

Eureka was quiet and sales were made only in the beginning of the week at from $4 to $4.75.

Quicksilver Preferred and Common are quiet, the former showing one sale at $38.00 and the latter at $10.88.

Plymouth Consolidated shows no transactions.

One hundred shares of Brunswick sold at 10c. per share.

Bodie Consolidated shows a small advance, going from $1.35@$1.45. Bulwer was quiet at 75c., Mono at 95c., and Standard at $1.05.

The Amador County, Cal., stocks continue active. Sutter Creek sold at from $1.10 to $1.15, Amador at $2.15, Middle Bar at 44c., and Hollywood at from 39 to 40c.

The stock of the Buffalo Iron Mining Company, of Michigan, has been placed among the unlisted securities at the New York Stock Exchange. Sales were made at $8 per share.

Silver King showed one sale on Saturday at $1.25, assessment unpaid. Later in the week the price ranged at from $2.25 to $2.45.

Silver Mining of Lake Valley shows a small business at from 49c. to 50c.

Rappahannock is neglected at 11c.

No attention was given to El Cristo, which shows one sale last Saturday at 95c

Nothing is doing in Proustite at $1, nor in Shoshone at 13c.

The one hundred and twenty-first dividend of $25,000 has been announced by the Homestake Mining Company, making a total paid to date of $4,193,750. This, as many of the other stocks, is neglected, selling at from $10@$11.

Iron Hill came out at 25c.

The Daly Mining Company of Utah, a neighbor of the grand old Ontario, has declared its eighteenth dividend of $37,500, making a total paid to date of $712,500. The stock is not dealt in this market, and isselling at about from $17 to $20. Ontario continues steady at $33.

Proxies are being asked by the Francklyn managers for the next meeting of the Horn-Silver Mining Company. A circular has been issued to stockholders by the opposition trustees. We shall be greatly obliged if some of our readers will send us a copy of this circular. We have been asked to advise concerning the giving of proxies, and have earnestly advocated measures to save to the stockholders the large amount of money which was misused by the old management; but we are not yet fully advised as to how the stockholders have been treated by their new directors.

The hot wave which appeared on Thursday evidently brought some life to Santiago, which had entirely disappeared from the list. Sales were made at from $3.30 @$3.75.

FINANCIAL STATEMENTS.

The following are the financial balances of the various mining companies on August 1st:

CASH ON HAND.

Alpha Con	$10,896.89	§Hale & Norcross	$75,103.95
Alta	36 131.74	Holmes	258.63
Andes	10,742 42	Independence	4.127,76
Belle Isle	6,988.81	Julia	1,422.58
Best & Belcher	12,537.94	LadyWashington	1,040.88
Bodie	35,073 44	Mexican	3.362.22
Bullion	5,953.94	Mono	15,804 40
Bulwer	18,650 26	Mt. Diablo	27.000.00
Caledonia	805.02	North Belle Isle	9,7-5.55
Commonwealth	13,000.00	Occidental	7,377.02
*Con. Cal. & Va.	217,199.41	Overman	24,012.82
†Confidence	99,898.47	Peerless	12,988.26
Crocker	13,068.26	Standard	36,127.20
Crown Point	3,066.63	Scorpion	7,335.70
Con. Imperial	2,322 05	Summit	447.43
Diana	5,649 85	Syndicate	9,638.89
Dudley	461 16	Tioga	1,793.87
Exchequer	7,127.85	Union Cons	18 000.00
Found Treasure	466.51	Utah Cons	13,034.52
‡Gould & Curry	28,370 23	Weldon	3,864.43

*In cash and unsold bullion of the assay value of $102,348.93 with further bullion shipments to be received before the fiscal month closes.

†With $18,490.13 in bullion since received.

‡In cash and unsold bullion of the assay value of $3.998.60

§In cash with a bullion shipment of the assay value of $13,935 advised.

INDEBTEDNESS.

Belcher	$6,970.64	Navajo	$4,420.05
Challenge Cons.	541.52	Nevada Queen	41,821 53
Chollar	64,848.38	North Commonwealth	11,207.25
Del Monte	7,006 91	Ophir	2,077.15
Found Treasure	61.34	Peer	2,850.29
*Grand Prize	35,320.00	Potosi	64,850.48
Kentuck	3,166.00	Savage	90,058.95
Locomotive	10,540.48	Seg. Belcher	5,500.00
Mt. Cory	49,318.69		

*With unsold bullion of the assay value of $15,000 on hand and other shipments to arrive.

Dividends.

The following dividends have been declared:

American Coal Company, of Alleghany County, Md., semi-annual, 3 per cent, payable September 10th, at No. 1 Broadway, room 152, New York City.

Confidence Silver Mining Company, of Nevada, dividend No. 4, $1 per share, or $24,960, payable August 10th, in San Francisco.

Daly Mining Company, of Utah, dividend No. 18, of twenty-five cents per share, or $37,500, payable August 31st at Lounsbery & Co., No. 15 Broad street, New York City.

Delaware & Bound Brook Railway Company, quarterly, 2 per cent, payable August 15th.

Homestake Mining Company, of Dakota, dividend No. 121, twenty cents per share, or $25,000, payable August 25th, at Messrs. Lounsbery & Co.'s, No. 15 Broad street, New York City.

New York & Honduras Rosario Mining Company, of Honduras, ten cents per share, payable August 27th, at Nos. 347-349 Produce Exchange, New York City.

Osceola Mining Company, of Michigan, dividend No. 24, one dollar per share, or $50,000, payable September 15th, in Boston.

Westinghouse Electric Company, of Pittsburg, Pa., dividend No. 2, one and one half per cent, payable August 25th.

Assessments.

COMPANY.	No.	When levied.	D'l'nq't in office.	Day of sale.	Am'nt per share.
Anchor, Utah	7	July 31	Sept. 3	Sept.22	.10
Anna, Dak	2	July 16	Aug.16	Sept. 3	.002
Atlas, Dak		July 11	Aug.15	Oct. 10	.001¼
Beaver Oil, Dak	1	July 23	Sept.11	Sept.28	.001
Belcher, Nev	35	July 18	Aug. 22	Sept.12	.50
Bullion, Nev	34	Aug. 4	Sept. 7	Sept.24	50
Canadian, Mich		Aug.			.07
Chollar, Nev	25	July 20	Aug.23	Sept.11	.50
Cœur d'Alene, Idaho	1	July 6	Aug. 6	Aug.27	.05
Deer Mt., Dak	2	July 27	Sept. 3	Sept.22	.001½
Eagle Oil, Dak	2	June 8	Sept. 1	Sept.20	.00½
Found Treasure, Nev	3	July 12	Aug.17	Sept. 7	.06
Gibraltar Cons., Cal.	21	June 9	Aug. 9	Sept.10	.20
Great N. West Oil, Dak	5	June 27	Aug. 4	Aug.25	.00½
Hartshorn, Dak	2	Aug. 1	Sept 4	Sept.20	.005
Iron Hill, Dak	13	June 27	July 30	Aug. 18	.04
Keyes, Nev	2	July 19	Aug.23	Sept.24	.50
Lockport Dak	4	Aug. 4	Sept. 5	Sept.22	.02
Lone Jack, Cal	2	July 11	Aug.16	Sept. 7	.10
Mayflower, Cal	42	July 31	Sept. 3	Sept.25	.50
Mexican, Nev	36	Aug. 10			.25
Morning Star	2	July 26	Aug.27	Sept.11	.01
Monitor, Dak	2	July 2	Aug.13	Aug.28	.001
Navajo Queen, Nev	21	Aug. 3	Sept. 3	Sept.24	.20
New Era, Dak	4	Aug. 9	Sept.10	Sept.26	.01
Perry, Cal	1	July 7	Aug. 4	Aug.20	.002½
Potosi, Nev	30	July 13	Aug 16	Sept. 5	.50
Rattler Gilroy, Dak	12	June 17	July 30	Aug.18	.01
Sampson, Utah		July 5	Aug. 7	Sept 7	1 00
San Luis Cons., Cal.	18	July 12	Aug. 9	Aug.23	+
Savage, Nev	70	Aug. 3	Sept. 5	Sept.25	.50
Scott Bar, Cal	1	July 26	Sept. 3	Sept.20	.10
Sierra Nevada, Nev	92	July 10	Aug. 14	Sept. 1	.25
Silver King, Ariz	1	June 22	July 30	Aug.23	50
Spring Valley, Cal	3	July 17	Aug. 25	Sept.24	.10

* Delinquent day and day of sale postponed to dates given above. † 0.00156.

Pipe Line Certificates.

Messrs. Watson & Gibson, brokers, 49 Broadway, report as follows for the week:

The oil market this week received a set back owing to the reduction in the price of refined from 7¾ to 7⅝c. per gallon within four days.

The shipping interest is enjoying a period of prosperity not seen for eight years, and in striking contrast with conditions prevailing even as late as four months ago. Petroleum freights to the United Kingdom and the Continent are 4s. 3d. for barrel of 40 gallons, against 2s. 3d last year at this time. Baltic freights are now 5s., against 2s. 9d. to 3s. last year. Coal freights from United Kingdom to South American ports are about 50 per cent higher than a year ago, and even at this rate it is difficult to find freight room. A great number of English, German and Norwegian vessels have this year found very remunerative employment in carrying split wood and railway sleepers from Norwegian and Baltic ports to France, England and Spain, and also an immense business is done in lumber from Norway and Sweden to Australia. When to these conditions are added the demand for steamer freight for cotton and grain, which are just coming into season, steamers will no longer interfere with sailing vessels in barrel petroleum trade, which the owners never accept unless compelled to do so. Therefore the probability is that ocean freights for all commodities will rule during the next 90 days, even higher than at present, and when we come to supply Europe with our grain, the increased cost of transportation will be a factor to seriously consider.

To-day the market closed quite strong, with a promise of better prices for a day or two on the short interest which has accumulated.

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Aug. 11	87c.	87¾c.	86¼c.	86⅞c.	310,000
13	86⅝	86⅝	85	85¼	887,000
14	85¼	85¼	82⅝	82⅝	1,919,000
15	82½	84¼	82	83¼	1,010,000
16	83⅜	84⅛	82⅝	83¼	1,758,000
17	84	85½	83½	85⅜	1,469,000
Total sales in barrels					7,353,000

NEW YORK STOCK EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Aug. 11	87c.	87⅝c.	86¾c.	86⅞c.	268,000
13	86¾	86⅛	85⅛	85¼	581,000
14	85	85⅛	82⅝	82⅞	810,000
15	82⅝	84¼	82⅛	83¼	565,000
16	83⅛	84⅜	82¾	83¼	554,000
17	83⅜	85¾	83⅛	85⅜	819,000
Total sales in barrels					3,597,000

Boston Mining Stocks. Aug. 16.

[From our Special Correspondent.]

The past week has been an an exceedingly dull one in copper stocks, with more disposition to sell than to buy, consequently prices have had a declining tendency, although there is no pressure to sell, holders being satisfied that as soon as there is a little more