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CONTENTS.

MR. JOSHUA E. CLAYTON'S elaborate report on the Drumlummon series of veins, which is concluded on another page, will be read with great interest by engineers, for Professor CLAYTON is an extremely acute observer and a very experienced miner. Whether his theories of the mode of vein formation be concurred in or not, his description of the system of veins is so clear, and evidences such close observation and study of vein phenomena, that we gladly give the report in full as being an extremely valuable contribution to our knowledge of this subject.

We understand Professor CLAYTON'S deductions have been partially, at least, confirmed by the finding of the continuation of a faulted orebody where he had indicated it would be met with upon this property.

THE American Society of Civil Engineers, the oldest and most exclusive technical association in this country, has made a very important modification in its practice, as is indicated in the following announcement:

"The Board of Direction of the American Society of Civil Engineers invites professional papers and communications on subjects of engineering interest from all persons, whether members of this society or not. These papers and communications will be accepted for publication in the Transactions of the society, subject to the regular rules prescribed by the society laws in regard to its publications. These rules provide for a proper editorial supervision, and for the exclusion of old matter readily found elsewhere, of matter specially intended to advocate personal interests, of matter carelessly prepared or controverting established facts, and of matter purely speculative or foreign to the purposes of the society.

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"The Transactions of the society will be sent to any subscriber at the rate of $10 per year; and to clubs of ten or more, when ordered through the secretary of an engineering or technical society or club, who will be responsible for the payment, at 25 per cent discount."

This new departure, following the precedent of the great English engineering societies, will undoubtedly extend the usefulness of our American society, add some valuable papers to its Transactions and make these available to the profession at large. It is possible, however, that in doing this it may lessen the number of candidates for membership from that large class made up of those unable to attend the meetings of the society.

SOME LESSONS FROM OUR IMPORT AND EXPORT STATISTICS.—I.

The statistics of our imports and exports are frequently very interesting and suggestive reading. The Government statement for the fiscal year ending 30th June, 1888, has just been published, and we make a few extracts from it.

Crude asphaltum or bitumen, which comes in free of duty, was imported to the amount of 81,346,914 pounds, as against 55,105,035 pounds in the year ending 30th June, 1887. The value, however, was $113,854 in 1888, as against $100,697 in 1887, though, as is well known, the market here is pretty closely held by a syndicate. In chloride of lime, or "bleach," our imports declined slightly from 103,087,827 pounds in 1887, to 95,318,471 in 1888. It is to be hoped that we may, before long produce this article, or its substitute, in this country at the Solvay works.

Our imports of sulphur or brimstone are almost stationary, and amounted in the fiscal year 1888 to 99,253 tons, valued at $1,581,582, as against 97,383 tons, valued at $1,688:360, in 1887. The consumption has, therefore, increased less than 2 per cent, though the price has considerably declined, and our own Utah works produced only about 1500 tons. Some Japanese sulphur has been imported through San Francisco, and this trade will probably increase. It is to be hoped the Louisiana sulphur deposits will before long supply a portion at least of our wants.

We import but little gold-bearing ore; for the year 1888 this item was valued in our imports at $3288, against $13,671 in the preceding year.

Of silver ores, our imports are large and rapidly increasing, chiefly owing to the entry of silver-lead ores from Mexico. In 1888, the import value of this article amounted to $5,115,563, as against $3,798,284 in 1887. In the six months of this year the imports were $2,868,214, as against $1,980,788 the corresponding six months of 1887. The total imports of silver ore in 1888 amounted to $5,115,563, or an average of about $65 a ton (a figure based on the imports in the El Paso customs district), and as the average lead contents in the ore imported at El Paso is about 26 per cent, the total lead that entered in silver ores in the calendar year 1887 must have been about 16,500 tons, and this year, if the lead increases in proportion to the silver, we shall receive about 20,000 tons of lead from this source in the current calendar year.

This lead finds no entry in our import statistics, but under the heading "Lead and Manufacturers of" we find our imports to have had a value of $668,706, which was very little below the imports in the preceeding year. The quantity of pig lead imported in 1887 was about 3900 tons, so that our total actual imports of lead during the last year must have been fully 20 000 tons, leaving our production of lead from domestic ores about 140,000 tons.

Unground plaster of paris, or gypsum, which is brought for the most part from Nova Scotia, was imported to the amount of 133,606 tons, valued at $146,496, as compared with 146,933 tons in 1887. The domestic production of gypsum in the calendar year 1887 was 95.000 short tons.

The importation of unmanufactured platinum in 1887–8 is given as 5335 pounds, valued at $564,761, while in the preceding year 3863 pounds, worth $438,516, was entered; our home production of this useful metal was not 10 per cent of our imports.

Tin, in bars, blocks, or pigs, was imported to the amount of 84,627,857 pounds, valued at $13,360,679, which was nearly 3½ million dollars less than in the preceding year.

Of tin plates we imported in the year ending 30th June, 634,914,601 pounds, valued at $18,979,337, as compared with $16,910,890 in the preceding twelve months. Our total imports last year of tin and tin plates were worth therefore no less than 32½ million dollars. It is indeed much to be regretted that this vast amount of value is not produced at home. If Dakota tin mines should ever be shown to contain tin in paying quantity, of which unfortunately the probability does not appear to increase much, we may some day save this heavy tax paid to Europe.

Cement continues to be a very important article in our list of imports, and one that is constantly increasing in quantity. Last fiscal year we brought in, chiefly from England and Germany, no less than 2,016,990 barrels, (400 pounds each), valued at $1,903,650, as compared with 1,079,944 barrels, valued at $1,108,819 in the preceding year. The imported amount

is all of the higher grade, known as "Portland," and this quality is even now manufactured at only a few points in this country. The chief place at which a good quality of native "Portland" cement rock is found is on the Lehigh in Pennsylvania, and the quality there manufactured is said by eminent authorities to be quite equal to the imported article, yet the amount of this grade made during the last year scarcely exceeded 400,000 barrels, though of common cement we made about 6½ million barrels, valued at about 75c. per barrels.

Our imports of coal are all of the bituminous variety, and amounted during the last fiscal year to 877,504 tons, worth $2,846,741, while during the same period we exported of domestic coal 1,724,631 tons, worth $6,295,380, or nearly two million dollars more than in the preceding year. Our imports are decreasing, while our exports are growing at a very satisfactory rate, especially those to Canada since that country removed its import duty from anthracite.

Of iron ore we imported 919,644 tons, valued at $1,818,034. This is almost 100,000 tons less than in the preceding year, and this reduction will be much more marked at the close of the present calendar year. Our imports of pig iron were 325,517 tons, against 418,919 tons in the preceding year, showing a heavy reduction here also. Our exports of pig iron are still less than 10,000 tons a year, though slightly increasing. Our imports of iron have generally diminished, though the value, amounting to nearly $49,000,000, was but slightly less than in the preceding year.

SENATOR STEWART'S NEW MINING LAW.

The bill introduced by Mr. STEWART of Nevada, passed by the Senate April 24th, 1888, and now in the hands of the House Committee on Mines and Mining, is destined, we understand, to be more or less extensively amended, with the consent of its author, before final adoption. We presume, however, that, in its present form, it contains the provisions which cover Senator STEWART'S objects in preparing it. Hence an outline of it may be interesting.

The first section amends Section 2319 of the Revised Statues by adding that "no person shall acquire, by location or possession, more than one mining claim on the same vein, nor shall any person re-locate a claim which he has previously located."

There is some vagueness in the term "possession," as here used. Does it mean possessory title? In that case, no body could acquire more than one unpatented claim on the same lode, even by purchase of the holders.

We do not understand why a claim once abandoned, and thus returned to the public domain, should not be open to re-location by any citizen, even the one who abandoned it. But both the provisions of this section would be too easily evaded to effect any reform, if one be needed. And on the other hand, we think legislation tending to discourage the consolidation of mining properties into aggregates of sufficient size to avert the danger of litigation and justify the investment of capital, is a mistake. So far as this bill affects that question, it would, we think, make the thing not impossible, but only somewhat more difficult than it now is, and, to that extent, it would do harm.

The second section amends Section 2324 of the Revised Statutes ("Miners' Regulations, Expenditures and Improvements") in the following particulars:

1. While the statutes now require the record of a location to contain such a description "*by reference to some natural object or permanent monument* as will identify the claim," this bill removes the words we have italicized. We presume the theory of this change is, that discoverers are often without means to put permanent monuments or measure angles and distances. But we do not think such an argument sufficient, even if true, to justify the surrender of one of the few safeguards furnished by the present mining law against the "floating" of claims, and the localization of titles by reckless parole evidence.

2. While the statutes now require annual assessment-work to be performed "until a patent has been issued," this bill substitutes "certificate of entry" for "patent." The theory seems to be that since delay in issuing a patent may be the fault of the Government, the locator ought not to be kept under an annual obligation after he has done his part towards securing a patent. But it is a serious objection to this provision that neither in the Revised Statutes nor in this bill is there any provision requiring the issue of a "certificate of entry" for a mining claim. If such a provision exists, it is merely a regulation of the Land Office, revocable at will by the Commissioner. But we find no such regulation; and are therefore left in doubt how much is really implied in a "certificate of entry." Without further definition of this document, it is questionable whether its issue should release the locator from annual assessment-work, and practically, perhaps, take away the inducement for him to proceed with his patent-application and receive a patent. Would the issue of such a certificate, for instance, render the claim taxable to the locator as real estate? This might in some cases be a serious point. But still more serious is the possibility that the "certificate of entry" might be construed to mean merely the acknowledgment of the receipt of an application for patent, or even nothing more than the certificate of the record of the claim. The statutes use the word "entry," in such a way as to leave it possibly doubtful, whether it is not synonomous with the record of location. In that case, the whole purpose of assessment-work would be defeated.

3. The bill requires annual work of $50 per 20 acres upon placer-claims. This, we think, is new in Federal legislation; but there is no good reason for the omission hitherto of such a requirement; and we do not think the sum exorbitant. The "certificate of entry" appears here also, and our preceding remarks concerning it are applicable.

4. The bill provides that a failure to comply with the conditions of annual work shall re-open the claim to re-location, unless the representatives of the original locators resume work before such re-location, *and continue the same with reasonable diligence until the required amount of labor shall have been performed or improvements made.* The italicized words are new, and the amendment is a good one. As the law now stands, mere resumption is enough—and it ought not to be so.

5. To the provision of the Statutes that the interest of a delinquent owner shall become, after due notice, "the property of his co-owners who have made the required expenditures," this bill adds, "And such co-owner may re-locate such individual interest in his own name."

How does this agree with the prohibition in the first section, of the location of more than one claim by the same person? If the answer be, that the provision applies only to individual interests within a single claim, then it fails to meet the innumerable cases in which claims have been consolidated and are held in joint possession. But is the new provision as good for the co-owner as the old? A re-location substitutes a later date; and the priority of the original date may be invaluable. The co-owner in such a case, we think, should succeed to all the rights of the original and delinquent co-owner, and not be put on the footing of a re-locator only.

6. The bill provides that work on a tunnel to develop a given claim or claims shall count as work on the claims. This we believe is simply enacting as statute law the usual practice of the Land Office, which is right and proper.

The third section of the bill amends Section 2325 of the Revised Statutes by adding that "no more than 3000 feet in length along the vein of claims located prior to May 10th, 1872, and not more than one claim located after said date shall be included in the same application for a patent, and not more than 160 acres of placer ground shall be included in the same application for a patent."

The use of the phrase "in length along the vein" is highly objectionable. It is one of the evils of our mining laws that so much is left to depend upon facts which often cannot be fully known at the time of the location. Let the words "along the vein" be struck out, and 3000 feet left as the maximum length of the patented lode-location. Then the patentee will not be embarrassed if the vein following a crooked course, should be a little longer.

The fourth section, amending Section 2335 of the Statutes, simplifies in an unobjectionable way the taking of affidavits and testimony.

The fifth Section amends section 2338 of the Statutes, which now leaves to the local legislatures the enactment of rules for "working mines, involving easements, drainage, and other necessary means to their complete development. The bill substitutes the following:

"As a condition of sale, each patent shall reserve the right of way through or over any mining claims for roads, ditches, canals, cuts and tunnels, for the purpose of working other mines; *Provided*, That any damages occasioned thereby shall be assessed and paid in the manner provided by the laws of the State or Territory in which such mine is situated for assessments and payments for land taken for public use under the right of eminent domain. And the rights and easements reserved under the provisions of *this section* in patents heretofore issued shall be regulated and made available as herein prescribed."

We have italicized two words which seem to be inadvertent, and should be replaced with a description of the section for which "this section" is made a substitute. And we suggest also that the imperative form of the provision literally excludes the amicable settlement and payment of damages without the form of assessment under eminent domain. But this is perhaps hypercritical. No legal proceedings would be taken, or would avail anything if they were taken, to hinder one party from accepting by private arrangement, any amount he might find satisfactory. The provision itself is an excellent one, and puts upon a uniform and equitable footing the interests of miners in all the States and Territories affected, removing the inequalities and inconveniences heretofore due to variable and deficient local legislation.

It will thus be seen that Senator STEWART'S bill has a number of good features—some of them important, some requiring small amendments—and a few doubtful or objectionable ones. It is chiefly directed against administrative evils, and does not touch the deeper difficulties inherent in the bad principle of the Law of the Apex.

NEW CALEDONIA NICKEL AND COBALT.

Written for the Engineering and Mining Journal, by John Heard, Jr.

In the ENGINEERING AND MINING JOURNAL of July 31st, 1886, I published a few notes on the famous mines of New Caledonia, and since that time I have sought in vain for reliable data concerning the metallurgy of those ores. Patents innumerable have been taken out since 1873, the year in which the *Société du Nickel*—more appropriately the *Monopole du Nickel*—was founded; but there was no evidence to prove that these patent processes had ever been successfully applied, and at the present moment even, with four articles * before me entitled "The Metallurgy of Nickel and Cobalt," written by the metallurgist and chemist in charge of the works at Maletra, I am in doubt as to whether the indicated processes were ever tried. If so, with what success? If not, what is successfully taking their place? The pompous little monograph in the *Moniteur Industriel* is chiefly pompous; its object seems to be to prove the superiority of Mr. Herrenschmidt's processes over any other, and the existence of log-rolling in a literature which should consist essentially of facts, figures and tabulated results. Here is an example of the writer's logic. After complaining of the fact that the "Nickel Company" send all their product either to England or Germany to be refined there instead of in France, they say the reason for this is a simple one: "The ores have to be shipped in foreign bottons and consequently pay a tax of 36 francs per metric ton above the freight (which is 2·50@3 francs)." To appreciate the value of this apology for the incapacity of French metallurgists as against English or German, it is necessary to bear in mind that the lowest ores of cobalt shipped average over 6 per cent of cobaltic oxide, whereas the nickel ores average 14@15 per cent of metallic nickel.

My object in publishing the following notes to day was to advance the theory that as long as the nickel-cobalt supply of the world is dependent upon the product of the New Caledonia mines it is useless to hope for such a reduction in the price of these metals as to warrant a large increase of consumption. The actual consumption of nickel in the world is less than one thousand tons per annum, representing at the present New York quotation of 65c. per pound, $1,300,000 only.

The figures on the annual consumption of cobalt I have been unable to find; it seems safe, however, to assume that $2,000,000 would amply cover the annual consumption of both metals. Now, bearing in mind the usual lavish expenditure of money by French mining companies in the colonies, the absurd extravagance of their administration, their proverbial lack of adaptability, and in this especial case the difficulty of mining the ore, the necessity of handling it a dozen or more times before it reaches a metallurgical center,† and the tediousness of the subsequent operations, it seems to us that this capital is too small to do more than maintain the New Caledonia enterprise on the present basis of prices. The papess keep repeating that the mines are able to furnish ten times as much nickel and cobalt as the world can use; but even on the basis of the present actual consumption this seems doubtful. Everything that could be done to force the metal on the market has been done. The price has been reduced to a limit which must be considered a non-paying one. The company, if our information is correct, has been obliged to accept a loan from the Rothschilds, and the world has refused to buy much larger quantities of these metals at the present prices.

Could nickel be sold at 25 cents, or even 30 cents, the consumption would attain very large figures. But at present it can not, and I can not see that there is the slightest chance of the Nickel Company's producing it at any thing like these quotations.

The only solution which we can see, lies in the discovery of a large body of such ore as can be readily and cheaply concentrated. Oxidized and silicate ores are thus out of the race. We can not smelt them down cheaply nor can we concentrate them mechanically. We must therefore look for some large body of nickeliferous pyrites—pyrrhotite being the most probable and the most easily worked. It seems to us that were a body of cheaply mined pyrrhotite, carrying, say, 3 per cent of nickel and cobalt to be discovered, the New Caledonia enterprise would share the fate of the Panama Canal Company. For it were a cheap matter to run it down to a matte which could be, if required, highly concentrated by Bessemerizing by Pierre Manhes' process, and the product should then be taken in charge by the Messrs. Cowles. The solution of cheap nickel lies in the *cheap* production of 20 or 30 per cent matte. Beyond that point, whether the matte be blown or treated wet, up to the point where the product could be used in a Cowles furnace, the operation can easily pay for itself at any price above 15 cents per pound of nickel:

How ill suited are the New Caledonian ores for such a concentration may be seen from the following analyses:

	1.	2.	3.	4.	5.	6.
NiO + CoO	21·10	8·70	14·20	6·00	18·00	7·210
CaO	....	....	....	....	.	1·400
Mn (oxides)	20·20	18·00	18·60	10·60	...	13·658
Oxygen (excess)	....	....	....	....	....	4·313
$Fe_2O_3 + Al_2O_3$	18·40	39·00	39·00	40.60	...	42·080
MgO	6·20	2·10	....	0·60	15·00	0·956
SiO_2	8·40	8·00	4·50	31·00	38·00	4·593
Water	25·60	24·00	23·30	11·00	22 00	25·600

(1) and (2), cobalt ores from Koé; (3) and (4), cobalt ores from Canalá; (5), Garnierite; (6), average cobbed ore.

By a suitable roasting, either in heaps or stalls, nearly the totality of the water can be expelled; thus the roasted ore, according to (6) might be said to contain, in round numbers, nickel and cobalt oxide 10 per cent, lime and magnesia 5 per cent, manganese oxide 20 per cent, ferric oxide 20 per cent, alumina 40 per cent, silica 5 per cent, and the proportion of oxygen in the bases, alumina and silica, would be as 14·7 : 18·7 : 2·7, which would give us a very uncomfortable aluminate slag. Yet if this ore could be delivered at a low price near any metallurgical center, it could be easily taken care of. The statement is made that this ore is smelted *per se* at Nouméa into a matte containing 60 to 70 per cent of nickel and cobalt, but how this matte can be produced from an oxide ore in which not a trace of sulphur is recorded by the analyses, it is hard to explain.

In a short article like the present one it would be impossible to review the metallurgical processes called into existence by the discovery of the new Caledonia ores, and of which certainly fifty have been patented within the last few years. My object in the present article was rather to point out what seems to me a proven fact that New Caledonia, as at present handled, is not the world's future source of supply for cobalt and nickel; and also that the reason of this lies not in the cost of the metallurgy, but in the cost of the mining of these famous ores.

* *Moniteur Industriel*, May 3, 10, 17, 24, 1888. *Le Cobalt et le Nickel; leur Industrie*, par MM. H. Herrenschmidt métallurgiste et E. Capelle.

† See ENGINEERING AND MINING JOURNAL, July 31st, 1886.

THE VALUE OF HYDRO-CARBON EXPLOSIVES FOR MINING PURPOSES.*

By George Blake Walker, F.G.S.

The explosives of practical use which are at present known may be roughly classed under (1) gunpowder or nitrate compounds; (2) nitro compounds; and (3) hydro-carbon compounds. [There is also a small class of chlorate powders not noticed by this author.]

1. In this class the oxygen required for the combustion of the powder is derived from nitrate of potash. The ingredients in gunpowder are merely mixed together mechanically.

2. In this group NO_2 (nitric peroxide) is the oxidizing agent, and the explosives are more or less true chemical substitution compounds of NO_2 and organic bodies such as glycerine, cellulose, or phenol. From these we have tri-nitro-glycerine, commonly called nitro-glycerine: tri-nitro-cellulose, or gun cotton; and tri-nitro-phenol, or picric acid. Nitro-glycerine *mixed* with 25 per cent of kieselguhr forms dynamite; with 75 per cent saltpeter it forms carbon dynamite; whilst by dissolving gun cotton in varying proportions in it we have blasting gelatine and gelatine oil. From this latter again are made gelatine dynamite of different qualities by mixing with it saltpeter in different proportions.

3. In this class definite compounds derived from hydro-carbons are mixed with suitable oxidizing agents.

Sprengel in England and Designolles in France showed some years ago that the aromatic hydro-carbons, as they are called, could yield powful explosives. They produced several, among which are said to have been a composition resembling *Sekurite*, produced by Sprengel, and *Melinite* produced by Designolles. These compounds, however, ignited too readily by friction, or decomposed too readily, or were otherwise dangerous and unsuitable, besides producing flame. Several explosives, however, more recently produced, such as *Hellhoffite*, *Carbonite*, *Sekurite and Roburite*, retain the explosive properties of these hydro-carbon compounds, but have been carefully built up in order to possess the qualities required for safe use in coal mining.

Hellhoffite is mainly a mixture of concentrated nitric acid with hydro-carbons or their nitro compounds, such as benzol or nitro-benzol.

Carbonite is the same substance with the addition of absorbent infusorial earth, as in the case of dynamite.

Sekurite is not very well known yet.

Roburite is derived from benzol by displacing three units of hydrogen by one of chlorine and two of nitric-peroxide, and is called a chlorodinitro-benzol. The oxidizing agent, which is usually mixed with this substance is ammonium-nitrate, and the degree of explosive force is regulated by the proportion used. The effect of the presence of chlorine, which is peculiar to roburite, appears to be that absorption of hygrometric moisture is prevented, the action of the explosive is intensified, and the resulting gaseous products extinguish flame. The following is the chemical statement of the composition and results of the complete ignition of roburite:

$$C_6H_3, Cl, 2NO_2 + 9NH_4NO_3 = 6CO_2 + 19H_2O + 10N_2 + HCl,$$

the following being the corresponding molecular weights:

$$\underset{\text{(Chlorodinitro-benzol.)}}{202{\cdot}5} + \underset{\text{(Ammonium nitrate.)}}{720} = \underset{\text{(Carbonic acid.)}}{264} + \underset{\text{(Water.)}}{342} + \underset{\text{(Nitrogen.)}}{280} + \underset{\text{(Hydro-chloric acid.)}}{36{\cdot}5}$$

A charge of 1543·2 grains, or nearly one quarter of a pound, would produce in a space of 4 yards each way, or 64 cubic yards, a proportion of carbonic acid equal to about ·034 per cent of the air contained in that space.

According to Herr Georgi, the relative volumes of the resultant gases from dynamite, blasting gelatine, and roburite are as follows: Dynamite, 881; gelatine, 1200; roburite, 1400.

Compared with gunpowder, roburite has theoretically 9 times its force, but practically the effect is 4·1 as compared with gunpowder. Being granular in form and less concentrated than gelatine, roburite adapts itself to the forms of shot-holes and occupies more space relatively. For this reason also it does not shatter the coal in blasting. It is not exploded by blows from a steam hammer or by the pressure of the wheels of a heavy locomotive when the roburite was spread on the rails. It can be burned on an open fire, and if wetted can be dried with safety and with no loss of power.

The principal drawback to its use is the necessity of using detonators containing mercuric fulminate to explode it. If the detonators do not produce the degree of heat adequate to the complete detonation of the whole charge, part will burn without exploding and thus lose useful effect.

The particulars of a number of experiments are given by Mr. Walker and by Mr. C. E. Rhodes in the discussion on this paper, all of which are worth careful study.

Loose gunpowder, coal-dust, cotton wool saturated with benzoline, tow with paraffine oil, and explosive mixtures of gas and air escaped ignition when cartridges were fired in contact with them, under circumstances in which gunpowder produced serious results.

Underground, the various kinds of shots incidental to coal mining—including blown-out shots and "ripping" or "brushing" shots—were repeatedly fired at Wharncliffe Silkstone Colllery and Silksworth Colliery with favorable results. Mr. Rhodes also fired some experimental shots in a quarry, and compared the results with equal weights of gunpowder, gelignite, and roburite.

* Abstract from Transactions of the Midland Institute of Mining, Civil, and Mechanical Engineers. Vol. XI., Parts xcii. and xciii.

THE BEDDED ORE-DEPOSITS OF RED MOUNTAIN MINING DISTRICT, COLORADO.*

By G. E. Kedzie, M. S., Ouray, Col rado.

The ore-deposits of all that portion of the San Juan country within the boarders of Ouray County are either in the tertiary eruptives or, confined to a relatively narrow zone, in the sedimentary beds just beneath them. The ore-deposits in the igneus formation would be classed as fissure-veins. In addition to these, however, there is that form of fissure locally called "chimneys," of which the deposits in the National Bell, Yankee Girl and Silver Bell mines are good examples. In the sendimentary formation the ore deposits are either fissures, usually along fault-planes, or intercalated beds between limestone, which forms the foot-wall, and a quartzite or shale that forms the hanging-wall. Of the bedded or contact-deposits there are two examples in Ouray County. One, known as the Mineral Farm, is just south of the city of Ouray, the other known as the Red Mountain deposit, nearly six miles south from Ouray; will be considered in this paper.

Fig. 1 is a map, and Figs. 2, 3, 4 and 5 are sections illustrating the facts stated below.

The tertiary eruptives, which are almost exclusively andesites, have a present maximum thickness of nearly 6000 feet; but previous to the Glacial epoch this formation, then forming a great plateau, must have been much thicker. The base of the andesites, resting unconformably upon the sedimentary beds beneath, has a mean elevation of 9000 feet above sea-level and an apparent slight dip toward the northeast. U-shaped valleys and cañons have been eroded in, and even through, this igneous rock into the sedimentary rock beneath, where the rounded and polished quartzites, with parallel *striae*, still furnish record of the genesis of the present orographic features of this country.

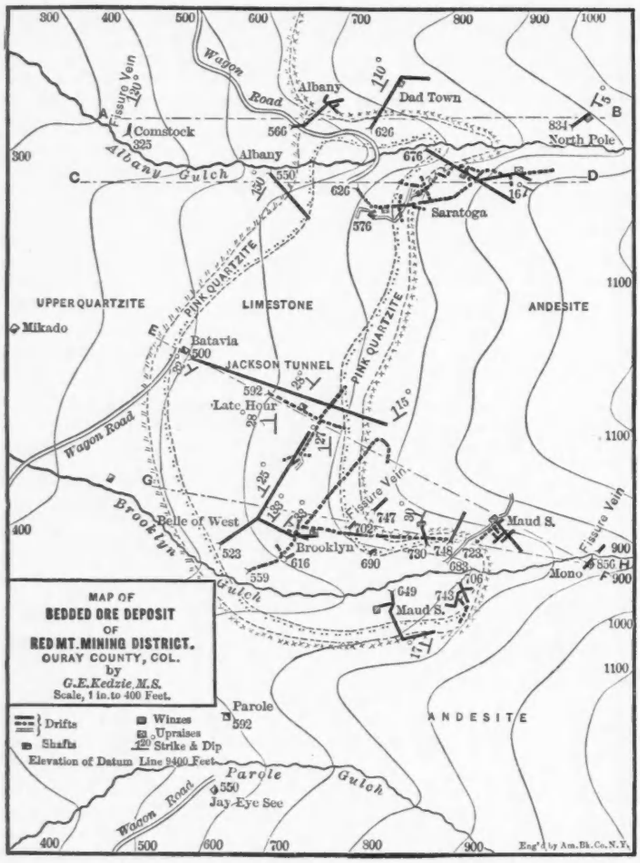

FIG. 1.—Bedded Ore Deposit, Ouray County, Colo.

Leaving Ouray, which is at the altitude of 7700 feet, in a due south direction, we pass at the corporate limits a massive light gray, non-magnesian limestone from 350 to 400 feet thick dipping northwest at a low angle, and resting uncomfortably upon the quartzites beneath. This limestone, which I will provisionally designate as Lower Carboniferous, contains, in the upper portion of the bed, at its contact with the overlying shales, the Mineral Farm ore-deposit. This bedded deposit, which is worthy of more extended and systematic development than has yet been bestowed upon it, consists essentially of a barite gangue, with galena, carrying silver, undoubtedly in the state of sulphide, and occasional bunches of argentiferous tetrahedrite.

Passing on south over the wagon-road which has been blasted into the steep and nearly naked walls of the Uncompahgre cañon, we find the formation beneath the limestone to have a strike of N. 75 degrees E., becoming east farther south, and an average dip of 60 degrees northwesterly. This formation, at its upper exposure, consists of dark-colored quartzite conglomerates, with a prominent band of laminated shale. These beds are succeeded by massive light-colored vitreous quartzites, which at the base become darker-colored and have interstratified beds of laminated shales. The exposed base of this formation is at the center of a steep anticlinal fold crossing Red Mountain Creek nearly 3000 feet above its junction with the Uncompahgre. This fold has an east and west trend and becomes broader towards the east. The vertical thickness of this quartzite formation, as here exposed, is not less than 13,000 feet. It unquestionably belongs to the Archæan age. Passing south from the anticlinal fold, the strike of the rock soon becomes S. 45 degrees E., with a dip of 60 degrees southwest, and at a distance of about 3000 feet the formation disappears under the andesite, at an altitude of 9100 feet. About 8000 feet further south, and at an altitude of 9500 feet, there is the reappearance in the andesite of the base of the outcrop of an isolated mass of sedimentary beds, which contain the Red Mountain bedded deposit. This ore-body is on the west slope of Mt. Abram, near its base, between Brooklyn and Albany creeks, and at the center of the east side of the widened valley locally known as the Park. This park, which is nearly level, has several small shallow lakes containing quite extensive deposits of bog iron. This iron, which is daily accumulating, is undoubtedly formed by the oxidation of the sulphate of iron held in solution by the water that has passed through the beds of decomposing pyrites which, as there is every reason to believe, underlie the park at no great depth.

The outcrop of the ore-deposit is exposed by erosion in Brooklyn and Albany gulches, and along the west slope of the mountain, at an elevation of about 500 feet above the park. The limited exposure of the limestone indicates an anticlinal fold, much sharper upon the west slope, the axis of which has a northeasterly trend. Upon the summit and east side of this fold, the Upper Quartzite appears to have been entirely eroded previous to the flow of andesite which rests unconformably upon the sedimentary beds.

Upper Quartzite.—In descending series, from the park level, the first formation encountered in passing up hill is a white and compact vitreous quartzite in beds from 1 to 3 feet thick, with a northwesterly dip of from 15 degrees at the park to 50 degrees at the base of the bed near the south workings of the Albany.

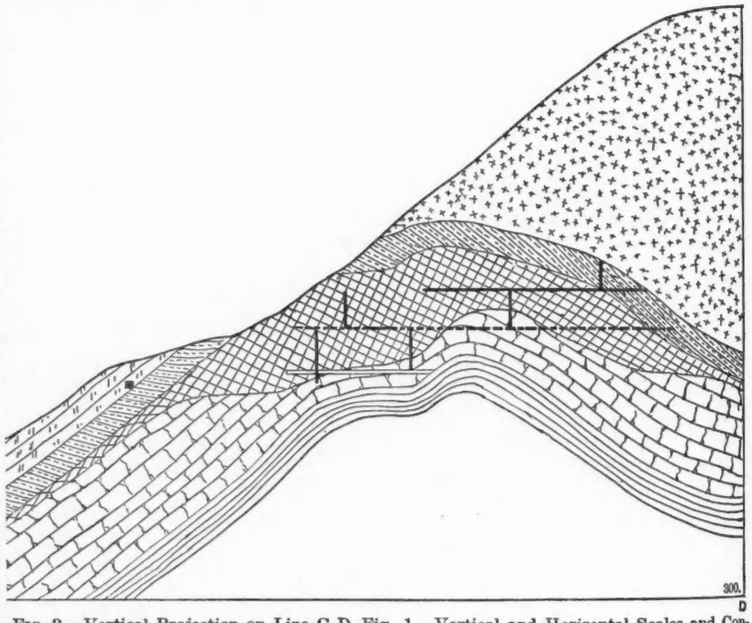

FIG. 3.—Vertical Projection on Line C D, Fig. 1. Vertical and Horizontal Scales and Conventional Signs, the same as in Fig. 2.

Pink Quartzite.—This is a light-red argillaceous quartzite in thin beds, having a maximum thickness of 35 feet. The top of this bed is a fine-grained conglomerate, consisting of worn fragments of white quartz, with a red argillaceous ground-mass. The base of the bed, which forms the hanging-wall of the ore-deposit, is finer-grained and lighter colored, and, in the vicinity of the Maud S. workings on the north side of Brooklyn Gulch, has been changed into a cherty conglomerate, while along the north side of Albany Gulch, in the vicinity of the Albany and Dad Town workings, the coloring has been almost completely removed, and in the cavities formed along the bedding and fracture-planes, there has been a re-deposition of crystalline silica and an occasional isolated bunch of fine-grained argentiferous galena.

Crystalline Limestone.—This is a white, massive-bedded, crystalline limestone, having a mean thickness of 140 feet. It is coarsely crystalline at the top of the bed, has a light gray band near the center, and is thinner-bedded and more siliceous at the base. This limestone forms the foot-wall of the ore deposits, which are mainly located in the upper portions of the bed, at or near its contact with the overlying pink quartzite. I made two analyses of this limestone, with the following result:

Top of Bed.		Base of Bed.	
Insolubles	2·30	SiO_2	5·76
Al_2O_3	trace	Al_2O_3 (trace of Fe)	4·91
$CaCO_3$	97·30	$CaCO_3$	87 55
$MgCO_3$	trace	$MgCO_3$	1 87
	99·60		100 09

Lower Quartzite.—This is a light-gray foliated quartzite, in beds from

* A paper read before the American Institute of Mining Engineers, Boston, February, 1888.

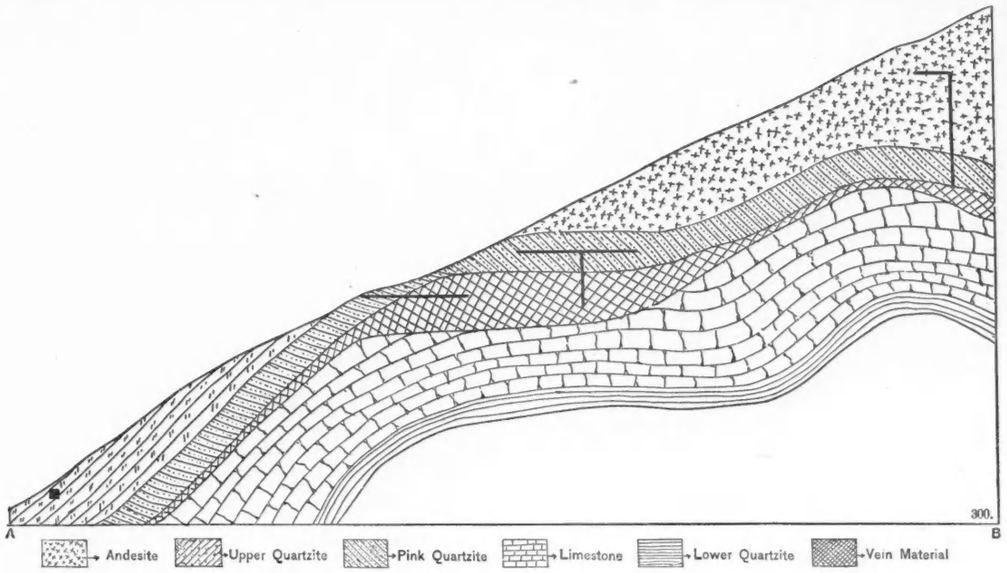

FIG. 2.—Vertical Projection on Line A B, Fig. 1. Horizontal and Vertical Scales. 1 inch = 200 feet.

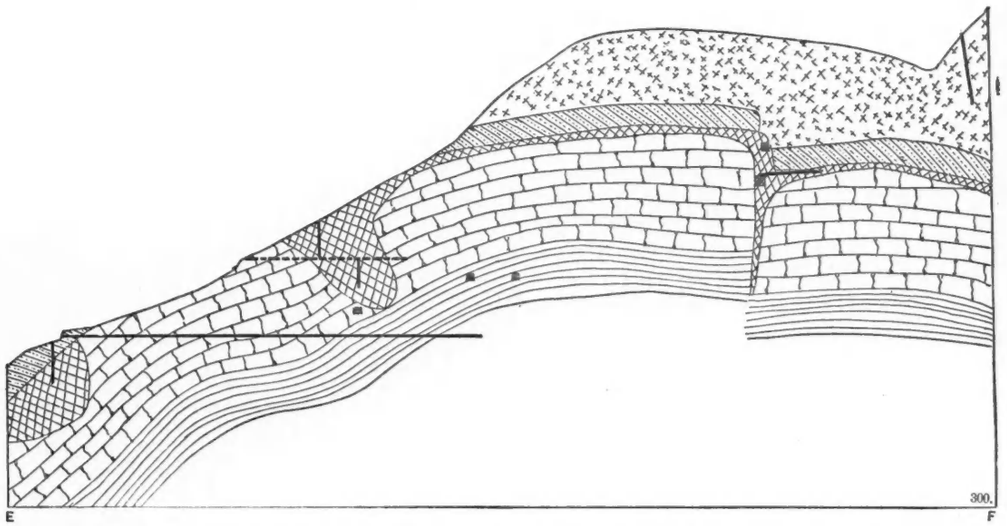

FIG. 4.—Vertical Projection on Line E F, Fig. 1. Vertical and Horizontal Scales and Conventional Signs, the same as in Fig. 2.

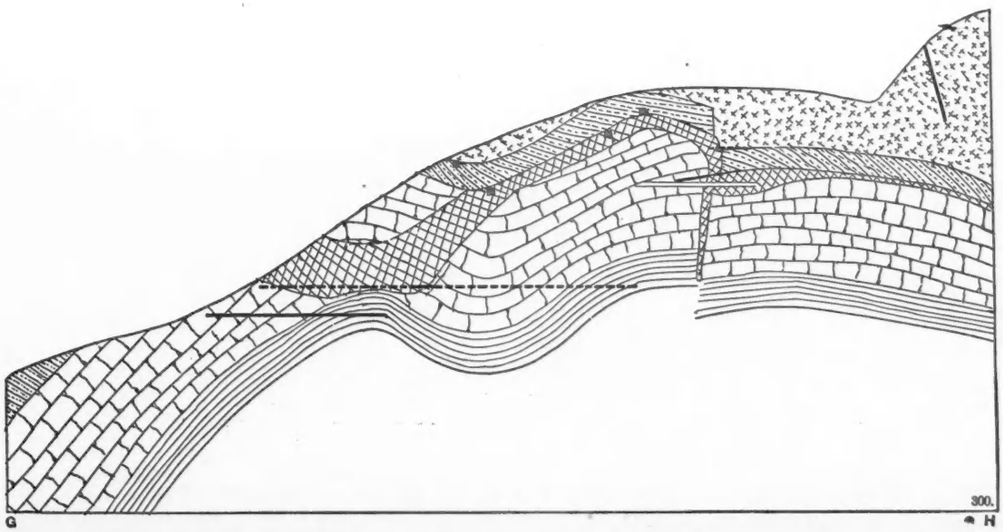

FIG. 5.—Vertical Projection on Line G H, Fig. 1. Vertical and Horizontal Scales and Conventional Signs, the same as in Fig. 2.

1 to 2 inches thick. This formation has been penetrated by the Jackson tunnel for a distance corresponding to a vertical depth of 140 feet, showing no material change in the character of the rock. An analysis proved the composition of this formation to be:

SiO_2	90·88
Al_2O_3	7·57
	98·45

Andesite.—This eruptive constitutes the entire mass of the rugged mountains in this vicinity, and has a present thickness on either side of the valley of nearly 3000 feet. Microscopically, it consists of a light-gray or pink ground-mass, containing an abundance of white crystals of an altered feldspar, together with a few grayish-green crystals of either hornblende or augite. Occasionally fragments are found inclosed, giving the bed the appearance of a breccia. These inclosed fragments rarely exceed a few inches in diameter, and are of a dark-green ground-mass, inclosing white crystals of feldspar. Specimens of this formation from different horizons were submitted to Mr. Whitman Cross, of the U. S. Geological Survey, for examination. He provisionally pronounces the rocks andesites. My analysis of this rock gave the following result:

SiO_2	58·85
Al_2O_3	21·01
Fe_2O_3	6·47 (4·53 Fe)
MnO	·36
CaO	7·08
MgO	1·94
Na_2O	4·73 (trace of K_2O)
	100·44

Though the sedimentary beds are much contorted, especially the lower quartzites, only one fault was found; and this appears to be a reversed fault, with an upthrow of 45 feet and a strike of N. 45 degrees E. This fault is found on the north side of the Brooklyn Gulch at the Maud S. workings. It is along this fault-line that a drift was run in the earlier developments, and a quantity of copper sulphide, rich in silver, was extracted. I found no evidence of the continuation of the fault in the andesite above.

Manner of Occurrence of Ore-Deposits.—There are several vertical ore-bodies partaking the nature of fissure veins, the principal one being the Mono vein, with a strike of N. 45° E. and a dip of 68° S.E. This ore-body is from 1 to 2 feet in width, and is a continuous body of pyrite and chalcopyrite, to the bottom of the 70-foot shaft. In general this ore is not very rich in silver.

A vertical vein of barren white quartz with a few disseminated crystals of pyrite is found just east of the Brooklyn workings. This vein has a strike N. 45° E. and a dip of 73° N.W. The walls of the vein, where in the igneous formation, are strongly kaolinized and heavily impregnated with pyrite. I was unable to find a downward extension of this vein into the crystalline limestone, where it would have been cut by the workings beneath.

Lastly, at the Comstock workings, in the upper quartzite, there is a 1-foot vertical ore-body, having a strike N. 15 degrees E. The ore consists principally of galena, with some chalcopyrite and blende, which, with large quartz crystals, forms a lining to a closely connected series of vugs.

The ore-body of greatest commercial value occurs in the crystalline limestone, at its contact with the overlying pink quartzite. The minimum thickness of the vein material is 3 feet; but it extends downward into the limestone for a very variable distance, being nearly 100 feet thick at the Saratoga workings, while, in the Brooklyn workings, the vein material reaches nearly to the base of the limestone. The greatest longitudinal extent of these bodies of vein material is in a direction parallel with the strike of the inclosing rocks.

The rich ore-bodies in the vein material are very irregular, and the line of demarcation between rich ore and low-grade vein material is exceedingly indefinite. There is, however, an apparent tendency of the richer argentiferous iron-ores to assume a horizontal position, while the light-colored kaolin bands, with which the lead values are associated, assume a position nearer vertical along the original fracture-planes of the limestone. The pyrite and the great mass of vein material is of low-grade in silver, containing from a mere trace to 20 ounces of silver per ton of 2000 pounds. The assorted ores, which are shipped to the smelters in 10-ton lots, vary from 50 to 80 ounces of silver per ton, with an occasional shipment giving returns much higher in silver. All of the ores vary from 1 to 3-tenths of an ounce of gold per ton.

Chemical Composition of Ores and Vein-Material.—Silver exists here as a sulphide; rarely in the native state. Occasional masses of nearly pure sulphide are found in the oxidized ores. One specimen gave me returns of 21,430·6 ounces of silver per ton. Careful analysis failed to detect any appreciable amount of silver in combination with chlorine.

Gold exists undoubtedly in the native state.

Lead is occasionally found as a fine-grained galena, usually in the pink quartzite at the base of its bed. It may possibly exist to a limited extent as a carbonate or oxide, but the larger portion is found as a sulphate.

Copper exists as chalcopyrite, associated with the iron pyrite. Occasional lenticular masses of the black sulphide are found in the oxidized ores. Native copper is rarely found. Blue and green carbonates of copper are occasionally found as an incrustation.

Iron, the essential carrier of the silver-values, exists at the base of the larger masses of vein-material as a sulphide. At the point where present oxidization begins the pyrite becomes granular and contains an abundance of iron-sulphate. The bulk of the iron, however, exists as an earthy, red and yellow, hydrous sesquioxide, though occasional masses of black anhydrous sesquioxide are found near the surface.

Manganese occurs as a dark-brown hydrous oxide, occasionally carrying up to 100 ounces of silver per ton of ore.

Zinc is found in small amounts, as a sulphide in association with the galena; also, as a light-brown hydrous silicate.

Silica is distributed throughout the vein-material in irregular masses and bands of friable granular quartz.

Alumina occurs in chemical combination with silica as hydrous silicates, usually contaminated by the iron and manganese oxide. A selected specimen of one of the typical varieties was analyzed, with the following results:

Al_2O_3	39·07
SiO_2	23·85
H_2O	34·93
	97·85

Calcium sulphate is occasionally found disseminated through the vein-material as a secondary product, in shape of slender, transparent crystals.

Barium sulphate has not been found in any of the workings.

Ammonium oxide is usually present in the decomposed vein-material; in one instance reaching three-tenths of one per cent.

I made analyses upon two characteristic car-load samples of ore. No. 1 was of a light gray color, carrying 128 ounces of silver and 0·22 ounce of gold per ton of ore.

No. 2 was of a light-red color, carrying 68 ounces of silver and 0·1 ounce of gold per ton of ore.

	No. 1.	No. 2.
H_2O (by ignition)	6·75	11·94
Insoluble silicates	41·63	8·65
PbO	18·40	....
Fe_2O_3	17·12	64·80
Al_2O_3	6·08	13·05
MnO	·59	1·98
CaO	1·70	....
ZnO	1·23	....
SO_3	3·87	....
CO_2	2·39	....
	99·76	100·42

Product.—Very few of the mines, excepting the Saratoga, have reached a state of development that will warrant their being termed anything but "prospects." In the two years since the discovery and more intelligent development of these mines, there have been shipped about 935 tons of ore, having an average value of $70 per ton. With the ground now opened the product during the year 1888 should reach, if not exceed, 2000 tons.

From the isolated exposure, the limited development and the absence of paleontological evidence I am unable to arive at a satisfactory conclusion as to the age of the formation inclosing this ore-deposit. I have no theory to advance as to its genesis, believing that the collation of many observations of similar deposits is necessary before justifiable conclusions can be drawn.

THE DRUMLUMMON GROUP OF VEINS AND THEIR MODE OF FORMATION.*

By Joshua E. Clayton, M.E.

(*Concluded from page 86.*)

THE DRUMLUMMON VEIN SYSTEM.

The Drumlummon lode belongs to the third system of vein fissures hereinbefore mentioned. It is the largest, most persistent, and important "true fissure" lode in the district. The mineral wealth of the district is confined mainly to this great lode and its branching spurs. The most important branching spur is known locally as the Castletown lode. North of the Castletown branch is another split or branch that is not explored far enough north to determine whether it unites again with the main lode, or separates permanently from it like the Castletown branch.

The general strike of the main fissure is remarkably direct on a course of N. 15 degrees E., and S. 15 degrees W. There are many short curves and local variations in the strike at various points, but the average course of the main fissure is very direct, as above stated.

The underlie of the lode is towards the east, but varies greatly at different points from nearly vertical to 30 degrees east of the vertical plane. The general tendency of the lode in the north end of the explored ground is to assume a nearly vertical position in the lower levels. The average underlie of the lode at the main working shaft (No. 1,) down to the 800 foot level is 20 degrees east of the vertical plane. At the north end of the workings the underlie will average about 10 degrees east. At the south end of the explorations in the barren ground the underlie of the fissure is about 32 degrees east of the vertical plane. The width of the lode between the walls is also variable, showing a series of swells and contractions in the productive portions varying from 10 to 12 feet to 40 feet. The average width of the pay shoots is about 20 feet between walls. In the south end the quartz gangue gave out entirely. The filling between the walls is nothing but crushed shale and abraded material from the walls of the fissure. The walls here are beautifully defined and regular in strike and underlie. The average width between the walls in this barren zone on the 400-foot level is about 10 feet, varying from 4 to 20 feet between walls.

The walls of the lode are very clearly defined in the barren portions, but in the productive portions they are indistinct either on one or both sides. As a rule, the walls are more clearly defined south of the No. 1 shaft than they are north of it. In some places the quartz gangue gradually fades out into the shaley schists, with no sharp or distinct lines of separation between the lode and the country-rock. This will be referred to again in the discussion of the theory of vein formation.

The walls of the fissure are in most part the metamorphic magnesian siliceous schists that lie along the east flank of the granitic core of the district. The juncture of the granite and metamorphic beds is very jagged and irregular. Numerous wedge like tongues of granite project southeasterly into the slaty schists beyond the line of the Drumlummon fissure. There also appears to be a set of independent granitic dykes of later origin than the central mass of granite above referred to. These newer dykes are more generally conformable to the strike and dip of the lode and its branches than the spurs of granite that project from the central mass.

* Extracts from a report dated June 12th, 1888, made by Joshua E. Clayton to the Montana Company, Ld., of London.

The secondary dykes of granite appear more frequently on the east or hanging-wall side of the lode than they do on the foot-wall side. The lode undoubtedly touches the central mass of granite in a number of places; but for a greater part of the distance explored, the foot-wall is the altered slaty schists lying east of the central granite mass of the district. This must, therefore, be classed as an independent "true fissure lode," that cuts through the country-rock of every kind in a course nearly parallel to the east flank of the granite, and is not in conformity with any well defined "contact line" between the two formations; it can not therefore, be a contact lode in any true application of the term.

I consider the foregoing description of the geological situation of the vein systems of the district generally, and of the Drumlummon lode especially, are sufficient to give at least a general idea of the relative position of this great mine and its geological surroundings; at any rate it is the best that I can do with the data now in hand.

THE CASTLETOWN LODE.

About 200 feet south of the point where the Cruse Tunnel taps the Drumlummon lode, the Castletown completes its union with it. From this point of complete union, going north, it presents the appearance of a double lode with blocks of broken country-rock, mixed with quartz, between the two lines of ore. At a point about 50 feet north of the tunnel intersection, the division becomes complete, and the Castletown lode becomes a separate diverging fissure, on a course or strike of north 38 degrees east, or 23 degrees more easterly than the Drumlummon lode.

The granitic dyke shown in the hanging wall of the Drumlummon lode curves to the right, and becomes part of the hanging-wall of the Castletown lode, thus leaving the line of the Drumlummon entirely.

The Castletown is contemporaneous in origin and structure with the Drumlummon lode. It is only partially explored, but from all that can be seen of it at present, I am confident that it will become a very large ore-producer. I therefore recommend its thorough exploration on the level of the Cruse Tunnel, and also on the 400-foot level. These two lines of exploration, being connected with the two tunnel levels, are admirably situated for economical work, and during the time the new hoisting plant is in process of erection at the 400-foot station, the two levels can be conveniently extended on the Castletown lode.

On the 400-foot level at shaft No. 1, the Castletown lode is seen in the cut-back of the station, about 40 feet east of the Drumlummon lode. At this point the Castletown cuts through a dyke or spur of hard granite, and is pinched down to about two feet in width, but the ore is high grade. Going south from this point, it rapidly approaches the Drumlummon, and then laps along the east side, until it finally consolidates with it at the north end of the Sampson ore-shoot. The hanging-wall granite dyke seems to have interfered with the expansion or development of the lode at this point, but further to the northeast, where the granite shifts to the hanging-wall, it ought to expand into a large strong vein. This is the direction in which the exploration should be made on this level. Two cross-cuts have been started east, a short distance north of the shaft; one of these should be extended to the Castletown, and then follow the lode out to the N. E. until the large ore-shoot is cut that outcrops to the surface. These two lines of exploration (on the Cruse and 400-foot levels) will undoubtedly show the value of the Castletown lode.

On the 400-foot level going north, another split was found at the north end of Pixley No. 3 ore-shoot. It is not yet known whether these unite again going north, or not. A cross-cut between the two branches at one point shows them to be 40 feet apart, and I am inclined to think it is a permanent split, similar in character to the Castletown lode

The south end of the Drumlummon lode shows some very remarkable features. After the Castletown vein becomes practically united with the main lode south of the Cruse Tunnel, it still shows in the wider parts the characteristics of a double lode dividing into two veins, and inclosing lenticular masses of shaly country-rock, as at a point 300 to 400 feet south of Cruse Tunnel.

On this level the quartz and ore continue as a strong lode south of the tunnel a distance of 600 feet, where the quartz gangue stone gives out entirely. From this point the level has been extended south a distance of 800 feet, without finding a trace of ore or any true quartz gangue. The fissure is continuous and unbroken, with foot and hanging walls beautifully defined and unaltered by any chemical change whatever. The walls are 4 to 20 feet apart, but do not average more than 6 or 8 feet. The filling between the walls is crushed country-rock, with now and then some sparry infiltrations and clay seams. It is crushed and ground and pressed together so closely, that the surface water cannot filter down through it. The material is the same constituting the solid walls of the fissure, but crushed and abraded by the movement of the walls during periods of disturbance, and so closely compressed as to completely choke the fissure.

Assuming that the fissure is more nearly vertical to the deep than it is near the surface at this point, and that the hanging-wall country settled down while the foot-wall side remained stationery, it will be readily seen that an enormous pressure would exist at those portions where the flat underlie occurs.

These "pinches" and "choked" sections of true fissure lodes are due entirely to mechanical causes and movements or shifting of the walls, thus leaving spaces where the lateral pressure is merely nominal, and presenting only slight obstructions to the circulation of mineralized solutions, while those parts that received nearly all the lateral pressure would be closed so tight, that no mineralized thermal waters or gases could penetrate into or pass through them.

These mechanical conditions are more distinctly marked and characteristic of "true fissure lodes" than of any other class of ore-deposits. It therefore follows that when a "pinched" or "choked" space is met with in a true fissure lode, it is due to a shifting of the walls, and that there is a corresponding opening of the fissure at some point below or beyond the "pinch." If the shifting of the walls should occur on the line of a wavy or irregular underlie, there will be a series of longitudinal openings and pinches that will make some levels very productive, while other levels will be in the tight ground and comparatively barren.

If the shifting of the walls occur longitudinally, there will be a series of openings and corresponding pinches nearly perpendicular to the line of strike, or straight down the plane of the underlie. If the curvatures of the fissure occur in oblique lines down the plane of the fissure, and the shifting of the walls occurs straight down the slope of the underlie, there will be a series of openings and pinches pitching obliquely down the plane of the lode. This last is really the case in the Drumlummon mine.

The shifting of the hanging-wall has been nearly straight down the slope of the underlie, and the curvatures, or wave-lines of the fissure pitch down obliquely to the south, corresponding generally with the pitch of the ore-shoots in that direction. I say "generally," because there are many local obstructions in all directions in lodes of this class, that cause great variations in the forms and directions of ore-shoots and pinches. Much depends, also, on the hardness and rigidity of the country-rock. Pinches may occur where the fissure passes through a zone of soft yielding country-rock—like talcose shale, for instance—that would press in laterally and choke the fissure completely at that point, before any ore-deposit or gangue stone could be formed. Hence the necessity of studying carefully all the local facts that are accessible in each district, and the relation the facts bear to each other, before drawing definite conclusions therefrom. The same general facts are seen in the south end of the 400-foot level, but further along the level going south, the ore on the Cruse level terminates six hundred feet south of the tunnel; whereas, on the 400-foot level, it does not terminate until it reaches a point a short distances south of the Jubilee ore-shoot, which is four hundred feet further south than the termination of ore on the Cruse level.

The vertical distance between the two levels is 263 feet. The downward pitch of the ore-shoot below the choked or pinched part of the fissure is towards the south at an angle of about 35 degrees below the horizon. The 400-foot level has been driven south on the fissure 450 feet beyond the termination of the quartz and ore, just south of the Jubilee shoot, showing in this barren portion practically the same physical conditions as in the Cruse level above, that is, a well defined fissure filled with crushed and ground stuff from the walls.

The 400-foot level has been driven north of the shaft (No. 1) 875 feet, and south of the shaft 1325 feet, making a total length of 2200 feet. In the north end, the last pay ore found was in the north edge of Pixley shoot, No. 4, 800 feet north of the shaft. In the south end, the last ore found was the south edge of the Jubilee ore-shoot, 900 feet south of shaft No. 1, making the total length of the lode in which pay-ore has been found about 1700 feet from end to end. All the ore-bodies in the Drumlummon lode have been found within this limit, north and south of 1700 feet; about one-third of this length is hard unproductive quartz. Therefore, the workable ore-bodies aggregate a length in the lode of about 1100 feet. The lower levels, 500, 600, 700 and 800, show no material difference in the size and general structure of the lode, except a larger proportion of hard low-grade and barren quartz, and a considerably less amount of high-grade ore in the ore-shoots.

So far as I can see this impoverishment of the ore-shoots below the 400-foot level is due to local causes rather than to permanent ones where surface influences could not permanently affect the lode in so short a depth. The lode was formed when the surface of the country was many thousand feet above where it is now. The erosion and denudation of the mountain range since its upheaval have been enormous, hence mere surface influences could have had no material effect upon the lode at the point of present exploitation beyond the oxidation of the sulphides of the materials down to the lowest points of drainage, neither is there any geological reason for the lode becoming poor in so short a distance below the present surface, nor is there any chemical cause apparent for such a change in the metal contents of the lode.

My conclusion is that the causes are purely mechanical and local, and not due to the original structure or other primal cause.

I will endeavor to explain my reasons for this conclusion under the head of lithological structure of the lode and the process of vein or lode formation. This conclusion has been strengthened to some extent by a recent discovery of rich ore on the 800-foot level about sixty feet south of the main or No. 1 shaft. When making the examination of the lode on this level, I found that there was considerable disturbance, caused apparently by the intersection of a spur of feldsparry granite from the foot-wall side with the porphyritic granite dyke in the hanging-wall country. In passing through these intersecting dykes of granite, the lode fissure was deflected to the west some ten or fifteen feet. The level was started south in barren quartz inclosing large quantities of brecciated county-rock. At a point sixty feet south of the shaft, Mr. Bayliss, at my request, had a cross-cut driven eighteen feet to the foot-wall, the last five feet of which cross-cut is in high-grade ore; this discovery gives a more hopeful outlook for the lower levels.

LITHOLOGICAL STRUCTURE AND CHARACTERISTICS OF THE LODE.

The gangue stone of the lode is quartz of a very peculiar structure, having the general appearance of a quartz breccia cemented and consolidated by a later infusion of quartz, filling the spaces between the broken fragments. While this is probably true in part, I find by a careful and patient study of the lithological facts, that the pricipal cause of this peculiar appearance of the gangue stone is due to chemical changes made in the original filling of the fissure, which was at the outset the brecciated and crushed magnesian schists torn from the walls of the fissure. This brecciated and crushed country-rock filling was afterward dissolved out, in most part, by the hot gases and hot mineralized solutions that passed up through it, and in part removed by mechanical action of the ascending waters during the period of thermal and chemical activity. The quartz, therefore, in large part, is "pseudomorphic" in structure, having replaced the magnesian shale fragments included in the fissure by the process of chemical substitution of silica in the place of the soluble and removable parts of the shale. Siderite (iron carbonate) and mesitite (iron and magnesia carbonate) are also abundant minerals, and these in part, have been replaced by silica, or possibly in some cases deposited in alternate layers of the siderite and mesitite and thin fillings of silica, giving it a very peculiar laminated or foliated appearance.

The most abundant forms of pseudomorphism, however, are due to the chemical action on the fragments of brecciated magnesian shale inclosed in the fissure at the beginning of the process of mineralization. Great quantities of these fragments of shale are inclosed in the quartz gangue that are only partially altered by chemical action, such fragments, for instance, as were sealed up by the quartz before the change was complete, thus preserving them from further chemical ac-

tion. In many cases the magnesian and lime carbonates have been removed and the clay only remains. In other cases, the originally inclosed angular fragments of shale have been entirely removed by the action of moving water after they were inclosed, the quartz shell having become fractured in such a way as to allow the escape of the residue that was not silicified. It is manifest to my mind that there have been two periods of mineralization in the formation of this interesting lode. The great body of the quartz gangue and pseudomorphic changes were made during the first period immediately following the opening of the fissure, and while the waters and gases issued under great pressure and heat. During this first period, the heat was probably too great to allow the precious metals to be deposited, hence the lode was very poor, or practically barren, at the close of this first period. At some later date another geological disturbance occurred that partially reopened the fissure, or at least fractured and to some extent brecciated certain sections of the lode, while other sections and blocks of the lode remained intact. These unbroken portions are still in their original barren condition. The broken, or partially brecciated blocks and sections of the lode gave new vents for the escape of thermal mineralized solutions up through the broken sections of the lode. During this second period of mineralization the temperature was much lower, the pressure of the escaping gases and solutions was also less, and the obstructions to their free escape very much greater than during the first period of lode-making. Hence the process of mineralization proceeded quietly in the reopened sections of the lode, giving ample time and more favorable conditions for the deposition of valuable ores from their solutions.

As an evidence that these conclusions are substantially correct, the facts show that certain portions of the lode have been fractured and partially brecciated; that these portions only are sufficiently rich to give remunerative returns for extraction and milling; also, that the rich mineral is often found inclosing angular fragments of barren quartz, and in other cases filling cleavage lines and cavities in the fractured mass of gangue stone, associated with a later deposit of crystalline quartz of more granular structure, and more easily fractured than the older gangue stone. These sections also contain copper and other ores that are never found in the undisturbed and barren portions of the lode.

A careful study of the facts, chemical and lithological, above recited, in connection with the geological and physical facts hereinbefore described, will enable the student of economic geology as applied to precious metal mining, to judge as to the correctness of my line of reasoning, and whether or no my conclusions are legitimate deductions from the facts and conditions stated. An opinion given without a careful statement and study of the facts upon which it is based is not often worth considering. The true method of procedure is to get all the material facts of a given locality carefully observed, and then study out the relation they bear to each other. This gives the *rationale* of the case under investigation, and includes all the theories relating thereto that are of any practical use.

In the case under discussion, I have seen nothing, either from a geological, mineralogical or chemical standpoint, to warrant any serious alarm in the minds of the manager and directors about the continuity of orebodies in the lode to the deep. I think the impoverishment of the lode at certain points where good ore was expected is due to local causes only. The solid unbroken portions of the lode are barren because the whole lode was primarily barren, or practically so. The enrichment of the lode was produced during the second period of disturbance and mineralization in those portions only that were sufficiently fractured to admit the circulation of mineralized solutions up through them. The unbroken barren blocks of the lode are much larger in some parts than in others. The thing we don't know is the distance through a solid block or section of the lode when it is met with. The only alternative is to drive through it. One large ore chamber in this great lode will pay for a year or more of active exploration.

An important lesson has been taught by the facts developed in this mine up to date, and that lesson teaches that the main lines of exploration must be pushed a long way ahead of the extraction, in order to keep up a steady average and economical output of workable ore.

PROSPECTS OF THE ALKALI TRADE.

The twenty-fourth annual report of the British Chief Inspector of Alkali Works confirms the statements and views put forth in our recent article dealing with the struggle for existence going on between the Leblanc and the Solvay processes of soda manufacture, and affords additional evidence of an official character concerning the actual situation of the alkali industry. This report, awaited with anxiety, is being perused and commented upon with keen interest, even outside the circle of those directly dependent on the soda trade. The question is one of wide scope. In its scientific aspect, it is of profound interest to the chemist; and in its industrial and commercial bearing, it involves so much that the issue is fraught with serious consequences to several important sections of the manufacturing community. The Leblanc process has held its ground for a century practically unchallenged till within the last few years. During this time a large aggregate of capital has been expended in establishing and maintaining Leblanc works, and some other industries have grown up or have become largely dependent upon them. Thus, it has been estimated by competent authorities that the value of the existing plant is about four and a half millions sterling. The Inspector in his report puts the value at three millions. But to this must be added the bleaching powder works, which have become a necessary adjunct of every Leblanc soda works. What the sulphuric acid industry, and the pyrites trade resulting from it, owe to this method of soda manufacture, may be gathered from the fact that last year the quantity of acid used to decompose the salt, which serves as the raw material, amounted to 600,000 tons. Moreover, a by-product of the soda manufacture, hydrochloric acid, is the raw material of another important industry, that of bleaching powder manufacture. Since the adoption, on a large scale, of the Solvay, or "ammonia" process, the Leblanc soda makers, forced down in prices by their rivals, who are able to produce more cheaply, have suffered a constantly increasing loss upon every ton of soda sold, to recoup themselve for which loss they have proportionally raised the price of bleaching powder. In this way it has come about that the very basis of the trade is changed, bleaching powder having virtually become the main object of the manufacture, and soda the by-product. This state of things is manifestly unfavorable to the bleaching trade, inasmuch as the cost of materials is thereby augmented, and it is plain that the more the Leblanc process is curtailed the more costly must bleaching powder become. Where such important and diversified interests are at stake, it is but natural that the issue of the struggle between the rival processes should be watched with keen anxiety. In this absorbing desire to learn the actual situation, and to discover the tendency of events, may be found our justification for returning to the subject.

The report of the Government Inspector affords evidence of a very significative character. To show the magnitude of the alkali trade, and to exhibit the changes which in the last three years have taken place in the relative position of the two contending processes, he has tabulated the quantities of salt decomposed. We learn from these statistics that last year the total quantity amounted to 736,017 tons, against 721,543 tons in 1886, and 713,128 tons in 1885, a steady increase indicative of growth throughout that period. We learn further that the whole of the increment fell to the share of the ammonia soda makers, and that these have seriously encroached upon their rivals' markets. The consumption of salt, according to these figures, was, for the Leblanc process, 598,096 tons in 1885, 584 323 tons in 1886, and 577,381 tons in 1887, a constant falling off; while for the new process, the consumption, which amounted to 115,032 tons in 1885 increased to 137,220 tons in the following year, and appears as 158,636 tons in 1887. By comparing these quantities year by year, we obtain a clearer notion of the actual situation, and perceive with greater precision the tendency of the trade. Thus we see that in 1885 a considerable proportion, 16·12 per cent, of the total production of that year was set down in the government records as the produce of the "ammonia" works. This proportion became 19·02 per cent in the next following year, and increased further to 21·55 per cent in 1887. Already, then, the ammonia process has gained a sure footing, and there is for the Leblanc manufacturer, and those dependent on him, an ominous steadiness in its growth well calculated to excite alarm. The facts leave no room for doubt concerning the issue of the struggle if no change be made in its conditions. Hence the whole question resolves itself into this: Is it possible to change the conditions in favor of the older process? The distribution of the Leblanc soda trade, and the degree in which each district would be affected by any radical change in the methods of manufacture, are indicated by the following figures, which express percentages of the total production in 1887. Ireland, 1·07; Scotland, 6·23; North of England, 18·27; Cheshire, North Wales, and part of Lancashire, 22·38; Widnes, 36·85; East Lancashire and Yorkshire, 5·99; South Midland, 3·79; South-West of England, 4·21; South-East of England, 1·21. The falling off last year was for the most part in the North of England district.

Apparently the only direction in which the Leblanc manufacturers can modify in their favor, at least in a material degree, the conditions under which they contend, is that of utilizing the tank waste. The "waste" is the weak point of both processes. In the Leblanc the sulphur is thrown away, in the Solvay the chlorine. The chemists in the service of each party are laboring to remedy the evil; and in their efforts are centered all the hopes and fears which agitate men's minds on this question. It is obvious that if the chlorine could be profitably utilized in the "ammonia" works, the struggle would be at an end. But hitherto nothing has been accomplished in this direction, and no promise of success has yet come to encourage further efforts. On the other hand, much has been achieved on behalf of the Leblanc process. Messrs. Chance Brothers, of Oldbury, are successfully treating the tank waste on a practical scale for the recovery of the sulphur. Many previous attempts have been made; but we have it on the authority of the Chief Government Inspector, that in this instance the system has proved a commercial success. To appreciate its importance, it is necessary to bear in mind the magnitude of the evil it is designed to remedy. The waste contains 15 per cent of sulphur. The amount of the waste annually produced exceeds 1,500,000 tons. Therefore, 225,000 tons of sulphur are thrown away every year. But this is not the whole extent of the evil. How to dispose of all this material is a problem manufacturers often find it hard to solve. At Widnes alone there are now accumulations of waste amounting to 8,000,000 tons, and covering an extent of 450 acres. Moreover, the waste is slowly decomposed under exposure to atmospheric influences, and the air becomes polluted with noxious gases. By the process adopted by Messrs. Chance, nearly the whole, about 95 per cent, of the sulphur is recovered, and the waste, consisting then chiefly of carbonate of lime, is rendered inoffensive, and, it is hoped, useful. But public attention is mainly directed to another process, viz., that of Parnell & Simpson, which we described on a former occasion. This is a combination of the Solvay and the Leblanc methods, a notable feature being the utilization of the tank waste in the process. The Inspector's report adds nothing to the knowledge we already possessed of this remarkable combination. But it confirms our previous statement that the process is being worked profitably on a large scale. Since the date of this report another half year's experience has been gained, and the result, as we learn from a trustworthy source of information, is in the highest degree satisfactory. This, then, seems destined to be the process of the future, capable of giving a new lease of life to the older method, in which so much capital is engaged, and on which so many interests depend.—*Industries.*

What is said to be the largest chain ever manufactured is in the Imperial Arsenal at Vienna. It has 8000 links, and was thrown across the Danube in 1529 by the Turks.

Copper Becoming Fashionable.—Copper is coming into fashion, says the *Jeweler's Weekly.* A lot of canes and umbrellas just imported had a piece of ordinary copper wire around the handle. Gold and silver has become so common as heads for these articles that people demand something new for a change. It is thought that when this metal becomes popular, we shall see very elaborate ornaments made of it.

MODERN AMERICAN METHODS OF COPPER SMELTING.

Engineering, of London, devotes a page in a recent number to the review of this important work. We produce a few of the commendatory remarks to show what is the foreign opinion of this book. The review says: "The most valuable chapters in this work are under the heads 'Blast-Furnaces Constructed of Brick,' and General Remarks on Blast-Furnace Smelting'; these are perhaps the most practical observations of the subject ever placed before metallurgists, and will be read with great interest by many a smelter, whose life is nearly worn out by the bane of his calling, namely, 'bears' and 'sows.'"

After many other complimentary remarks, the reviewer closes by saying: "As a whole, the book is full of information and devoid of the ordinary text-book objections; it bears throughout the stamp of having been written by a practical man thoroughly up in his subject; it will be especially appreciated by workers, and no metallurgist should be without it for purposes of information and reference. We trust the author will give an exposition of his views and experiences in the wet methods of copper extraction, which, together with more detailed information on the treatment of auriferous and argentiferous copper ores, would be a welcome sequel to this important addition to the literature on the metallurgy of copper."

Celluloid has recently been experimented with as a substitute for copper in sheathing vessels, and it is said to answer the purpose well.

Heavier Rails in France.—It is stated that the Northern Railroad of France is about to adopt heavier rails. Those at present weigh 61 pounds per yard, and as these wear out they will be replaced by rails weighing about 87 pounds a yard.

The Perekop Canal.—The Russian Government has begun the work of cutting the Perekop Canal, the original survey for which was made many years ago. This canal is to extend across the Isthmus of Perekop, connecting the Sea of Azoff with the Black Sea. It will be 111 versts (74 miles) long, and the present expectation is that it will be completed in 1891. As with most Russian works, the main object is military, to enable war steamers to pass from the Sea of Azoff to the dock yards and forts of Odessa without circumnavigating the Crimea or passing through the dangerous straits of Kertch; but the canal has also a commercial importance. The bulk of the trade from the Don River and a great deal of that from the upper Volga goes to Odessa, and the new canal will very much shorten the voyage for all the vessels engaged in this business, besides securing the further advantage that the grain barges employed on the Don will be enabled to carry their loads directly to Odessa without transshipment, and it will greatly lessen the cost of delivering coal from the mines to Odessa.

Tonnage of the Mahoning Valley, Ohio.—J. H. Sheadle, Secretary of the Mahoning Valley Iron Manufacturers' Association, has completed his tonnage report of the mills and furnaces of the Mahoning Valley for the year ending July 1st, 1888. During a portion of the time many furnaces were closed down by reason of the coke strike. For the year the tonnage items were as follows:

Rolling-mill shipments	196,421
Rolling-mill receipts	411,848
Blast-furnace shipments	306,757
Blast-furnace receipts	1,182,629

During the same period the railroads represented in the Mahoning Valley were paid $1,685,496.46 for freights. A conservative estimate of the revenue derived from the transportation of the product of these industries to the market shows that it approximated $1,000,000 additional. The railroads on incoming freight moved 169,451,457 tons 1 mile, and on outgoing freight hauled 158,486,179 tons 1 mile, a total of 327,937,636 tons.

Advantages of Water Gas over Producer Gas.—*Engineering* says: Under the direction of Mr. Samson Fox, plant of an extensive character has recently been laid down at the works of the Leeds Forge Company, for the manufacture of water gas, which is to be used not only in the difficult forging and metallurgical operations carried on here, but also as an illuminant, nearly the whole of the works being lighted by it. As is well known, the gas is produced by acting on incandescent fuel with a jet of steam, which is decomposed, the oxygen uniting with the carbon of the fuel to form carbonic oxide, whilst the hydrogen is set free. Owing, amongst other things, to the comparatively small quantity of air required for its combustion, a much higher temperature can be obtained with this gas than with ordinary producer gas, so that while with the latter only twelve charges a week can be worked off in the Siemens-Martin furnace, with water gas as many as thirty charges have been got out of a single furnace. Two generators are employed at the works, and from these 30,000 to 35,000 cubic feet of water gas are obtained per ton of fuel, at a total cost of about 4¾ pence per thousand. For lighting purposes a small jet of the gas is allowed to play on a Fahnejelm comb made of magnesia, which is raised to a brilliant white heat at the temperature of combustion of the gas, and gives an exceedingly good light.

An Elevator for Canal Boats.—The *Colliery Guardian* notes a novel arrangement used on a French canal to overcome a very sudden difference in level. The ground at Arques, near St. Omer, France, rises very rapidly; there are five or six locks in close contiguity, involving great loss of time and great cost in their management. By an invention of an English engineer, Mr. Edwin Clark, of Great Marlow, the canal boats are now lifted the whole height of nearly 50 feet at one operation, occupying only a few minutes of time, and no loss whatever of water. This singular machine consists practically of a gigantic hydraulic press, whose piston is 3 feet 3 inches in diameter and 50 feet in length, by means of which the boats themselves, actually afloat in an enormous tank or reservoir, are bodily raised or lowered, water and all, to the required height. This reservoir is a length of the canal itself, made of wrought iron plates, separated from the rest of the canal by iron gates, which are opened when it is raised into its proper position at the required height. There are two such presses, the one descending while the other is ascending, and they thus balance each other, and no steam engine or other mechanical power is required, although the weight lifted at each operation, including the water and the loaded barges, is very nearly a thousand tons. Sixteen hundred barges have already been lifted prior to this public inauguration, the task being performed by a single man, whose only work is the opening and shutting of a small valve, and the operation only occupies a few minutes. A smaller lift on this principle was erected by Mr. Clark some years since in Cheshire, and was then patented, but he has just completed a still larger lift in Belgium, which will be opened during the present month.

The Loeb Respirator.—*Industries* says: This apparatus has been designed for the purpose of enabling the wearer to remain for some length of time in the presence of smoke and noxious fumes, and is primarily intended for the use of firemen. The respirator is held between the teeth, and additional support is yielded by an elastic band which passes round the head. A series of small filters loosely packed with wet sponge, cotton wool, cotton wool damped with glycerine, and charcoal, intercept the majority of the harmful constituents of the air, and render it fit for breathing. An arrangement of valves is also provided, so that the air, as it is exhausted from the lungs, is sent directly into the surrounding atmosphere. A modification of the apparatus is intended for use when the gases to be combated are of a poisonous character, as is the case with choke-damp in mines. A reservoir, consisting of a long india-rubber tube, is filled with fresh air, and is wound round the body. The respiration of the wearer can be supported in this manner until the supply of air is exhausted. During some experiments conducted on this occasion, a man remained for half an hour in a building filled with the densest smoke, and, with the aid of the air pipe, spent some time in a room containing a dish of burning sulphur. Protection is afforded for the eyes by a pair of plain spectacles held in india-rubber frames, which are caused to press against the flesh all round the eyes. We understand that this apparatus now forms part of the official equipment in the German Navy, and that it has been adopted by many of the German fire brigades.

New York Mineralogical Club.—The former circular, with its programme of Saturday afternoon field meetings during June and July, has been widely distributed, and has aroused much interest, not only among the membership of the club, but among many others engaged in kindred studies. The trips taken have been both pleasant and profitable, and have been attended by increasing numbers. This second circular is now issued in the belief that it will not alone afford the club further opportunities of useful study and agreeable intercourse, but tend yet more to bring together the workers in allied fields. Several other scientific societies and circles have expressed a wish and purpose to join in some of the proposed trips, and the club has already enjoyed the company of a number of friends and co-workers.

Those members who wish to invite others to join in these excursions, can procure further copies of this circular from the Secretary, Nos. 11 to 15 Union square. Any persons interested in mineralogy or kindred pursuits, whether ladies or gentlemen, are welcome associates in these trips, upon introduction by a regular member of the club, or by application to the Secretary.

The remaining excursions in August are as follows:

August 11th—Brooklyn.—the Drift of Long Island, containing many rocks and minerals in boulders. From 2 to 4 P.M. on the block bounded by Grand, St. Mark's and Classon avenues and Prospect place. From 4 to 5 examine the boulders on Crow Hill, between Classon avenue and the Kings County Penitentiary. At 5:30, informal meeting of the club at No. 16 Quincy street, (by invitation of Dr. J. H. Hunt).

Route—Kings County Elevated Railroad from Bridge or Fulton Ferry to Grand Avenue Station, then walk down Grand avenue a few blocks south to St. Mark's avenue. [A fine anthophyllite boulder may be seen by those leaving the elevated railroad station as above, lying by the sidewalk at the corner of Grand and Lexington avenues.] *Fare*—5 or 10 cents each way.

August 18th—Fort George, N. Y. Island (second visit). *Minerals*—Many interesting species lately obtained, including muscovite, orthoclase, beryl, zircon, apatite, *columbite*, *xenotime*. *Route*—Any of the ordinary roads to 125th street; there take cable cars to the end of the route. Quarries a little beyond (400 yards northward). *Fare*—About 10 cents each way.

August 25th.—Melrose, N. Y.—new cutting for railroad tracks. Dolomite beds, similar in general character to those of Kingsbridge, though on another range—with brown (and green?) tourmalines, hydrodolomite, etc. *Route*—Harlem R.R. from Grand Central Depot, 1:30, 2:30, and 3:15. Excavations close to Melrose Station. Return trains, 5:24 and 6:00 P. M. *Fare*—10 cents each way.

September 1st.—New Rochelle, N. Y.—the old and celebrated serpentine locality, on the neck. *Minerals*—Serpentine, Deweylite, altered felspar, hornblende rock, etc. Another limestone belt adjoins the serpentine outcrop. *Route*—New Haven R.R. from Grand Central Depot, 1:00, 2:00 and 3:00 P. M.; walk from the station S E., by nearest route (as directed) nearly a mile, to the shore. Return trains, 5:04 and 6:25 P. M. *Fare*—35 cents each way.

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.]

The Crisis in Copper. The Beginning of the Great Fall, 1883. A Deluge of Copper, 1885, and the Copper Corner, 1888. By W. R. Lawson, London, England. Published by the Author. 1888. Pages 71. Price, one shilling.

British Guiana Directory, 1888. Published by C. K. Jardine, Georgetown, Demerara. Pages 446 and Index.

Pennsylvania Geological Survey Report, 1887. *Part IV. and Atlas. Paint Iron Ore, Limestone, Serpentine and Atlas. Northern Anthracite Field, Part II.* A. A. Published by the Geological Survey, Harrisburg, Pa., 1887.

THE METALLURGY OF STEEL.*

By Henry M. Howe.

(*Continued from page* 88.)

Though his compression is patented, Whitworth has never, I believe, permitted experts to observe it, if we except the distinguished members of the United States Gun Foundry Board: and they do not appear to be experts in metallurgy. Asked by Hewitt if he compressed large gun tubes, he hesitated and finally admitted that he did not.[a] It has seemed to many that Whitworth's attitude has not been one of confidence in the value of his compression.

Gautier states that Whitworth's former superintendent, Annable, exposes the futility of liquid compression in a paper presented to the Iron and Steel Institute but discreetly rejected.[b]

Annable states that he is not confident that a single one of the 1,500 ingots which he compressed was really solid: that the compressed ingot contains a pipe whose volume rises to 244 cubic inches, filled with gas found to be explosive: that to obtain sound ingots metal the upper third of the ingot must be cut off: that compressed steel forges exactly like uncompressed: and that the walls of the mould become glazed, preventing the escape of gas.

While this evidence is the most direct that I have met, I do not know how trustworthy it is. Gautier's paper produced on my mind an impression of strong bias against Whitworth's process: and such a bias on Annable's part might be understood.

To throw some light on the question whether liquid compression gives a higher combination of either ultimate or elastic tensile strength with ductility than is otherwise attainable, I have endeavored to find the best recorded combinations of these properties both in Whitworth's steel and in that of other makers. The best which I have found are given in Figure 48, and a few of the very best are collected in Table 79.

While the results here brought together show what no one doubted, that Whitworth's steel is admirable, it further shows that, unless I have accidentally met the records of only his poorer steel, it does not excel the best American steel in its combination of ultimate or elastic tensile strength with ultimate elongation. One of Whitworth's steels does, indeed, greatly excel all others: but one swallow makes no summer.

To sum up: In the case of large masses, in my opinion neither the a priori reasons nor the evidence shows that liquid compression closes blowholes more completely or confers any other benefit in a higher degree than forging with suitable apparatus, save that it probably closes the pipe more completely and hinders the formation of external cracks while the ingot is cooling, advantages which hardly seem commensurate with the cost of the apparatus.[c]

The compression of small ingots has received one satisfactory solution (§ 229, C).

§ 231. EXHAUSTION, already hinted at in discussing liquid compression, has been proposed.[d] Removing gas from the molten steel leaves so much the less to escape during plasticity and cause blowholes: but of course the exhaustion must cease before solidification sets in even in the exterior of the ingot, or the cure will but aggravate the malady. Except in the very largest castings this condition might be hard to comply with.

§ 232. SLOW COOLING. We have already seen that slow cooling should diminish the volume of the pipe,[e] and it appears that it tends to prevent blowholes as well. Thus Chernoff[f] finds that if moderately hot steel be cast in a mould one side of which is of sand and the other of iron, blowholes form next the iron side of the mould but none along the sand side. (Fig. 51.) In two sets of experiments I thought there were more tubules in rapidly frozen than in slowly frozen ice from the same water: but the indications were not conclusive.

I am not sure that I understand Chernoff's explanation of the greater solidity of the slowly cooled steel. It seems

TABLE 79.—HIGH COMBINATIONS OF STRENGTH AND DUCTILITY.

Number.	Tensile strength, pounds per square inch.	Elastic limit, pounds per square inch.	Elongation, %	Elongation, In.	Contraction of area.
WHITWORTH'S STEEL.					
1	94,720	.....	17·5	6"	47·2
2	100,560	52,000	14·3	6	39·2
3	98,000	.....	13·5	6	44·6
4	92,120	39,000	17·	6	52·2
5	91,960	40,000	17·8	6	52·2
6	76,000	30,000	17·3	6	47·2
7	86,880	37,000	2·1	3	30·6
8	78,880	33,000	19·	3	36·4
9	79,320	30,000	23·3	3	33·5
10	88,400	50,000	22·	3	47·2
11	96,280	55,000	25·5	2	52·2
12	82,840	31,000	31·5	2	49·7
13	84,600	34,000	28·	2	49·7
14	86,040	53,000	24·7	3	47·2
15	89,320	54,000	24·	3	47·2
16	84 000	44.000	20·	3	44·6
17	104,000	60 800	21·	3	44·6
18	93,280	52,800	20·	3	36·4
19	97 000	59,760	17·3	3	36·4
20	100,569	58,000	12·	2	11·8
21	91,600	51,000	20·	2	36·4
22	89,600	56.000	20·		
23	@ 112,000	@ 67,200	@ 15·		
24	106,624	.....	20·		
25	71.680	42 560	28·		
26	@ 80,640	@ 51,520	@ 24·		
27	212,800	....	11·		
28	89 600	.....	32·		
29	107,520	.....	24·		
30	129,920	.....	17·		
31	152,320	.....	10·		
32	161,280	.....	14·		
STEEL OTHER THAN WHITWORTH'S.					
33	90,000	.....	22·	8	
34	140.000	.....	12·	4	
35	147,200	.....	15·	4	
36	128,800		17·	4	
37	132,700	84,803	16·	2	31·07
38	155,000	.....	16·6		
39	119,969	.....	16·5		
40	102,000	61,400	26		
41	130.000	.....	14·	10	
42	104,000	.....	17·2		
43	114.000	54,000	17·50	4	
44	@ 116,000	@ 57.000	@ 12·2	4	
45	126,000	70,000	17·0		
46	112,000	64,000	18·6		
47	117,410	72,000	14·5	6	43·7
48	117,810	72,000	13·33	6	43·7
49	117,440	73,000	17·00	3	47.2
50	118,000	73,000	17 33	3	43·7
51	112,300	59,500	12·8	8	19·0
52	145,400 to 202,250	82,810 to 118,600	5·5 to 6·2	8	9·2 to 20·6
53	115,160	66 000	13·67	6	39·2
54	105,200	65,000	19·33	3	52·2
55	109,240	66,000	17·67	3	44·6
56	79,600	35.000	24·	3	30·8
57	82,400	41,000	28·	8	42·0
58	79,120	40,000	26·	8	42 0
59	79,880	45 000	30·7	8	56 8
60	78,480	40,000	32·	8	56·8
61	105,000	60,000	19·	2	

1 to **13,** Rept. Chf. Ordnance, U. S. A., 1884, p. 557. **14** to **21,** Maj F. H. Parker, U. S. A., Rept Select Committee Ordnance and War Ships, p 334, 1886 **22** to **26,** Proc U. S. Naval Inst., X. pp. 563-4, Benét, Jaques. **25** and **26,** untempered, the rest tempered **27,** Hardisty. **28** to **32,** Whitworth, "Guns and Steel," p. 18. These are properties claimed for certain of his steels. **33** to **36,** Norway Iron-Works private communication. **37,** Pittsburgh Steel Casting Co., private communication; also American Manufacturer, March 4th, 1887. **38,** Unforged casting, Chernoff, Revue Universelle, 1877, I., p. 405. **39,** Metcalf, unhardened crucible steel. Metallurg. Rev., I., p. 402. **40,** Pittsburgh Steel Casting Co., Rept. Select. Comm. Ord. and War Ships, p, 356. **41,** Bethlehem, Bessemer steel, private communication. **42,** Creusot, Bessemer steel, Journ. Iron and St. Inst., 1883, II., p. 803. **43-4,** Terre Noire, unforged annealed open-hearth casting. Jeans, Steel, p. 507. **45-6,** two bars prepared by Gruner. Journ. Iron and Steel Inst., 1883, II., p. 811, from Ann. Mines, 1883, I. **47** to **50,** Midvale. Rept. Select Comm. Ord, and War Ships, p. 334. **51-2,** Cambria, Idem, p. 309. **53** to **60,** Midvale, Idem, p. 335: untempered. **61,** Midvale. Proc. U. S. Naval Inst., XIII., p. 25.

[a] Appendix to Report U. S. Commission on Ordnance and War Ships, 1885, p. 27.

[b] Genie Civil, II., p. 385.

[c] The additional cost of equipping a gun making plant for liquid compression was estimated by the Gun Foundry Board at $175,000 (Report, p. 50; Proc. U. S. Naval Inst., X., p. 851, Jaques), and by Mr. J. Morgan, Jr., Chief-Engineer of the Cambria Iron Company, at $200,000 to $300,000 (Appendix to Rept. U. S. Commission on Ordnance and War Ships, appointed under resolution of July 6, 1884, p. 27).

[d] Proposed by L. Nessel, Metallurg. Rev., I., p. 494, from Oest. Zeit., No. 43, 1877.

[e] § 225.

[f] Revue Uuiverselle, 2d Ser., VII., p. 135, 1880.

to be as follows. The steel is less prone to wet the sand than the iron side of the mould, because at the sand side both steel and mould are hotter than at the other: as the steel wets the mould less, so bubbles are less likely to be

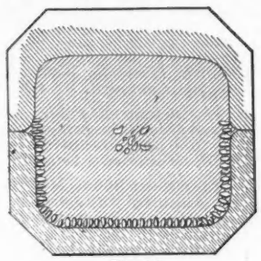

Fig. 51

Influence of rate of cooling on subcutaneous blow-holes. (Chernoff.)

detained. Now this may be true before solidification sets in: but I see no reason to expect that, after the outer shell has frozen, the fact that before freezing it had not wet the mould should now prevent it from retaining gas bubbles.

Wetting the mould can have nothing to do with the greater abundance of blowholes in rapidly than in slowly frozen ice, for here the initial conditions are the same in both cases, and the mould as wet as possible in each. I offer the following as a simpler explanation, but not as the sole nor indeed as necessarily the chief one.

When the first layers solidify, their falling solvent power expels a portion of their gas, which however may not be evolved as gas, but remaining dissolved may pass by diffusion into the adjoining still molten layers, much as the alcohol of freezing cider is forced towards the centre. If, however, the layers adjoining that which is freezing are saturated and hence unable to receive more gas, that expelled from the outer freezing layer will be gasified and may form blowholes Now diffusion is a slow process, and if the metal solidifies rapidly the previously dissolved gas will be driven inwards from the freezing layers into the adjoining ones faster than it can pass by diffusion through these intermediate layers into the central region: the intermediate layers soon become supersaturated, gasification and the formation of blowholes set in.

Again, if it be true that during solidification the tops of pine-tree crystals project beyond the compactly frozen mass into the molten interior, they would appear more likely to entrap and mechanically arrest rising gas bubbles, and to prevent growing bubbles from detaching themselves and rising, if their growth and the shooting out of their branches were rapid than if these processes were slow.

Indeed, whatever be the manner in which the solid portion of the metal grows, rapid growth would seem to offer less opportunity for evolved gas to free itself and swim to the surface than slow growth.

It is much harder to prevent blowholes in small than in large castings, and probably because the former, the ratio of the mass to that of their moulds and to the cooling surface being relatively small, cool and solidify faster.

While slow cooling tends to prevent piping and blowholes, it may lead to segregation, the concentration of the foreign elements in certain portions of the casting. A double injury results: the metal is heterogeneous, and it has not the composition aimed at.

Wellman would cool slowly by lining common prismatic cast-iron ingot-moulds with refractory matter.[a]

§ 233. CHEMICAL ADDITIONS, silicon,[b] manganese, carbon aluminum.[c] The action of the latter is obscure: as that of the former three is probably due to their increasing the solubility of the gases in the metal, they should be and are added immediately before casting. Needless to say that, by checking the escape of gas during solidification and so preventing the formation of blowholes, they favor the formation of pipes.

The proportion of silicon and manganese which are needed to prevent blowholes may be inferred from the examples in Table 80, while the proportion of these elements that should be added in order to produce given composition will be considered in treating of the open-hearth process. Suffice it here to say that, in general, the more carbon is present the less silicon and manganese are required.

(TO BE CONTINUED.)

[a] U. S. Patent, 298,642, May 13th, 1884, S. T. Wellman. The immediate object of the invention is to cool the ingot so slowly and hence uniformily that it may be forged immediately on removal from the mould, without furnacing.

[b] Cf. § 215.

[c] Cf. § 149, B, p. 87.

TABLE 80.—COMPOSITION AND PROPERTIES OF UNFORGED STEEL CASTINGS (CF. TABLE 9, PAGE 19).

Number.	Authority.	Description.	Composition. C.	Si.	M.	P.	S.	Physical properties. Tensile strength, lbs. per sq. in.	Elastic limit, lbs. per sq. in.	Elongation. %	Elongation. In.	Contraction of area.
1	A.	Terre Noire projectiles	·45@·60	25@·30	·50@·60							
2	P. N.	Miscellaneous castings: Works G	·20@·60	·10@·15	·5 @1·0							
3	"	" " " C	·35@·50	·2 @·20±	1·0±							
4	"	Rolls: Works C	·60	·20±	1·±							
5	P.	Cylinders about 6′ × 6′ and 2″ thick	·65	·25@·30	1· @1·2			70,000+		8+		
6	S.	Miscellaneous castings	·11	·49	·61			63 000		12	2″	
7	"	" "	·23	·19	·43			68,000		12	2″	
8	"	" "	·38	·39	·25			55.000		9	2″	
9	"	" "	·27	·38	·39			70.000		8	2″	
10	"	" "	·28	·26	·38			64,000		7·5	2″	
11		Graz castings	·4 @·5	·3 @·4	·45@·60							
12	J. H.	Large sound castings	·25	·25	·3 @·4							
13	"	Small " "	·4	·20	·4 @·6							
14	A. H.	Terre Noire soft steel castings	·18±	·263	·66			72,576	88,080	25·6	4″	43·5
15	"	" " very hard "	·7 @1·2	·5 @·6	·7 @1·6							
16	"	" " " soft "	·18@·30	·10@·25	·40@1·20							
21	W. H.	6 in. cast-steel gun, unannealed	·39	·299	1·01			92,700	51,960	12·5		
22	W. H.	20 foot steel cast cylinder, FORGED	·95	·498	·74			132,700	84,803	·6	2″	31·07
23	B.	Rolling mill roll, open-hearth steel; broke in use	·42	·42	·96							
24	B.	" " " " " " " " "	1·15	·77	1·30							
25	B.	" " " " " remarkably tough	·45	·11	·65							
26	B.	" " " crucible steel	·57	·29	·42							
27	E.	Hard steel for projectiles ....Terre Noire	·635	·55	·95					1·	8·93″	
28	E.	Medium hard steel " "	·425	·275	·75					12·	8·93″	
29	E.	Soft metal " "	·260	·26	·41					22·8	8·93″	

1. Akerman, Journ. Iron and St. Inst., 1879, II., p. 530.
2 to 4. Private notes.
5. Pourcel, Journ. Iron and St. Inst., 1882, II., p. 509.
6 to 10. Salom, Trans. Am. Inst. Mining Engrs., XIV., p. 128, 1886.
11. Graz, Steel Castings, Engineering, 1882, II., p. 352.
12, 13. Hardisty, Journ. Iron and St. Inst., 1886, I., p 128.
14. Holley, Priv. Rept. on Terre Noire process, 2d Ser., VII., p. 47.
15, 16. Holley, Priv. Rept., 2d Ser., IX., p. 24.
21. 6 in. cast-steel gun, cast by the Pittsburg Steel Casting Co. Private communication, Wm. Hainsworth. Eight tests made at Washington on pieces from this gun are reported to have given the following average results: Tensile strength, 80,198; elastic limit, 49,895; elongation, 9 5; reduction of area, 11·79.
22. Cylinders 20 feet by 20 feet, by the Pittsburg Steel Casting Co., for a hydraulic forging press. The tests were made by Carnegie, Phipps & Co. on a piece forged from the casting. Private communication, March 25, 1887.
23 to 26. G. H. Billings, Norway Iron Works. Private communication, Feb. 10, 1883.
27 to 29. Euvate, Mem. Societe des Ingenieurs Civils, 1877, p. 138. Eng. and Mining Jl., 1877, p. 369.

PERSONAL.

Mr. E. B. Tippett has resigned as Vice-President and General Manager of the Decatur (Ala.) Car-Wheel and Manufacturing Company.

The American Institute of Mining Engineers will hold its fifty-second meeting at Buffalo, N. Y., beginning on Tuesday evening, October 2d, 1888.

Col. Carroll D. Wright has resigned as Chief of the Bureau of Labor Statistics of Massachusetts, and Horace G. Wadlin has been appointed to succeed him.

Major A. B. Saulles, late Superintendent of the Fayette Coke and Furnace Company, Uniontown, Pa., has returned home after an absence of about four weeks.

Governor Beaver, of Pennsylvania, has appointed Henry M. French, of Pittsburg, on the commission to select sites for hospitals in the bituminous coal regions.

Mr. Gustavus Lambert Bassett died at Tehidy, England, July 25th, aged fifty-five years. Mr. Bassett was one of the mineral lords of Cornwall, and was largely interested in the Dolcoath tin mine.

Mr. J. J. Gill, of Cleveland, Ohio, has been elected Secretary and Treasurer of the Bessemer Consolidated Mining Company of Michigan to succeed Mr. Chas. E. Coon, who has long been anxious to be relieved from the arduous duties the reorganization of the company involved.

Sir Frederick Abel, who has been chemist of the War Department, England, since the creation of the office in 1854, has been relieved of those duties, and appointed president of a special committee on explosives, just established by the Government, which includes Prof. James Dewar, of Cambridge University and the Royal Institution; Dr. A. Dupré, chemical adviser to the Explosive Department of the Home Office; and Captain R. Thompson, R. A., who acts as Secretary. Dr. W. Kellner succeeds to the vacant post.

The death of Mr. Theo. Wood Bunning, the late secretary of the Northumberland and Dunham Coal Trades Associations, is announced. The deceased gentleman was a native of London, and after studying engineering he went to Newcastle, where he occupied a responsible position in the famous works of Robert Stephenson & Co., and afterwards was engaged by Messrs Morrison & Co. at the Ouseburn. Entering into business on his own account as a consulting engineer, he succeeded Mr. Thomas Doubleday as the secretary to the Coal Trades, and secretary to the North of England Institute of Mining Engineers, Newcastle. Mr. Bunning, who was sixty-six years of age, retired from his several offices only a few months ago, and went to live in Germany, where he died.

INDUSTRIAL NOTES.

The Estill Furnace of the Red River Iron Works, Ky., will go in blast about Sept. 1st.

The Coatesville Iron Works, West Chester, Pa., were sold at sheriff's sale on the 9th, to J. Sharpless Worth and H. P. Worth, of that borough, for $41,050.

The Chambers Brothers Company, of Philadelphia, Pa., with a capital of $200,000, has been chartered at the State Department. The firm will manufacture iron and steel.

A syndicate of Minneapolis, Chicago and Indiana capitalists has decided to put in at Two Harbors, Minn., granite polishing works for the Hinsdale granite plant, which will cost about $50,000.

The Conley Iron and Steel Company, of Chicago, Ill., has been organized, with a capital of $1,750,000; incorporators, Arnold Brecher, Louis Leland, J. Howland Silvera and Sumner Stowe.

The Tudor Iron Works Company, of East St. Louis, the plant of which consists of two bar mills, two guide mills, and a spike factory, has signed the Amalgamated Association scale. Work will be resumed shortly.

The large Sand-Crusher Works belonging to the Cambria Iron Company, one mile south of Somerset, Pa., were recently destroyed by fire. The loss will be at least $10,000 to the company. The fire is thought to have been the work of an incendiary.

A large portion of the machinery in the North Star Iron Works, which has practically quit business in Minneapolis, Minn., has been removed to Ashland, Wis. The company's buildings at Ashland are approaching completion. Mr. V. L. Rice will be manager.

The Aluminum Brass and Bronze Company, of Waterbury, Conn., to which we referred in our issue of July 28th, has purchased a tract of land on Housatonic avenue at Bridgeport, and will begin at once to erect brick buildings, covering 65,000 square feet of ground, for the works.

The old crucible steel works of the Cleveland Steel Company in Cleveland, Ohio, which were leased three weeks ago to the Prospect Rolling Mill Company, and were to begin operations on the 9th inst., were destroyed by fire on that day, and the fires in the heating furnaces had been lighted.

A contract has been closed with the Cartersville Land Company and the Cartersville Furnace Company, at Cartersville, Ga., with Northern and Southern, wherein they agree to erect an iron furnace and a ferromanganese furnace, to which they will apply the Pratt process for dephosporizing the ores used.

The two iron mills of Graff, Bennett & Co. were sold at auction at Pittsburg, Pa., on the 9th inst., for $750,000, to satisfy two mortgages, one for $625,000, held by the New York Life Insurance Company, and the other for $100,000, held by local parties, and $25,050 which was bid on the mortgage. The property was bought in by a syndicate of the firm's creditors.

The Salem Lead Company held a meeting in Salem, Mass., on the 8th inst., and discussed the question of rebuilding its works, which were recently burned, as mentioned in our issue of June 23d. It is not known what action will be taken on this matter. The company has been prosperous in the past, but within a few years has felt Western competition.

The Amalgamated Association scale of wages was signed on the 8th inst. for the works of Alderdice, Bishop & Co., of Warren, O., of which Mr. Henry Wick is Receiver. The works have been shut down for four months. The plant consists of sixteen puddling furnaces, four heating furnaces and two trains of rolls. The product is bar and shelf iron.

The Jackson Furnace Company, of Jackson, Ohio, has increased its capital stock from $25,000 to $40,000, and will begin making iron shortly. The company will use five sixths of raw coal and one sixth New River coke, with small quantity of lake ore and cinder, and two thirds of native iron ore. Mr. John Bird, from the Low Moor Furnace, in Virginia, will have charge of the furnace.

Another invention of General Superintendent Wm. R. Jones, of the Edgar Thomson Steel Works, at Braddock, Pa., is now in successful operation. The contrivance is a metal mixer, and its work is to mix the iron as it comes from the furnaces, thus securing iron of a uniform quality for use in the converter. By its use a more uniform grade of steel will be produced.

All of the thirty-five cases against the Boston & Providence Railroad Company, arising out of the Bussey bridge accident which occurred last year, have been settled without a trial. The highest amount received by any one injured in the accident was $25,000. It is understood that the whole cost to the company was about $1,000,000. The bills of physicians paid by the company amounted to $100,000. It has been stated that the fees of the company's lawyer exceed $50,000.

The Little Belle Iron Company has been organized, with a capital stock of $200,000, with the following officers: President, H. F. De Bardeleben, of Alabama; Vice-President, M. E. Lopez, of South Carolina. The Bessemer Land and Improvement Company, of Bessemer, Ala., has donated ten blocks of ground for location. As already mentioned in our last issued, the company will build a charcoal furnace with a capacity of 60 tons, which will be finished within 14 months.

The Clayton Air Compressor Works, of New York, are about to issue their sixth complete catalogue of the Clayton air compressors, in the manufacture of which they have been extensively engaged for over fifteen years. Mr. Clayton has decided to print a few pages of well selected advertisements of firms doing business in lines closely connected with his own, but with whom he would not conflict.

This catalogue has been thoroughly and carefully compiled, and will consist of 72 pages containing much valuable information and data which will be of more than passing interest to those engaged in the mining, tunneling, quarrying railway, bridge building and kindred interests—in fact, to every one interested in the use of compressed air in the United States and foreign countries. The edition will be of 5000, printed on heavy paper, and the size will be 8 × 11 inches, leaving space inside of margin of 6 × 9 inches.

Andrew Carnegie and his partners are completing arrangements to have their own railroad from the Edgar Thomson steel plant, near Pittsburg, Pa., to the lakes. This will necessitate the building of over sixty miles of new road to Minerva, O. There the line will connect with the Cleveland, Youngstown & Alliance Railroad, which is already operated by Carnegie Brothers & Co. This latter line runs to Phalanx, O., on the New York, Pennsylvania & Ohio Railroad, within a few miles of Lake Erie. It will be extended to the water's edge to receive the ore from lake barges that is consumed by the furnaces. It is stated that ore tonnage and other shipments to and from the Edgar Thomson plant and the other Carnegie works in Pittsburg is ample to make the new line a paying institution, independent of other freight and passenger traffic.

The Edison Electric Light and Power Company has been organized at Minneapolis, Minn., with a capital of $500,000. The incorporators are T. B. Walker, Henry C. Akeley, Charles H. Chadbourn, S. G. Cook and W. W. Huntington, of Minneapolis, and Willard H. Churchill, of New York, who constitute the first board of directors. The object is to put another electric light company in the field, all of whose wires will be underground, and to supply motive power to all who desire it for manufacturing purposes, chief of all to the running of street cars in the city. Another important feature of this enterprise is yet to be matured. President Johnson, of the Edison Electric Light Company, and also president of the Sprague Motor Company, is negotiating for the introduction of that motor in Minneapolis. The new company will furnish the motive power from its central station for the trains on the motor track as well as the horse cars.

CONTRACTING NOTES.

Machinery and supplies wanted. See page xiv.

Contracts open will be found on page xix. New contracts this week: No. 992, Furnishing, Placing, etc., Stop-Cock Valves and Gearing; No. 993, Construction of Iron-Lined Masonry Aqueduct; No. 994, Erection of Iron Bridge; No. 995, Asphalt Paving; No. 996, Boring for Water; No. 997, Water Works; No. 998, Sewerage; No. 999, Excavation.

The Director of Public Safety, Philadelphia, Pa., has awarded the contract for six new fire engines to the Silsby Manufacturing Company, of Seneca Falls, N. Y. The price to be paid is $24,000.

The Chester Rolling Mill Company, of Thurlow, Pa., has contracted with James P. Witherow, of Pittsburg, to build a new Bessemer steel plant, to be run in connection with the rolling mill. It will take eight months to complete the contract.

At a special meeting of the Aqueduct Commissioners held at New York on the 3d, the contract for deepening the tunnel and widening shaft 24 of the aqueduct to connect with the tunnel under the Harlem River was awarded to O'Brien & Clarke at $8,442.50. The next bid was $85,020.

The Philadelphia Gas Improvement Company, Philadelphia, Pa., has been awarded the contract for supplying the city of Philadelphia with 3 000,000 cubic feet of gas a day. The plans provide for the erection of twelve generators, an additional holder having a capacity for 1,000,000 cubic feet of gas, a purifying house and condensing house.

GENERAL MINING NEWS.

The Senate has added an amendment to the Sundry Civil bill appropriating $250,000 for a survey of the arid region of the West with a view to its ultimate irrigation and habitation. Major Powell, director of the Geological Survey, estimates that this barren region comprises a million square miles, or more than one fourth of the whole United States and Territories, and that 300,000 square miles can be economically irrigated and made fertile. It is alleged that corporations are now taking possession of the head waters of streams, and that settlers are obtaining vested rights which will interfere with any comprehensive plan if the survey is longer delayed.

Judge Symes, of Colorado, made a strong fight before the Senate Committee on Appropriations last week for an increased appropriation for the geological survey of the various States and Territories. His object, in the main, was to secure a sufficient fund to keep in operation the branch office at Denver, of which Professor Emmons has had charge. Major Powell, as is known, was almost compelled, for want of sufficient money, to withdraw the branch office at Denver last fall.

Justice Patterson, of the Supreme Court, New York, has granted an attachment against the property of the Walnut Grove Storage Company, of Kentucky, for $16,000, at the Mareno Valley Gold Gravel Company.

The third annual convention of the Coal Miners and Mine Laborer's National Trades Assembly No. 133, convened in Cleveland, Ohio, on the 8th inst. Twenty-two States are represented, and the convention will continue in session for a week. W. T. Lewis, of Shawnee, National District Master Workman in his annual address, among other things, said that denunciation of capital or capitalists can never be made the basis of successful labor organization. A study of the causes that have driven capital into combinations and an exposition of the business principles involved in these unions of capital will go far toward uniting labor on a solid and enduring basis. "A labor organization's place is not," he said, "in the moral or sentimental field. It is a business institution. We have to do with buying and selling. Our labor is our commodity. Through the medium of their coal association the operators of the East and West advance the price of coal 25 or 50 cents a ton. That is business, and the fact is quoted as an evidence that the market is in good condition. The miners through their organization advance the price of labor 5 or 10 cents a ton, and if they refuse to sell it for less it is a strike. Last month the coal pool struck the consumer for 25 cents advance, and struck the miner for 6 cents reduction. If the miner is to be educated out of striking, what is to be done with the operator?"

Mr. Lewis recommended a conference of anthracite and bituminous coal miners before the joint meeting of miners and operators. He also recommended establishing a nine-hour working day, beginning September 1st, 1889, and an eight-hour day, beginning September 1st, 1890.

TENNESSEE COAL, IRON AND RAILROAD COMPANY.—This company, which has the contracts for the Alabama State convicts for ten years from the 1st of January last, is under contract with the State to erect two prisons, which are now being built at the Pratt mines, and which are to be finished by the 1st of next January. The gross income from the convicts at Pratt mines to the State during July, was $6500, and will probably be more during August. From the income of the convicts the State pays the cost of prosecution in every case, under the late law, which requires the contractor to pay when the convict is delivered to him all the costs, for which he gets a credit on his account

with the State monthly. There are now at Pratt mines a small number over 700 convicts, some of whom are county men. With the income arising from this class of convicts the State has nothing to do, but it goes directly to the counties.

During July there were shipped from the Tracy City division 12,320 tons of coal and 12,515 tons of coke, making a total from January 1st, 1888, to July 31st, 1888, of 101,548 tons of coal and 92,586 tons of coke.

UNITED JELLICO COAL AND IRON COMPANY.—This company has been organized at Louisville, Ky., and is a consolidation of three of the mining companies of the Jellico District, the Main Jellico Mountain Coal Company, the East Tennessee Coal Mining Company, and the Jellico Coal and Coke Company, with a capital stock of $6,000,000 These corporations have been operating for some years, and have worked up a demand for the Jellico coal. The combination will operate on a larger scale than the three mines collectively, and will now probably be able to meet demands. The directors of the consolidated company are Moritz Lippman, M. E. Thornton, J. E. Redfield, B. A. Jenkins, Charles F. Johnston, Thomas Corcoran, W. N. Culp, St. John Boyle, Ed. F. Madden. The main office will be at Louisville, with sub-quarters in New York and Philadelphia. Besides the interests of the three companies the new corporation has purchased over 100,000 acres of mineral lands in Bell, Harlan, Knox and Whitley counties and a large tract in Tennessee. The largest part of the stock has already been taken, and the balance will be put on the New York Stock Exchange.

ALABAMA.

BIBB COUNTY.

CAHABA COAL MINING COMPANY.—The company has been steadily increasing the capacity of its mines during the past twelve months, until now 120 cars of coal, or 3000 tons per day are sent to Woodstock, the present distributing point for the product, and it is intended to further increase the capacity in a very short time. There are now 150 of the 300 new coke ovens that are being constructed fired, and several cars of coke of a fine quality have been shipped each day for the past month. It is intimated a new road extending from Blocton and to tap the Louisville & Nashville Railroad at Helena, a distance of forty miles, is being favorably considered. The survey of this route has been made, and the company has men in the fields along the proposed route prospecting for coal. This road will, besides affording transportation to the coal product of the Cahaba River, give the mining company the option of shipping the coal produced from the Blocton mines over the Louisville & Nashville or Alabama Great Southern, thus preventing any monopoly that might occur were there but one outlet afforded.

JEFFERSON COUNTY.

MOORE MINING AND MANUFACTURING COMPANY.—This company has been organized to mine, sell and ship iron ore near Trussville. It is probable that the company will build a blast furnace at some future time. The parties interested are J. H. Moore, Edgar Jones, A. W. Harris, W. W. Berry and T. P. McWhirter.

ALASKA.

The coal resources of Alaska are attracting attention. A vessel has been chartered in San Francisco and will soon leave with miners and tools, to properly develop the mine. It is stated that about 150 tons of coal are now ready for shipment.

ARIZONA.

PINAL COUNTY.

SILVER KING MINING COMPANY.—Official reports to us show that the production for July was as follows: In concentrations, 67,661 15 ounces; in bullion, 13,440·03 ounces; in sulphide, from leaching, 10,831·09 ounces. A total of 91,932·27 ounces fine silver; gold, 6·79 ounces.

CALIFORNIA.

FRESNO COUNTY.

The San Francisco *Mining and Scientific Press* states that it is asserted that the U. S. Attorney-General will enter proceedings against every hydraulic mine which maintains pipes and monitors, whether used or not. The object is to enforce the decision of the courts and cause a complete dismantlement of the mines. The removal of pipes and monitors is to be regarded as prima facie evidence of intent to comply with the law.

JOSEPHINE MINING COMPANY, LIMITED.—It is reported that the Josephine mine, at Fresno, has closed down.

COLORADO.

We have received the following statement, which shows the gold and silver bullion deposited at the mint of the United States at Denver, during July, from Colorado, Arizona, Dakota, Idaho, New Mexico, Oregon, Wyoming: Gold, $175,240.98; silver, $1708.23; jewelry, gold, $2198.94; silver, $20.56; re-deposits gold, $458.51; silver, $10.40; U. S. coin, gold, $125, making a total of gold, $178,023.43; of silver, $1739.19; and a grand total of $179,762.62. Gross weight deposits for July, 11,378·76 ounces; net weight deposits for July, 10,923·49 ounces; net weight base removed, 455·27 ounces; average per cent base removed, ·040; average fineness gold, ·797: average fineness silver, ·182.

CLEAR CREEK COUNTY.

ESSEX MINING AND MILLING COMPANY.—The Centennial mine in Georgetown has been sold under trustee's sale, and the company has been reorganized under the above name. Thomas E. Rallston, of St. Louis, has been installed as superintendent, Mr. Ed Foster having resigned his position as superintendent of the former company.

GUNNISON COUNTY.

PAINTER BOY.—Work has started up on the old Painter Boy mine in Washington Gulch. Some six or eight years ago this property was extensively worked by the Elk Mountain Consolidated Company, and has produced some very rich ore. At the time it was worked, everything in the country was expensive, and just after the railroad had been built into the country work was stopped, and the property has been practically abandoned for about six years.

LAKE COUNTY.

We condense the following from the Leadville *Herald-Democrat*.

The mines of Leadville are not at present producing more than 750 or 800 tons of ore per day, and this does not include the low grade ore mined and hoisted for the concentrating mills, nor the gold ore of the Antioch. The largest shippers are the Minnie, producing 75 tons per day; the Iron Silver, 70; the Dunkin, 70, nine tenths of which is iron, however; the Henriette and Maid, about 75; the Colonel Sellers, 50 or 60, and the Louisville, 50. There are between ten and fifteen mines producing from 300 to 1000 tons per month, and in addition, there are a number of smaller mines and leases which swell the amount. Of the large concentrating mills but three are running, the Adams and Wolfetone being idle. For these mills about 400 tons of low grade ore is being mined and hoisted each day, and for the Antioch gold mill nearly 100 tons more. Altogether, about 1200 tons of ore per day is being hoisted from the mines of Leadville. A large proportion of the smelting ore produced goes to the valley, but Leadville smelting works receive about 50 tons per day from Aspen, and about the same amount from Red Cliff. Not for years has the output of Leadville been so small as it is at the present time, and the production for the year 1888 is likely to be several million dollars less than it was last year. The great decline in the value of lead is the chief result of this decrease, but some other mines which are not affected by it, and could be large shippers, are not producing for other reasons.

The Hamburg shaft on Breece Hill, east of the Highland Chief, is being steadily worked by Woodrow & Co. There is a large body of hard carbonates at the first level, 125 feet deep, but low in grade. The shaft, which is over 200 feet, is being cleaned out to the 160-foot level, where the rich ore was formerly taken from. This development, which is more than likely to prove profitable, will open up a piece of territory which has been idle nearly eight years, and from which ore was taken in the early days of this camp. It is predicted, says a corrospondent of the Denver *Republican*, that within six months Breece Hill will be among the largest producing parts of the camp.

ADAMS MINING COMPANY.—The Brookland discovery is being rapidly developed. The shipments average about 40 tons daily, and the average runs net about $33 per ton from the smelter. The mill will shortly be started up, when it is expected that the output will be about 20 tons of concentrates per day.

AGASSIZ CONSOLIDATED MINING COMPANY.—The company has decided to erect a new mill, which will be specially adapted for dressing the low grade sulphide ore in the mine. The Wolfetone mine is now practically shut down, but a very small amount of ore being mined and shipped. Little will be done in the mine until the new mill is finished. The old mill will be run, as heretofore, on low grade carbonate ore, with which it does very good work.

VIRGINIUS.—Preparations are making to mine and ship iron, of which a very large body has been opened in the mine. This iron is of excellent grade, assaying about 10 ounces silver and well in basic excess. Recently some iron assaying over 12 ounces silver and also high in basic excess has been struck. The Virginius has contracts which will enable it to ship from 40 to 50 tons per day, and as soon as stopes are open this output will be made.

PITKIN COUNTY.

DURANT.—This mine has been organized under the laws of Ohio, with a capital stock of $1,000,000. The directors are Messrs. A. E. Reynolds, David W. Hyman, Charles Hughes, C. D. Arms, and R. McCurdy. Mr. Reynolds is President, Mr. Hyman Vice-President, and Mr. McCurdy Teasurer.

SAN MIGUEL COUNTY.

GOLDEN CHICKEN MINING COMPANY.—The mine and mill has shut down. The principal cause seems to be the suit now pending regarding a portion of the stock.

SUMMIT COUNTY.

JUMBO MINING AND MILLING COMPANY.—Superintendent Yeatman has tendered his resignation on account of ill health. It is understood that a new superintendent will soon be appointed and that operations will be resumed at the Jumbo mine and Eureka mill about the middle of this month. In our issue of July 28th we referred to the stoppage of work at this mine and mill.

From a circular issued to stockholders we take the following: At a meeting of some of the principal stockholders of the company a conference was had with the executive committee of the board of directors and from this committee the condition of the company was ascertained, which is as follows: The company owes about $22,000, which is now due and must be paid soon to protect the property of the company. The circular to the stockholders dated November 5d, 1887, was also discussed, in which the reports of the superintendent and of the mining expert on the condition of the property at that date were referred to the executive committee, stated that the company felt justified in arranging for a new mill. It now appears, however, that the estimates contained in these reports of the amount and quality of the ore in sight was greatly in excess of the amount actually found The ore-bodies in the upper levels are nearly exhausted and more development work must be done. The vein at the 200-foot level has been cut 100 feet below the present workings and looks promising. The output of the mine since November has been insufficient to pay the outlay for the tunnel (1030 feet in length) the saw-mill, amount on new mill paid and the current expenses of the mine. There is a deficit of $22,000. This amount is now due and must be paid. A practical miner has examined the property and assures the company that the property is a valuable one, and he is so favorably impressed with it that he agrees to accept the management of it if the company is put in position to do the necessary development work. He estimates that they should have at least $8,000 for development work; $30,000 is therefore needed to put the property in shape, and this can be accomplished only by a voluntary assessment on the stockholders. That no injustice should be done, all the stockholders should pay pro rata. Inasmuch as some stockholders, however, may decline to pay, the committe decided that the money raised by this assessment should be paid to George R. Barker, trustee, who as such trustee, under the direction of the committee of stockholders, will hold and disburse the money paid him to protect the interest of the stockholders who pay as herein requested.

There are 200,000 shares of stock; it will, therefore, require an assessment of 15 cents per share to raise the named sum, $30,000. The committee has ordered that this assessment be paid in three installments as follows: Five cents per share August 15th, 1888; five cents per share September 15th, 1888; five cents per share October 15th, 1888.

DAKOTA.

LAWRENCE COUNTY.

HOMESTAKE MINING COMPANY.—The company is now grading for the great steam stamp.

GEORGIA.

GEORGIA MARBLE COMPANY.—This company has just completed a 24-gang marble saw-mill, with all latest improvements, including Ripley's saw-feed, Brown's 250 horse-power engine, a battery of three 100-horse-power compound tubular boilers. It now saws blocks 20 feet long or 8 feet wide. The company is now running 40 gangs of saws, and its business is steadily increasing.

HALL COUNTY.

HAMBY MOUNTAIN GOLD MINES, LIMITED.—This company has started twenty stamps at its new forty stamp mill, recently built near Gainsville. This mill is run by a 13½ inch Leffel wheel, with amalgamators, stone breaker, tramway, and a modern appliances connected with gold mining.

IDAHO.

ALTURAS COUNTY.

ALTURAS MINING COMPANY, LIMITED.—According to local papers the Alturas mine at Rocky Bar is running behind expenses when it ought to be paying dividends.

KING OF THE WEST MINING COMPANY.—The new concentrating mill at this group of mines, in Smoky, which has been in process of erection since the early part of June, has started up and is working satisfactorily. The machinery was purchased from the Utah & Montana Machinery Co., of Salt Lake City.

The capacity of the mill will be from 50 to 60 tons of crude ore per day, from which they expect to make from 5 to 8 tons of concentrates. These concentrates will run upwards of 100 ounces per ton, carrying from 40 to 60 per cent lead.

The mine has been worked in a systematic manner. It has complete and substantial hoisting works, and is developed to a depth of over 400 feet. The three and four hundred-foot levels are opened on a continuous vein of ore for over 400 feet each, with ore in both the east and west face on each level. The best ore in the mine is taken from the 400-foot level, where there is a chute for several feet in length, which goes, it is said, about 100 ounces in silver, and carries over $50 in gold. In our issue of May 5th we referred to the finances of this company.

MINNIE MOOR.—There is only enough ore being shipped to pay for expenses. The owners are waiting for reduced freight rates.

BOISE COUNTY.

This county will make a light showing this year, owing to the scarcity of water for placer mining.

BANNER.—The mill at Idaho City has shut down for want of ore. The 400-level has been worked out and new levels will have to be opened in the Banner and Wolverine mines.

CASSIA COUNTY.

Mr. A. B. Roberts is operating to a small extent a marble quarry near Oakley, and is getting out some fine white marble, and about the head of Cassia Creek there is a deposit of tinted marbles.

BLACK PINE.—It is rumored that this mine, on which much has been expended in development and machinery, is to be operated again, $25,000 having been secured as operating funds. The property is 25 or 30 miles north of Kelton.

CUSTER COUNTY.

BIG COPPER.—This mine at Houston, Lost River, is now being examined by Mr. D. N. Brunton, of Taylor & Brunton, mining engineers, in the interest

of parties who are negotiating for the mine, brought to their attention by Col. M. Graham. In the event of the sale it is understood that the owners will push the work vigorously, and erect suitable reduction works.

DICKENS-CUSTER COMPANY, LIMITED.—Local papers reports that the Dickens-Custer mill is now being run on the old arastra tailings from the Charles Dickens mine. This only necessitates the use of the roasters and pans, and the stamps are hung up.

LEMHI COUNTY.

VIOLA COMPANY, LIMITED.—Recent reports from the mine state that the prospect work in the Westmoreland ground is being continued by driving the third level ahead to the southeast. This drift is to be continued until it intersects the ore-body at the level. The ore-body between the second and third levels is being prospected with good results. The old cable on the tramway has been replaced by the new steel cable, and now everything is in good order, both at mine and works, with the exception of the furnaces, which will have to be repaired before long. The stacks and crucibles are both in poor condition. During the past weeks a large amount of lime and iron has been used on the charge. This is what makes the cost of smelting per ton so high. The pay-rolls are considerably less than they were in May, and less fuel than ever before is being used. Most of the expenses have been reduced in the last year. But the low price of lead, small amount of silver in bullion, together with the fact that we are now compelled to use such a large quantity of lime and iron to flux the ore, has greatly reduced the profits.

ILLINOIS.

A correspondent writes that Illinois is likely to compare well with Indiana in natural gas. A discovery has been made of an extensive natural gas belt and so situated with reference to railroads and towns as to be soon brought into use. It is crossed by five railroads, giving an extensive area for utilizing it without distant piping from the wells. The gas is abundant, with strong pressure. Capital is needed to promptly develop it. The source of supply is the Trenton limestone reached from about 700 feet to 1500 feet according to locality.

COOK COUNTY.

Natural gas was struck on the 8th inst. at the malthouse of A. F. Bullen & Co., on Cedar street, Chicago, where an artesian well was being sunk. The gas was found at a depth of 74 feet. The well is eight inches in diameter, and the flow of gas is said to be heavy enough to furnish a flame six feet high.

PIATT COUNTY.

The Diamond Drill Prospecting Company, of Chicago, has abandoned the prospecting shaft east of the Illinois Central Railroad, at Monticello, after going down 671 feet and expending much money in the attempt to find a paying vein of coal there.

MICHIGAN.

The Standard Oil Company has begun the erection of extensive buildings and tanks at Ishpeming, which place, it is said, will be made the distributing point for the iron and copper regions of Michigan and Wisconsin. The Cleveland Refining Company will also put in a bulk station at once.

COPPER MINES.

The regular monthly table of the output of mineral by the principal Lake Superior copper mining companies is reported by the Boston *Transcript* as follows:

	July.		Jan. 1 to July 31.	
	1888.	1887.	1888.	1887.
Mines.	Tons.	Tons.	Tons.	Tons.
Calumet & Hecla.	2,751	2,747	16,275	19,286
Tamarack.....	621	433	4,381	2,270
Quincy.....	351	250	2,278	1,621
Atlantic.....	221	193	1,618	1,419
*Osceola.....	208	197	1,459	1,129
Franklin.....	191	202	1,271	1,406
Huron.....	110	31	837	411
Total 7 mines...	4,552	4,053	28,119	27,542

* Estimated.

CALUMET & HECLA MINING COMPANY.—This company sends out a correction of its annual statement of assets and liabilities recently published. The item "cash at Boston office and copper" gave the supply of metal on hand as figured at 9 cents per pound, as in former years. It was commented upon at the time that in view of the fact that the company gets 13½ cents from the French purchasers of its product, the figuring at 9 cents was ultra conservative. Deliveries to consumers under the contract with the Frenchmen began about May 1. As the company obtained rather more for its copper just before these deliveries began, the copper on hand April 30, the date of the statement of assets and liabilities, was figured at 14 cents, the result being correctly stated in the assets as $2,407,449.57, but the amount per pound being given as 9 cents by an error. The corrected statement therefore is as follows: April 30—*Assets*—Cash at mine office, $67,127.64; cash at New York office, $7,746.65; cash at Boston office, and copper at fourteen cents, $2,407,449.57; bills receivable at mine, $31,357,63; total, $2,513,681.49. *Liabilities*—Drafts *in transit*, $61,139.21; employés' aid fund, $2348; bills payable at mine, $146,285.14; bills payable at Boston, $100,000; machinery contracts, "estimate," $200,000; new smelting works, $50,000; total, $559,772.35; balance assets April 30th, 1888, $1,953,909.14. This company is now surveying the ground, preparatory to laying an eight-inch pipe from the mills to the stone quarry at the head of the old incline, where a large reservoir will be constructed, it is stated, capable of holding 5,000,000 gallons of water, to be used for fire protection.

COPPER FALLS MINING COMPANY.—The output of the Copper Falls mine for June was 82½ tons of mineral, making the total thus far this year 408½ tons.

HURON MINING COMPANY.—From a letter dated the 2d we learn that some of the stopes which have been very lean for about two months are now showing much better again. The works are in good running order, and the outlook considerably better than it was a month ago.

OSCEOLA MINING COMPANY.—Local papers state that as rich ground is making to the south, it has been determined to sink the No. 5, or Opechee No. 1, shaft down to the lower workings, so as to tap the drifts south of No. 4, some of which are already extended farther south than the No. 5 shaft, which was some years ago sunk through poor ground to its present depth, about 500 feet.

TAMARACK MINING COMPANY.—The small production for July is accounted for by a loss of four days caused by an accident through overwinding a shaft. The eighth level north is 16 feet wide, and said to be rich from wall to wall. No. 2 shaft was sunk 79 feet during July, and is now 1482 feet deep. The stopes look better than last month.

TAMARACK, JR., MINING COMPANY.—The shaft has now attained a depth of 160 feet.

IRON MINES.

Press reports state that for several months the Pittsburg & Lake Superior Mining Co. has been prospecting with diamond drills on the iron ore range midway between Marquette and Negaunee. The result of the work has just been made public. The drill in the last hole, at a depth of 17 ft., encountered mixed ore, and at a depth of 145 ft. clear ore was struck, through which the drill was worked for 45 ft., and is still working in it. The new find is one of the most important ever encountered in all the iron districts, and establishes the fact that the deposit runs clear through to the lake.

BESSEMER CONSOLIDATED MINING COMPANY.—We are advised that work is pushed by this company on the Iron King, which is improving every day. A new shaft is being sunk. The season's product is not likely to fall short of last year; all the ore has been sold, and at a profit. Work has just begun on the Bonnie, and ore will be raised from the two shafts until the close of the season.

IRON CLIFF MINING COMPANY.—One hundred and fifty men at the Barnum iron mine, owned by the Iron Cliff Company have been discharged. The reason given for the partial closing down of the mine is that ore in stock cannot be sold at a profit.

MONTANA.

DEER LODGE COUNTY.

ANGLO-MONTANA MINING COMPANY, LIMITED.—A petition for the winding up of this company was made to the High Court of Chancery, before Justice Chetty, at London, England, July 25th. The petition was presented by the company itself, and it was admitted that the company was commercially insolvent. A second petition was presented by the mining engineer of the company, and was supported by the secretary of the company, both claiming to be creditors, for arrears of salary. The Court ordered a compulsory winding up, and while the present provisional liquidator will be retained to act for present purposes, the ultimate appointment of a permanent official liquidator will be left an entirely open question. This company was organized in London in the summer of 1886—see ENGINEERING AND MINING JOURNAL August 21st, 1886—and was denounced editorily by this journal as a swindle in its issue of October 23d, 1886, and again May 14th, 1887. At the time of its London appearance in 1886 we invited our London contemporaries, the *Financial News*, the *Economist* and *Mining Journal*, to take note, and the *Financial News* did so and helped to prick this "bubble." Thus it is every bubble that the ENGINEERING AND MINING JOURNAL pricks promptly comes to grief. Investors have learned that this journal serves the interests of investors and the mining industry without fear or favor, and any scheme it denounces is an excellent one to keep out of.

BI-METALLIC MINING COMPANY. The company has made arrangements with the West Granite Company to use its boilers and run a line of steam pipe a distance of about 600 feet to connect with the Bi Metallic pumps, which will keep the mine clear of water until the machinery which was damaged by the fire, referred to in our last issue, can be put in working order. The loss will aggregate, it is thought, $60,000. The rebuilding will be commenced as soon as the ground is cleared.

NEVADA.

ELKO COUNTY.

The Navajo-Independence mill has finished its run on ore from the Commonwealth mine, and has started on ore from the Nevada Queen mine. Reports state the average assay of the battery samples of the latter ore is $267 per ton.

COMMONWEALTH MINING COMPANY.—The average assay from the south drift from No. 1 east cross-cut on the 150 level has been $121 per ton. In the north intermediate drift from the top of No. 8 upraise, the ore for 77 feet will average over $400 per ton. Other parts of the mine are showing well. Recent bullion shipments amount to $50,000.

GRAND PRIZE MINING COMPANY.—The upper stopes are showing some chloride ore assaying as high as $1000 per ton, and are otherwise looking and yielding well. The mill has started and is doing good work.

NEVADA QUEEN MINING COMPANY.—The face of the main drift is still in ore, 2 feet of which average $456 per ton. The stopes above the 350 level range from 5 to 18 feet wide and are looking and yielding well. High-grade ore has been extracted, averaging over $200 per ton, and concentrating ore averaging by car samples $26.39 per ton. The mill was started July 29th on ore from this mine. Average assay from battery pulp, $223.22 in silver, $24 in gold; total, $247.22. Furnace working 93 per cent and assays from the bins show no loss in gold. Two hundred and sixty tons of concentaating ore were extracted during the week ended the 3d inst.; average assay from car samples, $26.49 per ton.

NORTH BELLE ISLE MINING COMPANY.—Connection has been made with the Nevada Queen stopes above the 300 level. The vein is 7 feet wide, with 4 feet of high-grade ore. Good progress is being made on the concentrating works.

ESMERALDA COUNTY.

The mill at Sodaville, has resumed crushing ore from the Mt. Diablo mine at Candelaria.

EUREKA COUNTY.

The suit brought by C. R. Bray to recover $5200 from Prentiss Selby and others, on a judgment against the Albion Consolidated Mining Company, rendered by the Fifth District Court, came up for trial recently. The counsel agreed that a judgment should be entered in favor of the defendants as prayed for in the answer and without costs.

RICHMOND CONSOLIDATED MINING COMPANY.—The Richmond mine at Eureka has closed down for an indefinite period.

HUMBOLDT COUNTY.

ADELAIDE COPPER COMPANY.—The smelting furnace of this company has produced 117 bars of copper from ore from the Adelaide mine since it was first fired up. The copper bars carry 52 ounces in silver to the ton. Another smelting plant is to be put up at a point where water is obtainable for operating it the entire year.

LINCOLN COUNTY.

In Pioche district 12 new mining locations were recorded the last week in July. The activity is due to the prospect of a railroad being built through that region next year.

YUBA.—This mine, at Pioche, has been explored to a depth of 1200 feet below the surface. Ore developed on the latter level is base sulphuret, assaying, it is stated, 90 ounces in silver to the ton.

LYON COUNTY.

Col. James M. Walker has acquired absolute title to the Southend mining location near Silver City, all litigation with the Oest having been settled and the boundary lines fixed in accordance with the U. S. patent granted on the Southend location. The Virginia City *Chronicle* states that the Southend ground includes the original location of that name and the Comet ground, and is on what is known as the Comet lode—the same on which the Silver Hill and other mines in that district are located.

The Comet lode at the Southend and Oest locations is a more distinctly defined true fissure vein than further north. The Southend has been prospected to a depth of only 15 feet below the surface by cuts run along its course for several hundred feet in length, from which a large quantity of gold bearing quartz had been extracted. The gold shows a value of $13 per ounce.

Mr. Walker will soon begin developing the Southend by sinking an incline on the vein following its dip downward to the level of the bottom of American ravine—about 400 feet below—from where a tunnel will be run to connect with the incline. The mine joins the Oest, which is the most valuable property in the district, having produced above $40,000 in gold bullion so far the current year, operating with a small force.

CARSON RIVER DREDGING COMPANY.—The steam dredger will be in operation on the Carson River, near Dayton, the latter part of this or the first of next month. The engine and most of the machinery is in position on the boat, and the construction of sluices for washing the material lifted from the river bottom is in progress. A large Webber centrifugal pump has been shipped from San Francisco which will raise about 2500 gallons per minute. This completes the entire shipment of machinery for the dredge.

NYE COUNTY.

BARCELONA MINING COMPANY.—The new Huntington crushing mill will have a daily capacity of 45 tons. This, with the mill now running at Belmont, will enable the company to treat over 60 tons of ore per day.

STOREY COUNTY—COMSTOCK LODE.

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

The pay-rolls of the different Comstock Mining Company for July amounted to $238,894.

CHOLLAR MINING COMPANY.—Ore extraction is temporarily suspended from the joint Potosi stopes, pending the temporary hanging up of 20 stamps at the Nevada mill. The north raise above the 650 level continues in fair-grade ore. Low-grade quartz is showing in the 450 level.

CONFIDENCE MINING COMPANY.—It is probable that the extraction of ore from this mine will be temporarily suspended this month pending needed repairs to the Yellow Jacket shaft, through which that mine is operated. Advantage will be taken of the shutdown to overhaul the Brunswick mill. These repairs have been postponed as long as it is safe to operate,

and a short shut-down is now imperative. Up to July 31st, there was shipped bullion valued at $107,427.57.

CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.—During the week ended July 28th, 1114 tons of ore were shipped to the Morgan mill and 338 tons to the Eureka mill. The average assay value of all the ore worked at the above mills during the week, according to battery samples, was $35.21.

HALE & NORCROSS MINING COMPANY.—Ore shipments to the Mexican and Nevada mills aggregate 1000 tons weekly, showing an average value by pulp assay of $34 50 per ton. The bullion shipment for July, it is estimated, will amount to nearly $100,000.

MONTE CRISTO.—The work now being done in this mine in Sevenmile Canyon promises to result in important developments when connection is made with the old workings by the upraise now being driven above the west drift from the east shaft.

The vein developed in the upper workings of the mine shows a breadth, it is said, of nearly 40 feet, most of which was milling ore carrying streaks of high grade. From the east shaft the mine can be explored at a depth of more than 100 feet below the old workings, and the object of driving the present upraise is for the purpose of following downward the dip of the vein.

PHIL SHERIDAN MINING COMPANY.—T. J. Lamoureaux, has brought suit in San Francisco against John W. Pearson, on behalf of all shareholders in the Phil Sheridan mine, except defendant, to account for the disposition of over $7,000,000. The complaint alleges that the company in 1886 owned all but 3000 of the 100,000 shares of stock. Pearson is alleged to have procured the election of H. V. Brunner as President, and of himself as Treasurer, and having done so caused the issue of the 97,000 shares to himself.

By their sale it is claimed that he realized about $60,000 between November, 1886, and April, 1887, but wholly neglected to account for any of the proceeds by reason of his appropriation of them. A further allegation is to the effect that in 1886 Pearson caused a friendly Board of Directors, which acted down to the 15th of November, 1886, and permitted him to appropriate $9021.50 realized from an assessment of 10 cents a share, likewise $7000 on a second assessment levied in August, 1887. $3000 on a third assessment of March last, besides $18,000 passed by the board upon false claims, making a total of $7,079,-271.50, including the value of 70,000 shares of the par value of $100 per share. Charges are also made that the present board refused to bring suit against Pearson to recover the money and property wrongfully taken by him from the company.

WASHOE COUNTY.

It is stated that negotiations are pending for the purchase of mining property in Jumbo District, which, if consummated, will result in the development of that district on an extensive scale. The striking of water at a depth of less than 100 feet below the surface places the exploration of veins below that depth beyond the means of a majority of the original locators, if the flow of water should prove formidable enough to require steam pumps to handle it We referred to work now being done at the mines in this district in our issue of July 21st.

In the suit of Woods *vs.* Westerfeldt, to settle title to a mining location in Jumbo District, the jury gave the defendants title to 900 feet of the ground claimed by the locators of the Juniper, who still have an area of 600 feet square left out of the full location of 1,500 linear feet originally claimed.

WHITE PINE COUNTY.

OSCEOLA GRAVEL MINING COMPANY.—Some gold nuggets were recently brought from Osceola to Salt Lake City, the largest being a very solid one, weighing 12 ounces. The product so far cleaned up this season is a little over $12,000, and the year's work will run up, it is believed, to $25,000. The Salt Lake *Tribune* states that only four men are employed about the mine, making the results large for so small a force employed. The company hope to soon commence on the proposed new ditch, which will give it a much greater supply of water, and hope to have it ready for operating a number of giants next spring.

NEW MEXICO.

GRANT COUNTY.

PACIFIC GOLD MINING CO.—A consolidation of the Pacific No. 1 and Pacific No. 2 has been effected, and the above company organized. Mr. N. Bell will have the exclusive management for several months.

OHIO.

CITIZENS NATURAL GAS AND TRUST COMPANY.—Not since natural gas was turned on in Toledo by the two gas companies practically under standard control have the people been satisfied with the prices charged, especially to manufacturers. For a long time a movement has been quietly under way looking to the organization of a citizens independent line. That movement has been very successful, over 150 prominent citizens having subscribed, and the above company incorporated. The capital stock has been fixed at $100,000.

PENNSYLVANIA.

The largest single blast of limestone ever made in Pennsylvania was fired at Joseph Clarke's quarry at Readington on the 17th inst., displacing about 10,000 tons of stone. Nine holes, each 16 feet deep and 15 feet apart, had been driven into a ledge of the rock within a length of about 150 feet. The holes were 3 inches in diameter and were filled with pure dynamite. The report was not very loud, but for several seconds the air was filled with fragments. The blast was a complete success.

COAL.

CLEARFIELD CONSOLIDATED COAL COMPANY.—Work has been resumed at the West Mashannon mine which has been idle for two months. All the old hands have secured their places the same as when the suspension occured on the Tyrone scale of 50 cents per ton for run of mine coal.

FAIRBANKS COKE COMPANY.—This company has purchased the farm of the Johnston heirs, adjoining the Saltsburg Coal Company's works, in Loyalhadna township, and expect to build more ovens in the near future. A force of workmen are now at work building a reservoir to secure as much water as possible.

OIL.

AMAZON OIL COMPANY.—This company of Pittsburg has been granted a charter. The capital stock is $100,000.

TENNESSEE.

REFOGIO GOLD AND SILVER MINING COMPANY.—The annual meeting of this company was recently held at Nashville. The reports of officers, including that of General Manager J. M. Sharpe, who for several years has spent nearly all his time at the company's mines, were submitted. The net income of the company for the last six months was nearly $19,000. The present officers are S. A. Champion, President; John Woodard, Vice-President; J. A. Bishop, Secretary and Treasurer; J. M. Sharpe, General Manager.

TEXAS.

MARION COUNTY.

The report of Mr. J. H. Ralston to John A. Kruse & Co., of Chicago, on the iron ore deposits of Marion County, Texas, printed in the *Texas Iron News*, of Jefferson, shows that the cost of charcoal iron is figured at $12, putting 50 per cent ore in at $.50, 110 bushels of charcoal at 6 cents a bushel, limestone 75 cents, and salaries and labor at $1.05. An analysis by Chauvenet & Blair, of St. Louis, shows the ore to contain 53 per cent of iron, 5·45 per cent of silica, a trace of phosphorus, and 0·53 per cent of sulphur.

UTAH.

DICKERT & MEYERS SULPHUR COMPANY.—This company is under a cloud. During the last few weeks we have referred to the existing misunderstanding of the officers of the company which greatly retarded the work at the mines and now the Salt Lake papers report that the works at Cove Creek caught fire July 28th and a mass of molten sulphur and ruined boilers and engines is all that is left of the institution. The loss is estimated at $22.000. The injunction granted against this company compelled it to discharge a large number of men. The injunction was given on $2500 bonds and was obtained the 19th of last month. On July 30th, Judge Boreman raised the injunction bonds o $12,500.

We made reference to this company in our last week's issue, quoting the *Oil, Paint and Drug Reporter* for the statement that a committee of the stockholders had reported that the troubles in the company were due to the incompetency of the general manager, Mr. Ferdinand Dickert. We have since then received a communication from this gentleman, in which he emphatically denounces the statement as untrue, and says he asked the committee to send some disinterested and unprejudiced person to investigate everything connected with the management of the company, but no one was sent, and the so-called report was made without knowledge of the facts.

The ENGINEERING AND MINING JOURNAL has looked into the matter of the company's management and condition, and without wishing to prejudice either side, we feel confident that the source of all the trouble has been the old, old cause, insufficient working capital. It appears that the company has been operated on borrowed capital, that from lack of means it has never been able to produce more than about 1500 tons of sulphur a year, instead of ten times that amount, which would have made a notable change in the balance sheet. At the actual rate of output, after deducting the improvement account, the cost of production was almost equal to the market value of the product, but it is evident the general expenses were far too high for the business the company was in a position to do. If the enterprise were provided with sufficient working capital it would no doubt be a remunerative one, and aside from the large, perhaps necessarily large, general expense and salary account, there is nothing in the facts which we have examined to indicate any incompetency in the management. When the company commenced operations, ground sulphur at Salt Lake City was worth $70 to $80 per net ton; now it is less than $50, and the hopes which were based on the better market have naturally been converted into disgust and complaining under the new condition of affairs.—ED. ENGINEERING AND MINING JOURNAL.

SUMMIT COUNTY.

ONTARIO SILVER MINING COMPANY.—Ground was broken July 25th for the new drain tunnel. The tunnel will be 15,500 feet long, and will intersect No. 2 shaft at the 15th level of the Ontario. The size of the bore is not yet determined, nor that of the drain. The grade will be three fourths of an inch to the rod. Ingersoll drills, worked by compressed air, will be used. There is some water from springs on the ground and above available for immediate use. The estimated cost is within $350,000; time required to complete, about four years. There is no favorable place on the line for an air-shaft, and probably there will be none. A small ventilation plant at the mouth of the tunnel answers a better purpose than an air-shaft anyhow. No. 2 shaft is now at the 12th level. Some drifting, etc., has been done at that point and about eighty mine cars of ore taken out which assays by car samples 170 ounces silver per ton. There is apparently less porphyry than for three or four levels next above, and altogether the vein looks better. The effect of this work will be to remove the surface of the mine, so far as drainage is concerned, which has always been the great trouble of the Ontario from the 6th to the 15th level. With this tunnel completed, No. 3 shaft can be sunk in dry ground, an advantage which will be understood from the fact that for some months during its last extension downward water came into the bottom of the shaft at the rate of 700 gallons per minute.

WYOMING.

One of the largest bodies of coal in Central Wyoming is said to be in Bates Hollow, on the North Platte River, where veins of coal cross running North, South, East and West. On one section of land are to be seen cropping out twenty-six distinct veins of coal from three to thirteen feet thick. It is reported that Shickly Bros., of Nebraska, who own a half interest in the property, are perfecting arrangements to open it up as soon as shipping facilities can be secured.

FETTERMAN COAL COMPANY.—Work has been resumed at this company's mines. Day and night shifts are now being worked in order to get the mine in shape for a big output this winter. A new set of track scales are being put in. This is made necessary by reason of the fact that the men are now working on what is termed the contract system, being paid 8 cents per ton for the coal after it has been screened and is in shape for shipment.

FOREIGN MINING NEWS.

CHINA.

Dispatches from Australia state that the leading Chinese merchants of Dunedin, one of the chief cities of New Zealand, received copies of an imperial proclamation from Pekin, in which the action of the colonies in trying to prohibit Chinese immigration is characterized. The proclamation says the imperial army numbers 13,000,000 men, but they are not so well armed or drilled as the troops of Western nations, while the navy is not sufficiently large to warrant the empire taking aggressive action. The government, however, intends building more ships and improving the army, and commands all Chinese subjects in Australian colonies to wind up their business affairs and return to China within the next three years.

MEXICO.

BOLEO COMPANY.—At the company's copper mines of Santa Rosalia, there are now four blast-furnaces, two of 100 tons and two of 75 tons capacity, says the Mexican *Financier*. A narrow-gauge railway connects these mines, of which there are three groups. The ore averages from 7 to 10 per cent. There is a good wharf and all the buildings of the mining company are substantial.

A correspondent sends us the following:

Owing no doubt to the very high price which tin commanded in the market a few months ago, considerable attention has been directed to it, and prospectors all over the country have been chronicling wonderful finds of the ore.

Tin has been known to exist in Mexico for a very long period, and from time to time attempts have been made to mine the mineral, but as far as the writer is able to ascertain, always without success. Many pockets, some, perhaps, containing a few tons, but mostly a few pounds or hundreds of pounds only, have been discovered, and any one traversing the mountains of the States of Durango, Zacatecas and Guanajuato cannot but be struck with the wonderful amount of research and labor the natives have bestowed upon tracing up and prospecting every rock parting and sign of the presence of the mineral.

The rock in which it is found is a coarse-grained porphyry, largely composed of feldspar. The tin occurs as nodules, kidney-shaped lumps, and thin incrustrations lining cavities in those rocks, and is usually accompanied by specular iron ore.

Small quantities of alluvial tin are constantly being obtained from mountain streams at different points, and this the natives reduce in small improvised furnaces and sell at a handsome price to the local tin-plate workers in the neighboring towns. It is doubtless the presence of this alluvial tin which has led to the careful search for the tin *in situ* of which I have spoken; but if the disintegrating nature which those feldspathic rocks are known to possess, and their steep character and exposed condition is considered, it will be seen that they have been exposed to tremendous denudation, which is also evidenced by the immense columnar masses, the remains of the harder portion of the rocks, everywhere to be met with. The comparatively small quantity of stream-tin found in their valleys, therefore, does not augur much success for tin-mining in this country.

It is quite possible that the mineral in paying quantities may be found, but investors cannot be too careful in assuring themselves of this before launching out in expensive operations in Mexican tin mining.

INVESTIGATOR.

In our last issue we reported the organization of a company in Pittsburg, Pa., with a capital of $1.000,-000, to work the tin mines near Durango. Intending stockholders will do well to consider what our correspondent says concerning the prospects of success or failure.—ED. E. & M. J.

The Mexican *Financier* reports the following:

The sampling works of the St. Louis Smelting and Refining Co., at Monterey, State of Nuevo Leon, is now in operation and giving good results. It will be of great utility to miners.

CUEVA SANTA.—The managers of this mine, Pachuca, are encouraged at the recent finding of plenty of high-grade ore, but will pursue a conservative policy and

will not begin taking out metal till exploring work on the vein is pushed farther. The general meeting of the company will be held on the 23d inst.

SAN PABLO Y SAN PEDRO.—This old mine, State of Durango, has been taken in hand by Messrs. Brown and Balletine.

TERCERA COMPAÑIA RESTAURADORA DE BERNALEJO.—The report of the board of directors shows that the mine in the State of San Luis Potosi is being rapidly put in good working order, and that as soon as the shaft is made perpendicular the mine can be completely drained. There is an abundance of labor and prospects are good. The National Railway will pass close to the company's reduction works.

UNITED MEXICAN MINING COMPANY.—At a recent meeting of the company held in London it was voted to make a call of 2s. 6d. per share on all shares except on those fully paid up. The directors were authorized to raise £100,000 on debentures, to be issued at such price and at such times as the directors might see fit. It was voted that the capital of the company be increased by the sum of £150,000, divided into shares of £1 each. The chairman reported that recent returns from the property had not been as good as might have been expected. It was desirable to work the mines energetically, but it was impossible to do so out of the profits of the San Cayetano. It was hoped that El Cubo would show good returns.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, August 10.

Statistics.

Production Anthracite Coal for week ended August 4th and year from January 1st:

TONS OF 2240 LBS.	1888. Week.	1888. Year.	1887. Year.
P. & Read. RR. Co..	160,176	3,360,218	4,084 710
Cent. R. R. of N. J.	140,863	3,029 553	2,888,206
L. V. RR. Co.....	125,077	3,659.251	3,806,989
D., L. & W. RR. Co.	131,550	3,686,333	3,084,932
D. & H. Canal Co..	94,350	2,451,216	2,107,009
Penna. RR...	67,532	2,604 421	2,114,575
Penna. Coal Co	37.296	929,563	860.946
N. Y., L. E. & W....	*19,000	540,976	462,485
Total.....	775.849	20,261,531	19,389,852
Increase.....	.....	871,679	.....

* 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.....17,521,048 | 1885.....16,52',087
1884 ..... 17.459,917 | 1886 ....17.630,165

Production Bituminous Coal for week ended August 4th, and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

	1888. Week.	1888. Year.	1887. Year
Phila. & Erie RR.....	820	41,183	9,279
*Cumberland, Md....	76.672	2.059,191	1,823,672
Barclay, Pa.	4,499	106.039	118,195
Broad Top, Pa.....	5,603	206,637	194.874
Clearfield Region, Pa.	70,881	2,218,037	2,117,711
Alleghany Region, Pa	15,176	•516,337	603.927
Pocahontas Flat Top Coal	25,745	936 117	673,367
Kanawha Region, W. Va.....	48,578	1,078,342	893.699
Total....	247,974	7,161,883	6,434,634

* Tons of 2240 lbs.

WESTERN SHIPMENTS.

Pittsburg Region, Pa	20,097	476,738	385,290
Westmoreland Region, Pa...	35,631	1,029,624	882,276
Monongahela Region, Pa.....	14,567	259,326	246,220
Total.....	70 295	1,765,688	1,513,786
Grand total....	318,269	8.927,571	7,948.420

Production of Coke on line of Pennsylvania RR for week ending August 4th, and year from January 1st, in tons of 2000 pounds: Week, 70,994 tons; year, 2,282,229 tons; to corresponding date in 1887, 1,905,904 tons.

Anthracite.

The anthracite market is in excellent condition; orders exceed ability to deliver, and full circular prices are generally obtained. The sale agents hold a meeting next week, when it is expected that the advance reported in our last issue will be ordered to take effect from September 1st. The Lehigh Valley and Jersey Central roads have already decided on making an advance in tolls from September 1st, so that no doubt the advance in price will then go into force also.

We repeat the comparison of this year's prices with those of last year, which we gave last week.

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 safer men in the trade are decidedly of the opinion that prices are high enough, and that though it may be possible to squeeze a higher price from the public, and absorb it in an increase in tolls, so that individual operators will reap but little benefit from it and the miners none at all, yet they think the trade will be better served by keeping present moderate prices than by forcing the position.

It is true the demand for coal far exceeds what was anticipated, and this inquiry comes from all parts of the country. The West seems insatiable. Perhaps the hard experience of last winter has caused consumers to lay in stocks early. But also the use of anthracite is increasing everywhere, and the only limit to output at present seems to be the inadequate supply of cars.

Bituminous.

There is nothing worthy of note in our home market. Prices remain unchanged at nominally $2.60 f.o.b. Baltimore and Georgetown, and $3.25 New York, but these prices are shaded except for a few standard coals.

There is much dissatisfaction expressed by the Beech Creek operators, who find the Eastern market taken away from them, they claim, through some of their rivals having better railroad freights than they can get. It is the old story, so familiar in this department of the coal trade. The great improvement on the anthracite trade is improving the prospects in the bituminous trade, but the anthracite business is held in firmer hands and is easier regulated.

Boston. Aug. 9.

[From our Special Correspondent.]

The Boston market is in as good shape as when I last wrote, and that is first rate. The demand is not large from this quarter, but there is a very good business being done nevertheless. The agents here are not urging for orders, but are rather pursuing the opposite course. The companies are all well sold up and some of them, notably the Reading and Lehigh people, are not taking any more orders for August delivery.

There begins to be rumors of some cutting on part of the individual shippers, but such cutting, if it is done, as seems to be the case, certainly has no effect upon the general market. It is claimed that concessions of 15 cents can be had from regular circular rates on stove and egg, and ten cents on broken from individual shippers and their brokers and agents here. Broken coal is in lighter supply generally than the other sizes. There is also considerable detention in loading at most points, and altogether the companies are as independent as a demand decidedly larger than the supply can make them. It is at such times that the potency of the Western demand is borne on the Eastern coal dealer. There has been a constant increase in the tonnage coming East, but it is as nothing compared with the increase in the Western demand.

In the line of bituminous coal an excellent business is being done considering the season. Orders are small as the big contracts are out of the way. As much and probably more bituminous coal than ever is coming to New England by rail routes. Such coal is, however, mostly Clearfield, as those shippers are favored in the matter of railroad connections. It is asserted that this all rail business will continue to increase, and that it is popular where the arrangement is tried, as the coal comes often and in small lots, easy to store and is not broken by the rehandling to which water freight coal is subjected.

Quotations on bituminous remain unchanged at $2 50@$2.60 f.o.b., and delivered rates on that basis.

Freight rates are well maintained, and there is a larger shipping movement.

We quote vessel rates, exclusive of discharging: New York, 70@80c.; Philadelphia, 85@90c.; Baltimore, $1@$1.05; Newport News and Norfolk, 85@95c.; Richmond, $1.15@$1.25; Provincial, $1.60@$1.75.

The retail movement is good at unchanged figures. The next change is likely to be an advance from which there will be no probable reduction this season.

Buffalo. August 9.

[From our Special Correspondent.]

The market for anthracite coal is without any new features for local trade and rail shipping. Prices unchanged. Housekeepers are now receiving their winter supplies very generally, and our teamsters are kept quite busy. Bituminous coal trade shows an ordinary weekly demand from manufacturers and steamboat people. Deliveries by rail are not heavy, but equal to the requirements of consumers. Stocks have been considerably reduced, hence a firmer feeling prevails on the score of prices and dealers do not exhibit such intense anxiety to find purchasers perfectly regardless of the cost of production, transportation, etc. Coke quiet and unchanged. "Generally it appears that the market for this article is improving," says a dealer; "but here our trade is small, and without incidents of note."

"Lake freights for coal to Lake Superior ports declined 5c. per net ton late last week, with a general weak feeling prevailing since in consequence of light receipts. Chartering slow; much delay was experienced in loading vessels and several left port with only half or no cargoes. The present situation is thus spoken of by a local agent: "Vessels plenty; not sufficient coal here for demand; freights steady, but with no indications of an advance in quotations."

The shipments from August 1st to 8th, both days inclusive, were 86,050 net tons, namely: 29,340 to Chicago, 18,860 to Milwaukee, 9540 to Duluth, 5930 to Toledo, 7800 to Superior, 1200 to Marquette, 2450 to Detroit, 4150 to Ashland, 200 to Alpena, 350 to Put-in Bay, 400 to Saginaw, 3800 to Gladstone, 260 to Port Colburne, 1000 to Green Bay, 70 to Bay City 730 to Lake Linden. Total shipments thus far this season 1,245,880 net tons, including cargoes on vessels from Tonawada not reported at Custom House here. The rates of freight were as follows: 75c. to Chicago, Marquette, Lake Linden, 70c. to Milwaukee, 60c. to Duluth, Superior and Gladstone, 65c. to Washburn, 85c. to Muskegon and Racine, 50c. to Toledo, Detroit, Kelly's Island, Put-in Bay and Saginaw, 70c. to Sheboygan and Kenosha and 50c. to Alpena and Bay City.

Receipts by canal of coal first week in August 8712 net tons; shipments, 220 net tons. The Erie Canal is once more in good working condition, although a small amount of damage occurred a day or two since within our city limits (making three breaks within a month).

The new Central Dock Company's wharf chutes, etc., will be located at the foot of Georgia street, in the heart of our city's waterway, so says common report. It appears that the land was purchased "years ago" with this purpose in view. The N. Y. C. & H. R.R. people are long sighted and far thinking in all they do.

It is only a very short time since the electric light was introduced into Buffalo. An illustration of the rapidity with which its use is spreading and superseding coal gas is shown by the following statement: City coal gas bills for July, $8,349.52; electric light for July, $11,248.13; total, both systems, $19,597.65, or about $250,000 a year!

The Buffalo, Rochester & Pittsburg Railroad recently ordered a number of extra heavy weight engines and a supply of cars to match. These will be used only for coal traffic. The construction department will see that all bridges, culverts, trestles, etc., are strengthened to meet the requirements of the loads to be carried. The expectations are that a very large business will be done this coming fall and winter.

Pittsburg. Aug. 9.

[From our Special Correspondent.]

Coal.—The season is about over for the present. The lower markets have a sufficient stock on hand to last for some time. Mining in the pools is about done. The big coal firm of W. W. O'Neal & Co. have decided to stop mining, as the production of coal of late years has not been a paying business. They will use their river crafts for coal mined by other firms. The announcement caused a panic in the pools.

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.—There is an improvement in the demand, but not in price. Selling is still going on below the cost of production; the end must come and can't be far off. A number of iron furnaces will soon start up, and may bring about an increase in values. Present rates: Blast Furnace, $1 per ton; to dealers, $110; foundries, $1.15.

Freight rates to Pittsburg, 70c. per ton; to the Mahanoy and Shenango valleys, $1.35; East St. Louis, $2.20; to Cleveland, $2.80; to Chicago, $2.75; to all other points the same proportions.

There was quite a boom in shipments last week, the aggregate weekly output jumping from 4160 to 5000 cars. They were distributed as follows: To points West, 2575 cars; to Pittsburg furnaces, 925; to Eastern points, 1500 cars. This is an increase all around over the previous week, when the figures were: West, 2175; Pittsburg, 735; East, 1250. The increase in Western trade went largely to the big Chicago furnaces, which are now taking full runs of coke, their previous orders being very light.

West Superior, Wis.

West Superior is becoming one of the great coal markets of the West. Out of 825,000 tons received at the head of the lakes this season, 375,000 tons were received at the Lehigh, the St. Paul & Pacific and the Ohio coal companies, docks at this place. The extensions and additions now being made to the coal dock system there will double the capacity for the next year.

FREIGHTS.

The latest actual actual charters to August 9, per ton of 2240 lbs.

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; Nowich, 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; Gardiner, 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.

From Philadelphia to:—Alexandria, .85; Annapolis, .65; Bangor, 95*; Bath, Me., .90*; Beverly, 1.05*; Boston, 90*; Cambridgeport, Mass., 1 17½; Charlestown, .75@80; Charleston, .75@80; Chelsea, .90*; Com. Point, Mass., .95; East Cambridge, 1.05*; Fall River .90*; Gardner, Me., .95*; Gloucester, 1.05*; Hingham, 1.50*; Lynn, 1.10@1.30*; Marblehead, 1.10*; Milton, 1.20*; New Bedford, .85@.90*; Newburyport, 1.15*; Newberne, .80; New Orleans, 1.25*; New York, .90*; Norfolk, .65@.70; Portland, .90@1.05*; Portsmouth, Va. 1.00@1.05; Portsmouth, N. H., 1.00*; Providence; .85@.90*; Quincy Point, 1.05*; Richmond, Va., .75; Saco, Me., 1.20*; Salem, Mass., .90*; Saugus, 1.20*; Savannah, 1.00; Washington, .85; Wilmington, N. C., .85.

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

MARKETS.

NEW YORK, Friday Evening, August 10.

Prices of Silver per ounce troy.

Aug	Sterling exchange	Lond'n Pence.	N. Y Cents	Aug	Sterling exchange	Lond'n Pence	N. Y Cts.
4	4.86½	42	91⅛	8	4.87	*	91⅛
6	4.87	*	9 1⅛	9	4.87¼	42	†
7	4.87	*	91⅛	10	4.87½	42	91⅝

*41 15-16, †91 9-16

Foreign Bank Statements.—The governors of the Bank of England, at their weekly meeting, raised its rate for discount from 2½ to 3 per cent. During the week the bank lost £503,000, and the proportion of its reserve to its liabilities was reduced from 39 78 to 39 20 per cent, against an advance from 38·18 to 40·51 per cent in the same week of last year, when its rate for discount was 3 per cent. The weekly statement of the Bank of France shows a loss of 31,375,000 (?) francs gold and a gain of 2,100,000 francs silver.

Copper.—The condition of the copper market has undergone very little change during the week, but owing to a comparatively larger quantity of spot copper being offered than for some weeks past, the tone has become slightly easier, and quotations are now a shade lower than a week ago. The total quantity of Lake copper changing hands on the Metal Exchange for the week has amounted to about 400,000 pounds, and on Thursday last sales to the extent of 250,000 pounds of Lake Spot at 16 70 were reported. Our closing quotations to day are: Spot, 16·70; August, 16·65; September, 16·60; October, 16·50; November, 16·50; December, 16 35.

In outside descriptions the demand continues very good, and the well known casting brands can be sold at 15¼ to 15 50.

The London market has remained very steady during the whole of the week, and the fluctuations in prices have been very small. Our latest cable quotations are, Chili bars spot, £81 15s.; 3 months' futures, £78; G. M. B., £73 10s.

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

To Liverpool—	Matte.		Lbs.	
By S. S. City of Chester.....	Bbls.	90	119,000	$11,000
By S. S. Britannic.	Bbls.	90	123 000	8,000
To Liverpool—	Copper.		Lbs.	
By S. S. Celtic...	Casks	178	225,000	$33,750
	Copper Plates.		Sheets.	
By S. S. Colorado.....	Cases	17	72	$5,200
To Honolulu—			Lbs.	
By Bark Ivy...	Casks	4	4.000	682
To Bordeaux—			Lbs	
By S. S. Chateau Margaux.	Casks	1,395	1,833 257	$301,440

James Lewis & Son's monthly report of August 1s gives the English view of the copper question. We do not think the estimates of probable stocks or of probable production at all reliable and a pretty heavy discount may be made on these expectations.

"The first six months of the operations of the Société des Métaux and of the French Syndicate to control the copper markets of the world, and enhance the value of this metal one hundred per cent, having now passed, this seems a suitable time to criticise their effect so far, and endeavor to form some idea of how this gigantic speculation is likely ultimately to result.

"The total production of the world was estimated by Messrs. H. R. Merton & Co. for the years 1885, 1886 and 1887 as 226,892, 217,070 and 224,490 tons; deducting from or adding to this the increase or decrease in the English and French stocks during each of these years, it would appear that the total consumption of copper in the world was 218,045, 208,394 and 244,886 tons respectively, or an average of 223,908 tons.

"During the first half of the year, it will be seen from the statistics annexed, that the imports into England and France have been 29,855 tons greater than during the same period last year, and as the production of copper in the Lake Superior district and in Montana will be much greater during the present half-year than during the past one (which included the winter months and stoppage of one half the supply obtainable from the Calumet & Hecla Mine in consequence of the fire), and the supplies from the smaller mines increased, we may reasonably look for a similar, if not a greater, increase for the remaining six months of this year. Allowing for a similar increase of 30,000 tons or 60.000 tons in all, the total production of the world this year promises to be 285,000 tons against 225,000 tons last year.

"Our statistics show a decrease in the English and French consumption, and English exports of copper during the first six months of this year of 10.000 tons. But as there is very little doubt that some 20,000 tons of copper smelted at the works of the Rio Tinto, Tharsis and Cape companies in this country during this period are still on hand (6,000 tons of English copper lying at Rouen alone), in addition to the 65.000 tons of foreign copper in the public stocks, we consider that consumption has fallen off in the half-year to the extent of 30.000 tons.

"As large quantities of old copper have been received since the 1st of January, and this sources of supply is now nearly exhausted, the decrease in the consumption of foreign copper this half-year may not fall below that of the corresponding period last year by more than 20,000 tons—although it was then exceptionally large, owing to smelters and manufacturers laying in large stocks during the great and rapid advance in values which took place the last three months of 1887.

"This would give a total decrease in consumption this year of 50,000 tons, as compared with last, or, say, a total of 195 000 tons against a total production of 285,000 tons, which would result in an increase in the stocks held on the 1st of January last (35,000 tons) of 90,000 tons, making them 125.000 tons on December 31st next.

"Next year, unless some restriction is placed upon the output of the larger producers, we shall probably have a production of at least 300,000 tons, and even if consumption is as high as the average of the years 1885, 1886 and 1887—say 225.000 tons—there will be a further surplus of 75.000 tons, so that by the end of 1889 we may look for a stock of copper of 200.000 tons, and at the termination of the three years for which the contracts have been made by the Société des Métaux a stock of 275,000 tons, against 35,000 tons on the 1st of January, 1888.

"Chili Bars realized early in the month £81 5s. for cash warrants, but fell to £78 7s. 6d. on the 13th ult., the demand to cover prompts falling due having fallen off. With a revival of this demand the past week up to £81 has again been paid, importers chiefly realizing the benefit of the advance, the syndicate having sold but little. The syndicate have continued buyers of three months prompt at £78, though in one instance £77 15s was accepted for 50 tons from another buyer, while latterly up to £78 10s. has been paid by other buyers. The market, however, closes much weaker, with sellers of cash at £80 10s., and of three months prompt at £77 10s."

For good merchantable copper there has been more demand of late, especially from the syndicate agents, and the price has advanced from £71 5s. to £73 15s. On the 20th ult. the English smelters fixed their price for best selected at £75, but sales were afterwards made at 10s. to 20s. below this for some brands.

There has been an active demand for furnace material the past ten days, the syndicate agents having bought and offering to buy those lots not already under their control. This brought in smelters, who have secured all they can, fearing that ere long they will be obliged to go to the syndicate and pay their price. For Anaconda matte, of which there are now 16,588 tons in stock here, 14s. per unit has been offered and refused, 14s. 6d. being asked.

The directors of the Quebrada Company, in their annual report, state that the company's estimated production of copper has been sold to the Société des Métaux for three years from January 1st, 1888. This company produced, during 1887, 2606 tons of fine copper, which realized an average price of £47 14s. 2d. per ton, or 9s. 6½d. per unit.

The price obtained by the Parrott Company, of Montana, for their production is 13 cents per pound, with half of any excess realized over this. They are permitted to produce 5000 tons (2000 pounds) this year, 5500 tons during 1889, and 6000 tons during 1890.

The Boston Montana Company have, we understand, sold 45,000 tons for delivery over three years at 12 cents per pound, while the first contract for six months made by the Anaconda Company was at 11 cents, a contract for a further six months having subsequently been made, and a contract for a further period being now in course of negotiation.

One of the anomalies of the present situation is, that while those mine owners who have contracted with the Société des Métaux have only obtained from £53 to £65 per ton for their produce, the Chili producers obtain from £77 to £81 for their copper, the syndicate being obliged to buy all that offers in order to sustain the value of the 50,000 tons of Chili bars they already hold.

The Calumet & Hecla Mine is being unwatered at the rate of about 5,000,000 gallons a day. It appears that at the present time the South Hecla, or Black Hills part of the mine, which is wholly separate from the main mine, is producing nearly as much copper as the whole mine was before the fire. The June product was 2542 tons of mineral, or 2033 tons fine copper, against 2398 tons fine during June, 1887.

The output of the seven principal Lake Superior mines for the first half of the following years has been: 1886, 18,153; 1887, 18,791; 1888, 18,931 tons (2,000 lbs.) fine.

During the past month 7877 tons of Chili bars have been transferred from here to France, making 16,382 tons to date, viz.: 12,383 tons to Havre, 2848 tons to Rouen, and 1151 tons to Dunkirk. The cost, including the *surtaxe d'entrepôt*, is nearly £2 10s. per ton.

The arrivals in England from Chile during the month have been 2928 tons, and the deliveries 2129 tons fine, and from other countries 6571 and 4722 tons fine, respectively.

The arrivals here from the United States have been 50 tons bars, 45 ingots, and 3577 matte (including 3263 tons Anaconda), equal to about 2208 tons fine copper, and in France 550 tons.

The Chili charters for the first fortnight are 1200 tons, for the second they are not yet received, but we estimate them at 1500 in our statistics. The closing rate of exchange is 26⅜d.

Tin.—During the whole of the week the tin market has continued very firm in tone, and the tendency has been strongly in the direction of higher quotations. Consumers are evidently more disposed to buy, and the rise is being helped on by considerable purchases on account of certain parties who are understood to be operating for the rise. On the whole the tone of the market may be described as fairly strong, the recent considerable decrease in the visible supplies having had a very favorable influence. Whether a further advance may be considered justifiable is altogether another question, and we would simply suggest that a good deal of caution ought to be observed by intending purchasers. The last quotations in our market are: Spot, 21·50; August, 21·50; September, 21 50.

In London the market is also a good deal higher, and cable advances report that Spot Tin is rather scarce. To-day's closing prices there are Spot, £94 17s 6d; three months, £95 5s.

Lead.—Owing to continued buying by the well-known speculator in this metal, prices have been steadily advancing again during the week. The interest of the party referred to in lead is becoming greater and greater every day as the stocks held by him increase, and the ultimate result of the manipulation must be left to time to determine. It obviously cannot be the intention of the buyer in question always to buy; and the general opinion is that he will endeavour to raise prices a little more in the hope that he may thus obtain the control of the entire floating stock, which he appears likely to do before very long, the object in view being, no doubt, to drive the consumers to apply to him for their supplies. That he will be able to clear out much of his stock seems to us improbable, for under such circumstances the consumers are not likely to buy more than is necessary to meet their pressing needs. Another important factor in the problem is, of course, also, the action of the Western smelters, who rarely sell their output for more than from one to two weeks ahead and who have recently been offering pretty freely. Before the recent rise set in the smelters were holding off, but now the usual periodical quantities are finding their way into the open market, and whenever there are any indications of a disposition on the part of the speculative holders to unload there is no doubt that the smelters would also want to sell.

Our closing quotations to-day are Spot, 4 35; August, 4·35; September, 4·375; October, 4·40. The latest prices in London are Spanish, £12 17d. 6s.; for English, £13 2d 6s.

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

Our market is advancing on account of large purchases by speculators. Buyers are now bidding freely 4·12½@4·15, but little lead is to be had.

Messrs. Everett & Post, of Chicago, telegraph to-day as follows:

Our market has shown remarkably activity since our last advices. Sales for the week sum up over 950 tons, at prices ranging from 4·10@4·15 for spot and futures. Speculative transactions at New York are the principal reason for the advance.

Spelter is rather firmer again, and the quantity offering is very small. Present quotations, 4·62½@4·70.

Antimony continues dull at 9⅝@9¼ for Hallett's and 12 for Cookson's.

Chemicals.—Although the past week has shown symptoms of an awakening from the dullness which has so long pervaded the chemical market, there is still a feeling of uncertainty among consumers and dealers as to the effects of the tariff legislation upon future prices, which prevents the consummation of many large orders now pending. In the case of the glass blowers, these orders will have to be placed soon if the furnaces are to be started as usual about the 15th of September; but at present they are holding off, and concerning this a prominent chemical dealer says: "If chemical manufacturers would abandon the cut throat policy of competition which now exists among them, and would work for the general improvement of prices, regardless of any particular line of chemicals which they may want to dispose of, we would not witness these long periods of inactivity and consequent depression of prices. If an association or 'trust,' as you will doubtless call it, existed at the present time, we could force consumers to place their orders without waiting and negotiating indefinitely."

In heavy chemicals, while there is a better feeling existing, as yet there are no transactions of importance that would warrant an advance upon our quotations of last week.

Caustic soda ash, 48 per cent, is unchanged at 1·30 @1·35 as to quality. Futures, while attracting little attention, are held somewhat firmer at 1·22½@1 25. Transactions are moderate.

Carbonated soda ash, 48 per cent, is even duller than last week. We hear of one order of 500 tons, but aside from this there seems to be little disposition to trade. We continue our quotations of 1 22½@1·25, according to quantity. Sales on the spot are for current requirements only, and 1·27½@1·35 are fair quotations.

For high test, there is absolutely no demand. In answer to some inquiries we have had in reference to the above, we repeat the explanation given in our issue of January 7th. For the benefit of the uninitiated among our readers, we beg to make the following explanation: The basis of valuation of caustic soda is a 60 per cent article, which is taken as the unit. When a 70 per cent caustic is under consideration, the actual cost price to the purchaser will be our quoted price ($2 35) for that grade plus ⅞, as it exceeds the unit (60 per cent) by 10 per cent, making an actual cost of $2.74 per cwt. A reference to our printed price list will show that the purer the article the cheaper the price, when reduced to a 60 per cent basis. The reason of this is that the duty on caustic soda is specific, not ad valorem; the higher grades, therefore, pay less duty in proportion to purity than the lower grades. Moreover, the freight is the same whether the caustic be 60 per cent or 70 per cent. In the latter case, of course, there is less "dead matter" to carry, and the freight is proportionally cheaper. For these reasons the importer can afford to sell the 70 per cent caustic at a proportionally lower price than the 60 per cent.

Caustic soda illustrates the general feeling of hesitancy among consumers, who now buy from actual necessity only. The quotations of last week, although firm, are unchanged, and the demand is but little improved. We quote for 60 per cent. 2 30@2 35 for large orders, with an increase for small lots; 70@7

per cent are not in demand, although holders are offering quantities at 2·17½@2·20 with a disposition to shade these figures for a large order.

Bleaching powder is still quiet. It is evident that Boston continues to absorb the trade that would come to New York if prices were easier here. Advices from abroad are stronger. We quote 1·87½@1·92½, according to quantity and brand.

In the acid market we note a slight improvement.

Sulphuric acid especially shows a stronger feeling throughout the trade. It is believed that an advance in prices will take place in the next four or six weeks.

For some time past, owing to over-production, the price of sulphuric acid has been down to the lowest point ever reached, but large stocks seem to be disappearing and local dealers are quite sanguine. Some of them refuse to take orders for future delivery at present prices.

A factor in the question is the increasing production of sulphuric acid in the South, which, although a grand tribute to the mineral resources of our country, is still capable of an increase that might overstock the market and produce a repetition of recent dullness.

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

Acetic acid is sold in small lots at 2¼@2½c.

Tartaric acid is in little demand. We quote the prices of local dealers as follows: Large lots, 43c. per b.; smaller quantitis, 44c. per lb.; 50-lb. lots in boxes, 45c. per lb, the above for crystals.

Oxalic acid is dealt in very lightly. We are unable to learn of any orders of importance, but continue to quote as at our last writing, 6c. per lb. for 10-box lots and 6½c. for smaller quantities.

The fertilizing chemical market shows no abatement of the activity first noted several weeks ago. The demand is strong and steady, and is evidently permanent. Local dealers are exceedingly hopeful, and are disposed to advance prices in every line. Ammoniates are still scarce and in very good demand. Phosphates are quiet, although the product is light. Last week's quotations are advanced to the following figures: Dried blood (city), low grade, 2·35@2·40 per unit; Western high grade, 2·37½@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 20@$3.25 per cwt. Steamed bones, $20@$22 per ton. Charleston rock is $5 per ton for undried, and $6 per ton for dried f.o.b. mines. Refuse bone-black is $17½@$18 per ton. Dissolved bone-black is 90c. per unit for available phosphoric acid, and acid phosphate, 75@80 per unit for available phosphoric acid. High-grade sulphate of potash is quoted at 2·25c. on basis of 90 per cent.

Double manure salt is quiet at slightly increased quotations. While the actual transactions have been very small, we may quote 1·15c. on a basis of 48 per cent potash.

Muriate of potash continues quiet and dealers generally agree that $1.80 represents the market price.

Kainit is still very firm. Stocks are small and ocean freights are high, so that the present price will probably be maintained for some time to come. Dealers continue to quote at $10 ex ship and $10.50 ex store, but evidently believing in the above prediction, have advanced futures to $9.25@$9.50.

Brimstone is quiet and stocks are limited. We note a slight increase in quotations, which are $22 for best unmixed seconds on the spot, $19.50 for shipment, and $20 to arrive near by.

Nitrate of soda is firm although the demand is limited. We record a slight advance over last week's figures, and quote 2·05@2·10 spot, and 2c. to arrive and for shipment.

Messrs. T. F. Edmunds & Co. have issued the following statements, dated Boston, August 1st:

	1888. Tons.	1887. Tons.	1886. Tons.
Exports from S. A. to Europe since January 1st	262,295	225.000	146,500
Exports from S. A. to U. S. since January 1st	42,139	47.000	50,700
Total exports	304,434	272,000	197,200
Loading in S. A. for Europe, July 31st	80,000	80.000	28,000
Loading in S. A. for U. S., July 31st	6,000	7,000	3,000
Total loading	86.000	87,000	31,000
		Bags.	Bags.
Stocks at Atlantic ports July 31st, 1888			90,854
Afloat and due in Atlantic ports, August	38,000		
Afloat and due in Atlantic ports, September	30,000		
Afloat and due in Atlantic ports, October	22,000		90,000
Visible supply for U. S. August 1st to November 1st, 1888			180,854
Visible supply for U. S. August 1st, 1887			189,000
Deliveries for consumption in U. S. for above time in 1887			129,582
Deliveries for consumption in U. S. for above time in 1886			150,171
Deliveries for consumption in U. S. since January 1st, 1888			322,342
Deliveries for consumption in U. S. since January 1st, 1887			289,758
Deliveries for consumption in U. S. since January 1st, 1886			196,892

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Aug. 10.

At the meeting of steel rail manufacturers held at Long Branch on the 3d inst., to which we alluded in our last issue, there were representatives from the North Chicago, Joliet, Union, Edgar Thomson, Cambria, Bethlehem, Pennsylvania, Lackawanna, Scranton, Troy and Worcester mills. The Springfield and Indianapolis mills were not represented, while the Cleveland mill sent a proxy. The meeting was thus a full one. No business of great importance was transacted. Matters are still left to the arrangement of the Board of Control. Except a few slight changes in percentages, the proportionate allotments to the different mills are unchanged. Some mills not at work, or not wishing orders at present prices, allowed part of their allotments to go to other mills which were willing to take the orders at current rates. It

IMPORTS AND EXPORTS OF METALS AT NEW YORK AUGUST 2 TO AUGUST 4, AND FROM JAN. 1.

IMPORTS.

Spelter.	Week. Tons.	Year. Tons
American Metal Co., Lt.		247
Friedensville Zinc Co.		24
Hendricks & Bros.	28	56
Lewisohn Bros.		33
Naylor & Co.		131
Osgood, F.		83
Perkins, C. L.		725
Pope's Sons & Co.		28
Total	28	1,326
Corres. date 1887	20	2,238
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.		148,316
Total		148,316
Antimony.	**Casks.**	**Casks.**
Total	30	1,850
Corres. date 1887.	57	2.320
Pig Lead.	**Tons.**	**Tons.**
Caswell, E. A.		46
N. Corwith & Co.		111
Hendricks Bros.		100
Total		257
Corres. date 1887	200	1,053
Tin.	**Tons.**	**Tons.**
Abbott & Co., Jere.		3,448
American Metal Co.		182
Birdwell & French		89
Crooke S. & R. Co.		131
Davol & Sons		8
Dickerson, Van Dusen		10
Funch, Edye & Co.		10
Hendricks Bros.		112
Knauth, W. & K.		21
Lewisohn Bros.		15
Muller, Schall & Co.	157	3,741
Naylor & Co.		1,014
Phelps, Dodge & Co.		503
Pope's Sons & Co		124
Schwarer Bros.		7
Thomsen & Co., A. A.		6
Thomson & Co., D.		181
Total	157	9,592
Corres. date 1887	162	6,931
Tin Plates.	**Boxes.**	**Boxes.**
American Metal Co.		301
Bridge & Beach Mfg. Co.		339
Bruce & Cook	3,730	69,095
Byrne, James	975	18,271
Central Stamping Co.	2,004	22,202
Coddington & Co., T. B.		98,734
Corbierre, Fellows & S.		1,749
Cort & Co., N. L.	1,801	70,185
Cons. Fruit Jar Co.		849
Crooks & Co., Robert	971	40,072
De Mill & Co., H. R.		13,433
Dickerson, Van Dusen	3,027	161,477
Dolly, T. G. F.		112
Iron Clad Mfg. Co		119
Lalance & Grosjean	1,104	2,560
Lombard, Ayres & Co.		12,568
Merchant & Co	594	12,108
Mersick & Co., C. S.	200	4,342
Morewood & Co., G.		26,089
Naylor & Co.		8,899
Newall Bros.		158
Phelps, Dodge & Co.	2,196	401,080
Potts, W. A., Son & Co.		573
Pratt Mfg Co.	1,098	99,430
Saunders Bros.		330
Shepard & Co., Sidney	557	72,256
Stroud & Co		686
Taylor, N. & G.		295
Thomsen & Co., A. A.	5,145	85,800
Warren & Co		1,665
Wheeler & Co.	1,006	3,853
Whittemore & Co., H.		39,046
Wolff & Reesing		20,352
Wright & Sons, Peter		165
A. M. Underhill		21
Total	24.408	1,292.413
Corres. date 1887	52.944	1,216,566
Pig-Iron.	**Tons.**	**Tons.**
Abbott & Co., Jere		600
Austin, B. & Co		100
Baldwin Bros. & Co.		100
Bartlett & Co., N. S.		3,400
Crocker Bros.		7,000
Crooks & Co., R.		700
Dana & Co.	200	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.		901
Naylor	928	4,797
Pierson & Co.		15
Page, Newell & Co.		13
Sanderson & Sons.		2
Stetson & Co., G. W.	200	10,757
Tonsila, M. R.		120
Walbaum, W. H.		200
Williamson & Co., Jas.		2,800
Total	628	34,166
Corres. date 1887	3,606	96,908

Copper.	Week. Pounds.	Year. Pounds.
Lewisohn Bros. from Liverpool	50,000	161,824
Steel Sheets, Billets, Forgings, etc.	**Tons.**	**Tons.**
Abbott & Co., Jere.		1,768
Arkell, Jas		17
Belcher, H. U.		11
Bowker, C. F.		231
Bruce & Cook		7
Carey & Moen		24
Carter, G. T.		273
Cohn, M		129
Cooney, D. J.		20
Crooks, R. & Co.		682
Crousbey, H.		236
Dana & Co.		253
Downing & Co., R. F.		246
Henderson Bros.		31
Holt, H. N.		6
Hondolette & D.		106
Hugill, Chas.		131
Lalance & G. Mfg. Co.		245
Lazard Freres.		50
Leng, J. S.		20
Lebenberg, N.		36
Littlejohn, Jas.		40
Lundberg, G.		100
Mersick & Co.		124
Milne & Co., A.		1,085
Montgomery & Co.		52
Moore's Son & Co.		25
Muller, Schall & Co.		5
Manas, J. & Son		10
Naylor & Co.	4,585	10,249
Newton & Shipman	5	50
Ogden & Wallace		241
Phelps, Dodge & Co.		3
Phœnix Steel Co		20
Pierson & Co.	23	694
Pilditch, F. S.		198
Power, C. W.		47
Prosser, Thomas		2,137
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.		778
Walbaum, W. H.		2,479
Walschid, C. A.		
Wallace, W. H & Co.		41
Webb, J. B		1
Wheeler & Co., E. S.		12
Whiting, E. W.		11
Whitney & Co.		27
Wilson, J. G.		10
Whittemore & Co		6
Wetherill & Co		2
Wolff, R. H.		162
Wright's Sons & Co.		10
Total	4,613	23,862
Corres. date 1887	1,246	52,879
Bar-Iron.	**Tons.**	**Tons.**
Abbott & Co., Jere		1,886
Abeel Bros.		3
Bacon & Co.		13
Downing & Co.		139
Jacobus, E. Y.		12
Lilienberg, N.		5
Lundberg, Gustaf		449
Milne & Co., A.		95
Naylor & Co.	51	76
Ogden & Wallace		4
Page, Newell & Co.		122
Philip, C. M		20
Wallace & Co., W. H.		16
Wilson, J. G.		7
Totals	51	2,847
Corres. date 1887	363	8.182
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		535
Cohn, M.		60
Dana & Co.	500	2,318
Downing & Co., R. F.		192
Galpin, S. A.		2,122
Heyn, A.		1,689
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.		13,557
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	26
Wolff & Co., R. H.		1,861
Total	526	35,786
Corres. date 1887	1,571	76.701

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		1,012
Stetson & Co., Geo. W.		230
Waltam & Co.		300
Winter & Smillie		80
Total		5,541
Corres. date 1887	892	108,602
Sheet Iron.	**Tons.**	**Tons.**
Coddington & Co.		1,305
Newton & S.		4
Wagner, W. F.		40
Whitney & Co.		5
Total		1,354
Corres. date 1887.	40	1,238
Scrap-Iron.	**Tons.**	**Tons.**
Bowring & Archibald.		10
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		1 648
Corres. date 1887	316	14.011
Charcoal Iron.	**Tons.**	**Tons.**
Abbott & Co., Jere.		3
Bacon & Co		102
Downing & Co.		25
Luuberg, G.		16
Mersick & Co.		70
Milne & Co.		15
Muller, Schall & Co.		11
Naylor & Co.		9
Page, Newell & Co.		307
Sanderson & Son		1
Total		647
Spiegeleisen.	**Tons.**	**Tons.**
Abbott & Co., Jere.		205
Arkell, Jas.		78
Crocker Bros.	745	2,347
Dana & Co.	200	651
Geisenheimer & Co.	25	228
Jansen, J. A.		10.293
Naylor & Co.	200	7,767
Perkins, C. L.		2,443
Pierson & Co.		1,035
Total	1,170	25,047
Corres. date 1887.	761	64,910
Iron Ore.	**Tons.**	**Tons.**
Cormack & Co.		1,022
De Flores, R.	710	7,478
Earnshaw, A.	443	5,567
Ennis & Co		1,721
Johnston & Co		300
Naylor & Co.		3,706
Wright, Chas. L. & Co.		1,630
Total		21,370
Corres. date 1887	200	28,618

EXPORTS.

Copper.	Week. Pounds.	Year. Pounds.
Abbott & Co		8,434,475
Amer. Metal Co		4,968,72
Becker, & Co., H.		1,250
Bridgpt. Copper Co		112,000
Copper Queen		224,034
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.		349,881
Parsons & Co.		206,250
Phelps, Dodge		230,664
Pope's Sons		1,282,530
Todd & Co.		112,026
Total		25,933,787
Corres. date 1887.		7,952,809
Copper Matte.		
Abbott & Co		601,145
Amer. Metal Co.,	120,000	3,035.600
Ledoux & Co.		469,720
Lewisohn Bros.		1,126,822
Nichols & Co.		516,785
Wilm's, Terhune.		34,876,048
Total	120.000	40,626,118
Corres date 1887.		22,196,361
Old Copper.		
Burgass & Co.		51,221
Total		51,221

CURRENT PRICES.

CHEMICALS.

Acid—Acetic.....2¾@2¾
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°, ℔ ℔.....4
20°, ℔ ℔.....5
22°, ℔ ℔.....6¾
26°, ℔ ℔.....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, ℔ ℔.....5@6c.
Hard, ℔ ton.....$28.00
Trinidad, refined, ℔ ton.....$30.00
Barytes—Sulph., Am. prime white16.00
Sulph., foreign, floated, p. ton...19.00
Sulph., off color, p. ton.....12.50
Carb., lump, f.o.b. L'pool, ton..£8 0 0
No. 1, casks, Runcorn " "£4 10 10
No 2. bags, Runcorn " " 3 15 0
Bleach—Over 35 p.c., ℔ lb.1.82½@1.95
Borax—Per lb.....7¾
R-fined at Liverpool, per ton.....£31
Brimstone—*See Sulphur.*
Bromine—Per lb.....36
Cement—Rosendale, per bbl.....1.00
Portland, American, per bbl.....2 00
Portland, foreign, per bbl.....2 25
Chalk—Per ton.....3.00
Precipitated, per lb.....4
China Clay—English, per ton....18.50
Southern, per ton.....13.50
Chrome Yellow—Per lb.....8
Cobalt—Oxide, per lb.....270
Copper—Sulph. English Wks.,ton£23
Precip., Eng. Wks, unit...fluctuating
Copperas—Common, per 100 lbs.$ 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.....14.09
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.....6¼
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, ℔ ℔.....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 ℔...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.....10¼
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.....6¾@7
* Spot.

BUILDING MATERIAL.

Bricks—Pale, per 1,000.....2.50@2.75
Jerseys, per 1,000.....4.75@5.75
Haverstraw, per 1,000.....4.75@6.25
Front bricks, per 1,000, from.14.00
Building Stone—Amherst freestone, per cu. ft., from..95@1.00
Brownstone, per cu. ft., from. 1.10@1.35
Granite, rough, ℔ cu.ft., from 45
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. 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
Cæsium—(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
Nioblum—(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.....27.00
Tungsten—(Metallic) per oz.....1.25
Vanadium—(Metallic), per oz..320.00
Ytrium—(Metallic), per oz....144.00
Zirconium—(Metallic), per oz..240.00

METALS.

Aluminum—
Bronze (10 %), ℔ lb.....46c.
Copper—
Lake Ingot, Spot, ℔ lb....16·70@16·80c.
Electrolytic, ℔ lb.....16·25c.
Casting Brands, ℔ lb.....15⅝@15·50c.
Chili Bars, London, ℔ ton.....£81 15s.
Sheet Copper (according to size), ℔ lb.....25 @38c
Lead—
Domestic, Common, Spot..4.35@4·40c.
Foreign.....4.60@4 65c.
Sheet, ℔ lb, net.....6.75@6·80c. net
Pipe, ℔ lb.....6¾c. "
Tin lined Pipe, ℔ lb.....12c. "
Shot, ℔ lb.....6½@ 7¼c
Tin—
Tin Plates.....14s. 6d.
Tin Spot in London.....£94 17s. 6d.
Pig tin, spot in N. Y., ℔ lb..21·75c.
Zinc—
Domestic spelter, ℔ lb....4·65@4·71c.
Foreign spelter, ℔ lb....5·40@5·50c.
Silesian, ton.....£17
Sheet, American, ℔ lb.....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 TSEEL.
New York Prices.

American Pig-Iron.—At tidewater.
No. 1 X.....$17 50@$18.50
No. 2 X.....$17.00@ 17 50
Forge.....$16.00@.....
Scotch Pig—Coltness...$20.00@$20.25
Clyde.....18.50@.....
Dalmellington.....18 50@.....
Summerlee.....19.50@ 20.00
Shotts.....19 50@ 20.00
By Cable to-day to the Metal Exchange :
Scotch Warrants.....39s. 1d.
Coltness, at Glasgow.....48s. 0d.
Langloan, at Glasgow.....45s. 0d.
Summerlee, at Glasgow.....48s. 0d.
Gartsherrie, at Glasgow.....45s. 0d.
Glengarnock, at Ardrossan.....43s. 6d.
Dalmellington, at Ardrossan.....40s. 6d.
Eglinton, at Ardrossan.....39s. 6d.
Bessemer Pig—
Foreign, nominally.....$19.00
Domestic.....16@17.50
Spiegeleisen—
German, 20 per cent.....$26
English, 20 " " 27.00
" 30 " " .....$31.00@ 31.50
Ferro Manganese, 80%.....49.00@ 50.00
Steel Blooms, nominally.....
Steel Billets, " 28 50@ 29.00
Steel Nail Slabs, " 29 50@.....
Steel Wire Rods, " 40.00@ 40.50
Steel Rails—
Heavy sections, at mill....$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.....2·1 @2·2c.
Beams and Channels, on wharf, 3·3c. base.
Steel Plates—
Tank and Ship, on wharf.....2 25@2·4
Boiler 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 tank, on wharf.....2·1@2 3c.
Boiler shell, " .....2·1@2 3c.
Boiler flange, " .....3·50@3 75
Extra flange, " .....3¼@3½
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.....4½@c
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 @2·1c.delv'd
Angle Fish-bars.....1·8 @1·9c.
Bolts and Sq. Nuts.....2·7 @2·8c
" Hex. " .....3 @
Wrought Scrap—
Foreign, *ex store*.....$19.00@
No. 1 Yard *to vessel*.....19.00@
Cast Scrap.....15.50@ 16.50
Old Car Wheels.....18 00@
Old Rails—Iron.....21.00@ 21.25
—Doubles.....@
Nails—In car-load lots..1 90@1·95c.
—From store.....2·00@2·05c.

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.....$16.50@17.00
Foundry No. 2.....15.50@16.00
Gray Forge No. 3.....14.50@14.75
" " No. 4.....14.00@14.25
White.....13.50@14.00
Mottled.....13.50@14.00
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.....26.50@27.00
Steel Blooms.....28.50@.....
Steel Slabs.....28 50 at works
Steel Crop Ends.....18.00@18 50
Steel Bloom Ends.....17 50@17.75
Ferro Manganese, 80%.....51.00@.....
Steel Billets.....28.50@28.75 at works
Old Iron Rails.....21.00@21.50
Old Steel Rails.....19.00@.....
No. 1 W. Scrap.....18 00@19.00
No. 2 W. Scrap.....17.00@17.50
Steel Rails.....*31.50@32.00
" light sections.....*32.00@33.00
Bar Iron, nominal.....1.75@ 1.85
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@22.50
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@ 2.20
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	1.70@1.75
Balt. & N. C.....	.35	.40@.45
Big Vein Coal..	...	...
Conrad Hill . ..	.07@.10	.15
Diamond Tunnel	...	...
George's Crk. C.	100½@101	103¼
Lake Chrome..	.05	.10
N. State, Balto..	.20	....
Ore Knob.....	.03	.09@ .11
Silver Valley....	.85@ 88	1.00@1.25

Highest and lowest prices bid and asked during the week ending August 9th.

Birmingham, Ala.

COMPANY.	Bid.	Asked.
Ala. Conn. C..	....	25
Bir.Min.& Mfg.	...	190 @192½
Bir.Fur. & Mg.	...	18½@ 22½
Broken Arrow C. & M.. ...	†15¼	15½
Decat. L. Imp. & Fur.....	13¼@12	14¼
DecaturMin.L.	....	26
Enterprise Mfg Co	35	50
Jagger-Townley C & C.Co.	....	11
Mag-Ellen C. & Mg	50	...
No Bus. Crk., C. & Mg.....	5	7½@ 12½
Pioneer M. & Mfg	....	....
Sloss I. & S. .. 12	@13	13¾@ 14¼
* Sloss I. & S..	76	78½
Sheffield C. & I. 84	@89	104½@105
Tenn.C.& I. Co.	27	....
*Williamson Iron Co....	98¾	....
WoodstockS&I 49¼@50		53¼@ 55

* Bonds. † Bid aft r last offer.

Highest and lowest prices bid and asked during the week ending August 4th.

Pittsburg, Pa.

COMPANY.	H.	L.	Closing
Allegheny Gas..	35 00	35.00	35.00
Bridge water Gas..	74.00	74.00	74.00
Charlotte Mg. Co..	....	....	....
Chartiers Val. Gas.	54.00	53.00	54.00
Columbia Oil Co..	3.88	3.25	3.75
Consignee Mg. Co.	.....	....	.....
Forest Oil Co....	.....	.....	. . .
Gogebic Iron Syn..	.....	.... .	.....
Iron City Mining..	.....	.....	.....
Kittanning Gas...	.....	.....	.....
La Noria Mining ..	.....	1.88	2.25
Lustre Mining.....	....	....	....
M'f'turers' Gas....	25.00	24.75	25.00
Nat.G.Co.of W.Va.	60.00	60.00	60.00
N. Y. & C. Gas Coal	31.00	30.00	31.00
N. Y. & Westmoreland G , C. & C..	.....	.....	.....
Ohio Valley Gas ..	.....	.....	.....
Pennsylvania Gas.	20.00	20 00	20.00
People's Nat. Gas.	....	....	....
Philadelphia Gas..	45.38	43.50	45.13
Pine Run Gas.....	....	....	....
Pittsburg Gas.....	60.00	60.00	60.00
Royal Gas.....	.....	.....	... ..
Silverton Mining..	....	.....	.....
South Side Gas..	....	....	....
Tuna Oil Co.....	62.00	55.00	57.00
Washington Oil...	50.00	47.00	47.00
W't'h'se Air-Brake	....	....	....
West'house Brake	60.00	60.00	60.00
Westmoreland & Cambria Gas..	.....	.....	.....
Wheeling Nat. Gas.	27.25	26.50	27.00
Yankee Girl Mg...	.....	.....	.....

Highest and lowest prices bid and asked during the week ending August 1st.

Foreign Quotations.

	London. Highest.	July 27. Lowest.
COMPANY.		
Alturas Gold, Idaho...	15s.	13s.
Arizona Copper, Ariz..	15s. 6d.	15s.
Bird'seye Creek, Cal..	6s.	5s.
Carlisle, N. Mex	17s. 6d.	16s. 6d.
Centennial, Cal.	7s. 6d.	5s.
Colorado United, Colo..	5s.	4s.
Columbian, S. A.....	35s.	30s.
Denver Gold, Colo.....	1s.	6d.
Dickens Custer, Idaho.	7s.	6s.
Eberhardt, Nev	....	....
El Callao, Venezuela....	£2¼	£1¾
Empire, Mont	21s. 3d.	18s. 9d.
Flagstaff, Utah.....	3s. 6d.	2s. 6d.
Garfield, Nev.....	16s. 3d.	13s. 9d.
Gold Hill, N. C.....	2s.	1s.
Idaho.....	14s. 6d.	13s. 6d.
Ilex, Cal.....	17s.	15s.
Josephine, Cal	7s. 6d.	5s. 6d
Kohinoor, Colo.....	2s. 6d.	1s. 6d.
Lady Franklin N. Mex .	6s.	4s.
Mason & Barry, Portugal	£9½	£8⅞
Montana Lt., Mont	£1 11-16	£1 9-16
New California, Colo...	5s. 6d.	3s.
New Emma, S., Utah...	6s.	5s.
New Hoover Hill, N. C.	2s.	1s.
New La Plata, Colo...	2s. 6d.	1s. 6d.
Pittsburg Cons., Nev...	27s. 6d.	22s. 6d.
Plumas Eureka, Cal....	£1	£15-16
Quebrada, Venezuela...	£4¾	£4¼
Richmond Con., Nev...	£4⅛	£3⅞
Ruby&Dunderberg,Nev	3s. 6d.	2s. 6d.
Russell Gold, N. C.....	4s.	3s.
Sierra Buttes, Cal....	£⅝	£½
Stanly, N. C.....	7s. 6d.	5s.
Tolima, Colombia, S.A.	£2½	£1¼
Union Gold, Colo.....	2s.	1s.
U. S. Placer, Colo.....	£27-40	£5/6
Viola Lt., Idaho	£1	£¾
	*Paris.**	July 26.
El Callao.....	55.00	55.00
Golden River.....	405	405
Lexington.....	80	80
" parts.....	3.75	3.75
Rio Tinto.....	498.75	498.75
" obligations...	501.25	501.25
" " 2d.	498.75	498.75
Tharsis	135	135

* Francs.

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. 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	1886	.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..	16,000,000	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	Big B'nd Hydraulic, G	Dak..	1,000,000	200,000	5	*				258,000	Aug.	1887	.03
13	Black Bear, G	Cal..	3,000,000	30,000	100	22,500	Dec.	1884	.25	895,000	May	1883	.20
14	Bodie Con., G. S.	Cal..	10,000,000	100,000	100	450,000	Feb.	1888	.50	1,295,000	Apl.	1885	.50
15	Bonanza Developm't	C & M	3,000,000	300,000	10					135,000	Oct.	1882	.15
16	Bonanza K'g, Cons. S.	Cal..	1,000,000	100,000	10	*				185,000	Feb.	1885	.10
17	Boston & Mont, G	Mont	2,500,000	250,000	10	*				520,000	Jun	1886	15
18	Boston & Mont., C. S	Mont	2,500,000	100,000	25	*				200,000	July	1888	2.00
19	Breece, S	Colo.	,000,000	200,000	25	*				2,000	Feb	1880	.01
20	Brooklyn Lead, L. S	Utah	500,000	50,000	10					127,000	July	1887	.05
21	Bulwer, G	Cal	10,000,000	100,000	10	80,000	May	1888	20	175,006	Jan.	1884	.10
22	Caledonia, G	Dak	10,000,000	100,000	100	505,000	May	1885	.15	40,000	Feb	1886	.10
23	Calumet & Hecla, C	Mich	2,500,000	100,000	25	1,200,000				30,850,000	Sept	1888	5.00
24	Carbonate Hill, S. L.	Colo.	2,000,000	200,000	10	*				80,000	Apl	1884	.05
25	Caribou Con., S	Colo.	1,500,000	150,000	10	*				50,000	Mch	1880	.10
26	Castle Creek, G	Idah.	100,000	100,000	1					51,000	Oct..	1883	.03
27	Catalpa, S. L	Colo.	3,000,000	300,000	10	*				270,000	May.	1884	.10
28	Central, C	Mich	500,000	20,000	25	100,000	Sept	1861	.06	1,890,000	Aug	1888	1.50
29	Christy, S.	Utah	10,000,000	100,000	100					10,000	Jun	1885	.10
30	Chrysolite, S. L.	Colo.	10,000,000	200,000	50	*				1,650,000	Dec	1884	.25
31	Colorado Central, S. L	Colo.	2,750,000	275,000	10	*				323,750	Aug	1888	.05
32	Confidence, S. L	Nev..		24,960	...	287,440	Apl.	1887	.50	149,760	July	1888	2.00
33	Cons. Cal. & Va., G S.	Nev.	21,600,000	216,000	100	108,000	Jan.	1885	.20	2,116,800	Aug.	1888	.50
34	Con. Gold Mining, G.	Ga...	500,000	100,000	5	*				108,000	Nov.	1888	02
35	Contention, S	Ariz.	12,500,000	250,000	50					†2,587,000	Dec.	1884	.25
36	Crescent, S. L. G.	Utah	15,000,000	600,000	25					210,000	Aug.	1886	.05
37	Crown Point, G. S.	Nev..	10,000,000	100,000	100	2,775,000	Apl.	1888	.50	11,588,000	Jan	1875	2.00
38	Daly, S. L.	Utah	3,000,000	150,000	20					675,000	July	1888	.25
39	Deadwood-Terra, G..	Dak..	5,000,000	200,000	25	*				§1,000,000	Nov.	1887	.10
40	Derbec B. Grav., G. S.	Cal..	10,000,000	100,000	100	90, 0	Dec.	1881	.10	180,000	May	1887	.10
41	Dunkin, S. L.	Colo.	5,000,000	200,000	25	*				335,000	July	1888	.05
42	Eclipse	Colo.	100,000	100,000	1					20,000	Nov	1887	.10
43	Elkhorn, G. S.	Mont	1,000,000	100,000	10	50,0	July	1883	.50	170,000	July	1887	.05
44	Empire Lt., G	Mont	500,000	100,000	5					7 ,500	Oct	1887	.37½
45	Eureka Con., G. S. L.	Nev..	5,000,000	50,000	100	600,000	July	1886	1.00	4,918,500	July	1888	.25
46	Evening Star, S. L.	Colo.	500,000	50,000	10	*				1,400,000	Nov	1883	.50
47	Excelsior, G	Cal..	10,000,000	100,000	100	560,000	Sept	1885	1.00	875,000	Oct.	1880	.25
48	Father de Smet, G.	Dak..	10,000,000	100,000	100	200,000	Nov	1878	1.00	1,125,000	Dec.	1885	.20
49	Franklin, C	Mich	1,000,000	40,000	25	220,000	Jun.	1871		720,000	July	1888	2.00
50	Freeland, G. S. C.	Colo.	5,000,000	200,000	25	*				190,000	July	1886	.10
51	Fresno Enterprise, G	Cal..	5,000,000	100,000	50		Mch	1883	.10	110,000	July	1882	.10
52	Garfield Lt., G. S	Nev	500,000	100,000	5					85,000	Apl	1888	.12½
53	Golconda, G. S.	Idah.	1,000,000	100,000	10					120,000	May	1888	.60
54	Gould & Curry, G. S.	Nev.	10,800,000	108,000	100	5,301,000	Jun	1888	.50	3,826,800	Oct	1870	10.00
55	Grand Central, S.	Ariz.	1,000,000	100,000	10					625,000	Dec.	1882	.25
56	Grand Prize, S	Nev.	10,000,000	100,000	100	570,000	Apl.	1886	.50	495,000	Mar.	1884	.25
57	Granite, S	Colo.	125,000	125,000	1					6,250	May	1883	.01
58	Granite Mountain, S.	Mont	10,000,000	400,000	25					4,500,000	July	1888	.25
59	Green Mountain, G	Cal..	1,250,000	125,000	10	*				212,000	Nov.	1881	.07½
60	Hale & Norcross, G. S	Nev..	11,200,000	112,000	100	5,086,000	July	1887	.50	1,822,000	Aug.	1888	.50
61	Hall-Anderson, G	N. S.	150,000	150,000	1					7,000	Jan	1882	.05
62	Hecla Con., S. G. L. C.	Mont	1,500,000	30,000	50					1,182,500	July	1888	.50
63	Hel'a Mg & Red, G. S. L	Mont	3,315,000	663,000	5	*				197,97	July	1886	.06
64	Holmes, S	Nev..	10,000,000	100,000	[illegible]	300,000	Sept	1885	10	75,000	Apl.	1886	.25
65	Holyoke, G	Idah.	200,000	200,000	1					27,000	Feb	1883	.10
66	Homestake, G	Dak.	12,500,000	125,000	100	200,000	July	1878	1.00	4,168,750	July	1888	.20
67	Honorine, S. L.	Utah	500,000	250,000	2	25,000	Jun.	1883		125,000	Sept	1887	.05
68	Hope, S	Mont	1,000,000	100,000	10	*				233,252	Apl.	1888	.25
69	Horn-Silver, S. L.	Utah	10,000,000	400,000	25	*				4,000,000	Nov	1884	.50
70	Hubert, G	Colo.	500,000	50,000	10	*				234,000	July	1888	.08
71	Idaho, G	Cal..	310,000	3,100	100					4,943,500	Aug.	1888	10.00
72	Ideal, S. L.	Colo.	1,500,000	50,000	10					15,000	Oct.	1886	.05
73	Illinois, S	N. M.	100,000	100,000	1	*				25,000	Jan.	1887	.25
74	Independence, S	Nev..	10,000,000	100,000	100	340,000	Oct.	1886	.20	225,000	Sept	1879	.25
75	Indian Queen, S	Nev..	250,000	125,000	2					368,750	July	1883	.03
76	Iron Hill, S	Dak.	2,500,000	250,000	10	111,250	Jun	1888	.04	156,250	Nov.	1887	.07½
77	Iron-Silver, S. L	Colo.	10,000,000	500,000	20	*				2,300,000	July	1888	.20
78	Jackson, G. S	Nev	5,000,000	50,000	100	10,000	Nov	1880	.20	45,000	Oct.	1886	.10
79	Jay Gould	Mont	2,000,000	4 ,000	5	*				267,000	Jun.	1888	.09
80	Jocuistita, S	Mex.	2,500,000	250,000	10					1,200,000	Feb.	1885	.50
81	Jumbo, G	Colo.	2,000,000	200,000	10					35,000	Oct.	1887	.02½
82	Kentuck	Nev..	3,000,000	30,000	100	342,000	Nov	1881	.30	1,350,000	Dec.	1886	.10
83	La Plata, S. L.	Colo	2,000,000	200,000	10	*				610,000	Sept	1882	.30
84	Leadville Cons., S. L. L	Colo	4,000,000	400,000	10	*				423,000	Apl	1887	.05
85	Lexington, G. S.	Mont	4,000,000	40,000	100	*				565,000	Jan.	1885	2.00
86	Little Chief, S. L	Colo.	10,000,00	200,000	50	*				800,000	July	1888	.10
87	Little Pittsburg, S. L	Colo.	20,000,000	200,000	100	*				1,050,000	Mch.	1880	50
88	Manhattan, S	Nev	5,000,000	50,000	100	250,000	Dec	1887	1.00	437,500	Feb	1886	.25
89	Marion Bullion, G	N. C	500,000							15,000	Jan.	1886	
90	Martin White, S	Nev.	10,000,00	100,000	100	1,150,000	Mar.	1886	25	140,000	Dec.	1886	.25
91	Mary Murphy, G. S.	Colo.	350,000	3,500	100	*				122,500	Feb.	1888	5.00
92	Minnesota, C	Mich	1,000,000	40,000	25	420,000	Apl	1886	1.00	1,820,000	Mar.	1876	
93	Mono, G.	Cal.	5,000,000	50,000	100	616,000	Sept	1887	.50	12,500	Mar.	1886	.25
94	Montana, Lt., G. S.	Mont	3,300,000	660,000	5	*				2,010,96	Apl.	1888	.25
95	Morning Star, S. L.	Colo.	1,000,000	100,000	10					775,000	Mar.	1888	.25
96	Moulton, S. G.	Mont	2,000,000	400,000	5	*				380,000	Dec.	1887	.07½
97	Mount Pleasant, G	Cal.	150,000	150,000	1	*				150,000	Feb.	1887	.30
98	Mt. Diablo, S	Nev	5,000,000	50,000	100	137,500	Jun.	1880	2.00	110,000	July	1888	.20
99	Napa, Q	Cal..	700,000	100,000	7					290,000	Jan.	1883	.10
100	Navajo, G. S	Nev..	10,000,000	100,000	100	505,000	Aug.	1888	.20	325,000	Feb.	1885	.25
101	N. Hoover Hill, G. S.	N. C.	300,000	120,000	2½	*				30,000	Dec.	1885	.06¼
102	Northern Belle, S	Nev..	5,000,000	50,000	100	425,000	Jan.	1884	8.00	2,400,000	Apl.	1883	50
103	North Belle Isle, S.	Nev..	10,000,000	100,000	100	250,000	Mar	1887	.50	230,000	May	1888	.50
104	Ontario, S. L.	Utah	15,000,000	150,000	100					9,350,000	July	1888	.50
105	Ophir, G. S	Nev..	10,000,000	100,000	100	4,059,440	Aug	1887	.50	1,595,800	July	1882	1.00
106	Original, S. C.	Mont	1,500,000	60,000	25	*				120,000	Apl	1888	.05
107	Osceola, C	Mich	1,250,000	50,000	25	480,000	Apl.	1876	1.60	1,122,500	Jun	1888	1.00
108	Oxford, G	N. S.	125,000	125,000	1	*				33,500	Oct.	1885	.02
109	Paradise Valley, G. S	Nev.	10,000,000	100,000	100	62,000	Apl	1888	.15	150,000	Apl	1887	.10
110	Parrott, C	Mont	1,800,000	180,000	10					210,000	July	1888	.20
111	Peacock, S. G. C.	N. M.	2,000,000	200,000	10	*				60,000	Nov.	1886	
112	Pleasant Valley, G. S.	Cal..	10,000,000	100,000	100	10,000	Mar.	1884	.10	30,000	Dec.	1882	.05
113	Plutus, G. S. C. L	Colo.	2,000,000	200,000	10	*				20,000	Feb.	1886	.10
114	Plymouth Con., G	Cal..	5,000,000	100,000	50	*				2,280,000	Feb	1888	.40
115	Prussian, S. L.	Colo.	1,500,000	150,000	10					132,000	Jan	1883	.10
116	Quicksilver, pref., Q	Cal..	4,300,000	43,000	100					1,417,692	July	1888	1.50
117	" com., Q.	Cal..	5,700,000	57,000	100					131,00	July	1882	.40
118	Quincy, C	Mich	1,000,000	40,000	25	200,000	Dec.	1862		4,970,000	Aug.	1888	5.00
119	Richmond, S. L.	Nev..	1,350,000	54,000	25	*				4,312,537	Jun.	1887	1.25
120	Ridge, C	Mich.	500,000	20,000	25	219,939	Mar	1886	.50	99,785	Feb.	1880	.50
121	Rising Sun, S.	Dak..	750,000	150,000	5	*				52,000	May	1881	.07½
122	Robinson Con., S. L.	Colo.	10,000,000	200,000	50	*				585,000	Mar.	1880	.05
123	Robert E. Lee, S. L..	Colo	10,000,000	500,000	20					100,000	Dec	1882	.50
124	Rooks, G	Vt...	500,000	50,000	10	*				61,000	Apr	1885	.30
125	Savage, S	Nev..	11,200,000	112,000	100	6,380,000	Aug.	1888	50	4,460,000	July	1869	3.00
126	Security L. Mg., Mfg.	Colo	1,000,000	100,000	10	*				50,000	July	1884	
127	Shoshone, G	Idah.	150,000	150,000	1					7,500	Apl	1883	01
128	Sierra Buttes, G	Cal..	2,225,000	122,500	10					1,492,537	Apl.	1888	.12½
129	Sierra Nevada, G. S..	Nev..	10,000,000	100,000	100	6,125,000	July	1888	.25	102,000	Jan.	1871	1.00
130	Silver Cord, G. S. L..	Colo.	5,000,00	500,000	10					225,000	Nov.	1883	.25
131	Silver King, S	Ariz.	10,000,00	100,000	100	50,000	Jun.	1888	.50	1,950,000	July	1887	.25
132	Silverton, G. S. L.	Colo.	2,000,000	200,000	10	*				80,000	Nov	1886	.02
133	Small Hopes Cons., S	Colo.	5,000,000	250,000	20	*				3,112,500	Dec.	1887	.20
134	Smuggler, S. L.	Colo.	600,000	60,000	10					66,700	Aug.	1888	.25
135	Socorro, C	N. M.	250,000	2,500	100					4,000	Mch	1882	.00½
136	Spring Valley, G	Cal.	200,000	200,000	1	50,000	Oct.	1886	.25	50,000	Jan	1881	25
137	Standard, G. S	Cal..	10,000,000	100,000	100	25,000	Oct.	1884	.25	8,595,000	Jun.	1888	.05
138	Stormont, S	Utah	500,000	500,000	1	*				155,000	Nov	1881	.05
139	St. Joseph, L	Mo..	1,500,000	150,000	10	*				844,000	Dec	1887	.20
140	Surinam, G	D. G.	3,000,000	600,000	5					105,000	Nov	1887	.05
141	Swansea, G	Colo.	600,000	60,000	10	*				9,000	Apl.	1888	.02½
142	Syndicate, G	Cal..	10,000,000	100,000	100	38,729	July	1882	15	48,308	Sept	1885	.10
143	Tamarack, C	Mich.	1,000,000	40,000	2	520,000	Apl	1885	3.0	240,000	July	1888	3.00
144	Tip Top, S	Ariz	10,000,000	100,000	100	250,000	Sept	1883	.25	100,000	Nov.	1881	.20
145	Tombstone, G. S. L..	Ariz	12,500,000	500,000	25	*				1,250,000	Apl	1882	.10
146	United Verde, C	Ariz.	3,000,000	300,000	10	*				97,500	Feb.	1884	.20
147	Valencia, M	N. H.	150,000	1,500	100	*				37,500	Apl	1886	2.50½
148	Viola Lt., S. L.	Idah.	750,000	150,000	5	*				222,500	Dec.	1887	.12
149	Yankee Girl	Colo.	2,500,000	250,000	10					1,275,000	July	1887	.10
150	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	Shares. 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.	1888	.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	3,957,000	Aug.	1887	.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	1,264,000	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	1,400,00	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	18,000	July	1882	.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	G and Duke	Colo.	800,000	80,000	10				
64	Great Romance, G..	U. S. C	1,000,000	500,000	2	*			
65	Gregory-Bootail, 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..	1,000,00	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.	2,000,00	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	4 ,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	Mike & 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	50,00	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	1888	.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	1.00
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 19th, 1881, paid $1,4[illegible]0,000. ‡ Non-assessable for three years. § The Deadwood previously paid $275,000 in eleven dividends, and the Terra $[illegible]5,000. Previous to the consolidation in Aug., 1884, the [illegible] had paid $3[illegible],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 $1,350,000 in dividends.

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Aug. 4.		Aug. 6.		Aug. 7.		Aug. 8.		Aug. 9.		Aug. 10.		†SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Adams, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Alice, Mont	....	....	....	....	....	....	....	....	....	....	....	....	.....
Argenta, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Bassick, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Belcher, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Belle Isle, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Bodie Cons., Cal.	....	....	....	....	1.85	....	....	....	1.60	1.55	1.60	1.50	1,600
Breece, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Bulwer, Cal	....	....	....	....	....	....	.70	....	....	....	....	....	500
Caledonia, Dak	....	....	....	....	....	....	2.60	....	....	....	....	....	200
Central, Mich	....	....	....	....	....	....	....	....	....	....	....	....	.....
Chollar, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Chrysolite, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Colorado Cent'l, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cons. Cal. & Va., Nev.	9.38	....	9 00	....	7.88	....	....	....	....	....	7.50	....	760
Crown Point, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Deadwood, Dak.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Dunkin, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Eureka Cons., Nev	....	....	6 00	....	....	....	5.75	5.50	5.13	....	5.25	5.00	470
Father de Smet, Dak	....	....	.50	....	....	....	.50	....	.50	....	.45	....	900
Freeland, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Gould & Curry, Nev.	....	....	....	....	2.20	....	....	....	....	....	....	....	.....
Grand Prize, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	100
Green Mountain, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hale & Norcross, Nev	....	....	5.50	....	....	....	....	....	4 70	....	....	....	120
Holyoke, Idaho	....	....	....	....	....	....	.06	....	....	....	....	....	500
Homestake, Dak.	....	....	11 50	....	10.50	....	10.88	....	....	....	11.60	10.50	529
Horn-Silver, Ut.	....	....	.81	....	....	....	.80	....	....	....	....	....	600
Iron Hill, Dak.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Iron Silver, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Leadville C., Colo.	....	....	....	....	.20	....	....	....	.24	.20	.30	.29	3,950
Little Chief, Colo	....	....	....	....	....	....	....	....	....	....	.22	....	500
Little Pittsburg, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Martin White, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mono, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mount Diablo, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Navajo, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
North Belle Isle, Nev.	....	....	3 00	2.95	....	....	....	....	....	....	....	....	110
Ontario, Ut.	....	....	34.00	33.50	35.00	....	34.00	33.00	33.00	....	33.50	33.00	3,257
Ophir, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Plutus, Colo.	1.10	....	1.05	....	1.05	....	....	....	1.05	....	1.05	1.00	1,400
Plymouth, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Quicksilver Pref., Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
" Com., Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Robinson Cons., Colo.	.90	....	....	....	....	....	....	....	....	....	....	....	200
Savage, Nev.	2.85	....	....	....	....	....	....	....	2.20	....	....	....	200
Sierra Nevada, Nev.	....	....	....	....	....	....	....	....	2.60	....	....	....	100
Silver King, Ariz.	2 25	....	2.25	....	2.25	....	2.25	....	....	....	....	....	700
Silver Mg. of L. V.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Small Hopes, Colo.	....	....	....	....	1.00	....	....	....	....	....	....	....	200
Standard, Cal	....	....	....	....	....	....	....	....	....	....	1.20	....	150
Stormont, Utah	....	....	....	....	....	....	.05	....	....	....	....	....	100
Yellow Jacket, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Aug. 4		Aug. 6.		Aug. 7.		Aug. 8.		Aug. 9.		Aug. 10.		SALES
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alta, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Amador, Cal.	2.20	....	2.20	....	2.20	....	2.20	....	2.20	....	2.15	....	1,900
Am'can Flag, Colo.	....	....	....	....	....	....	.03	....	....	....	.03	....	400
Astoria, Cal.	.24	....	.25	.24	.25	.24	.25	....	.25	.24	.24	.24	7,700
Barcelona, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Bechtel Con., Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Best & Belcher, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Brunswick, Cal.	....	....	....	....	....	....	....	....	....	....	.12½	.11	300
Bullion, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Carupano, Venez.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cashier, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Castle Creek, Id.	....	....	....	....	....	....	.06	.05	....	....	....	.05	1,800
Cleveland, Dak.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Commonw'th, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Confidence, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Con. Imperial, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Con. Pacific	....	....	....	....	....	....	....	....	....	....	....	....	.....
Denver City, Colo.	....	....	....	....	....	....	.20	....	....	....	....	....	500
Eastern Oregon	....	....	....	.08	....	....	....	....	....	....	.02	....	2,500
El Cristo, U. S. Col.	1.10	....	1.00	.95	....	....	....	....	....	....	1.05	.95	1,800
Exchequer, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Found Treas'e, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hector, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hollywood, Cal.	.39	....	.40	.39	.40	.39	.39	....	.39	....	.40	.39	7,000
Huron, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Julia, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Kingst'n & Pemb'ke	....	....	....	....	....	....	....	....	....	....	....	....	.....
Kossuth, Nev.	....	....	....	....	....	....	2.75	....	....	....	....	....	150
Lactose, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Lee Basin, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mexican, Nev	....	....	....	....	....	....	2 90	....	....	....	2 25	....	150
Middle Bar, Cal.	.44	....	.44	....	....	....	....	....	....	....	.44	....	3,000
Monitor, Colo.	.11	....	....	....	.11	....	.10	....	.11	.10	.11	.10	2,800
N'th Standard, Cal	....	....	....	....	....	....	....	....	....	....	....	.11	100
Phœnix Lead, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Phœnix of Ark.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Potosi, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Proustite, Idaho	1.00	....	1.00	....	1.00	....	1 00	....	1 00	....	1.00	....	2,400
Rappahann'k, Va.	.11	....	.12	....	.11	....	.11	....	.11	....	.11	....	4,000
San Sebastian, S'n S	....	....	....	....	....	....	....	....	....	....	....	....	.....
Santiago, U. S. Col.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Scorpion, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
*Security, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Shoshone, Idaho	.13	....	.13	....	.13	....	.12	....	.12	....	.12	....	4,400
Silver Cliff, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver Cord, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver Queen, Ariz.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sutro Tunnel, Nev.	....	....	....	.09	.08	....	.08	....	.09	.08	.10	.08	2,800
Sutter Creek, Cal.	1.10	....	1.10	....	1.10	....	1.15	....	1.10	....	1.15	1.10	2,300
Taylor Plumas, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Tornado, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Union Cons., Nev.	....	....	2.70	....	....	....	....	....	....	....	....	....	100
Utah, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....

†Dealt in at the New York Stock Ex. Unlisted Securities Dividend shares sold, 16,876. Non-dividend shares sold, 54,100. Total New York, 70,976.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY	Aug. 3.		Aug. 4.		Aug. 6.		Aug. 7.		Aug. 8.		Aug. 9.		SALES.
Atlantic, Mich.	17.60	....	....	....	*17	....	....	....	....	....	....	....	120
Bodie, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Bonanza Developm't	1.69	....	1.75	1.69	1.75	1.69	....	....	1.63	....	1 63	....	1,300
Boston & Mont., Mont	....	....	....	....	....	....	....	....	....	....	....	....	.....
Breece, Colo.	32½	....	....	....	32½	....	....	....	.30	....	32½	....	1,400
Calumet & Hecla	270	268	275	274	*275	....	*274	273	274	273	....	....	173
Catalpa, Colo.	....	....	....	....	.21	....	.20	....	.21	....	....	....	750
Central, Mich.	....	....	20.00	....	....	....	....	....	....	....	....	....	50
Chrysolite, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Con. Cal & Va., Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Dunkin, Colo.	.90	.85	.90	....	*.90	....	.90	....	.89	*87½	*87½	....	1,650
Enterprise	....	....	....	....	....	....	....	....	....	....	....	....	.....
Eureka, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Franklin, Mich.	21.25	20.13	21.00	20.88	*21½	20.00	*21	....	20.75	20.63	20.50	19.50	3,475
Hale & Norcross, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Honorine, Utah	....	....	....	....	....	....	....	....	....	....	....	....	.....
Little Chief, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Little Pittsburg, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Martin White, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mono, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Napa, Cal.	....	....	....	....	1.75	....	2 00	1.89	1.88	....	....	....	800
Osceola, Mich.	....	....	21.50	....	*21½	21.00	*21½	....	21.25	....	21.00	....	495
Pewabic, Mich.	3 25	....	....	....	....	....	....	....	3.25	....	....	....	150
Quincy, Mich.	72.00	....	....	....	....	....	....	....	....	....	....	....	20
Ridge, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sierra Nev., Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver King, Ariz.	2.25	....	....	....	....	....	....	....	....	....	....	....	50
Standard, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Tamarack, Mich.	....	....	....	....	....	....	*164	163	*164	....	....	....	43

NAME OF COMPANY.	Aug 3		Aug. 4.		Aug. 6		Aug. 7.		Aug. 8.		Aug. 9.		SALES
Alloues, Mich.	2.63	....	2.75	....	2 63	2 13	2.63	....	2.63	....	2.50	....	1,000
Arnold, Mich.	.25	....	.25	....	....	....	....	....	....	....	....	....	400
Aztec, Mich.	.10	....	.12½	....	.12½	....	.12½	....	.12½	....	....	....	1,900
Bos. & Mont., Mont.	49.00	48.00	48.25	48.00	48.00	....	48.75	48.25	48.50	....	49.50	....	840
Brunswick, Cal.	....	....	....	....	....	....	.17	....	....	....	....	....	200
Contentment	....	....	....	....	....	....	300	....	....	....	....	....	500
Crescent, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cusi, N. Mex.	....	....	.10	....	....	....	....	....	....	....	....	....	500
El Cristo, U.S. Col	....	....	....	....	....	....	....	....	....	....	....	....	.....
Everett	....	....	.30	....	....	....	.30	....	.30	....	....	....	800
Hanover, Mich	....	....	....	....	....	....	....	....	....	....	....	....	.....
Humboldt, Mich.	....	....	....	....	....	....	....	....	.14	.12	....	....	200
Hungarian, Mich.	....	....	....	....	.20	....	....	....	....	....	.20	....	300
Huron, Mich.	6.00	....	6 00	....	....	....	....	....	5.50	....	5.25	5.00	660
Kearsarge, Mich.	6.75	....	....	....	6 75	....	6 25	....	....	....	6.50	....	50
Mesnard, Mich.	.80	.75	.75	....	.75	.70	.75	....	....	....	.70	.50	1,700
National, Mich.	3 50	....	3.50	....	3.13	3.00	....	....	3.25	....	....	....	510
Native, Mich.	....	....	12½	....	....	....	....	....	....	....	....	....	400
Oriental & M., Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Rappahannock, Va.	....	....	....	....	.11	....	....	....	....	....	....	....	600
Royal, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Security, Colo.	.06	....	....	....	....	....	....	....	....	....	.09	....	1,500
Shoshone Idaho	.14	....	13	....	13	....	13	....	.13	....	.13	....	1,200
South Side, Mich.	.25	....	....	....	....	....	....	....	....	....	.20	....	300
Sullivan	.36	.35	.34	....	.35	....	.35	....	.35	....	.35	....	1,110
Sutro Tunnel, Nev.	.09	....	....	....	....	....	....	....	....	....	....	....	400
Taylor Plumas, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Washington	....	....	....	....	....	....	....	....	....	....	....	....	.....
Winthrop, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....

*Ex dividend. † Assessment paid. Boston: Dividend shares sold, 10,258. Non-dividend shares sold, 15,610. Total Boston, 25,868.

COAL STOCKS.

NAME OF COMPANY.	Par val. of sh'rs.	Aug. 4.		Aug. 6.		Aug. 7.		Aug. 8.		Aug. 9.		Aug. 10.		Sales.
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Barclay Coal	....	†16	....	†16	....	†16	....	....	....	†16	....	....	....	.....
Buck Mt. Coal	....	*4	....	*4	....	*1	....	....	....	*4	....	....	....	.....
Ches. & O. RR.	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Chic. & Ind. Coal RR.	100	....	....	....	....	40	....	....	....	....	....	....	....	100
Do. pref.	100	89	....	....	....	....	....	....	....	....	....	....	....	100
Col. & Hocking Coal	100	....	....	25	23½	....	....	24½	24¼	24¼	....	24½	24	2,650
Col., C. & I	100	....	....	36¾	36½	36¾	36½	36⅞	36¾	37¾	37	....	....	3,360
Connellsville Gas Coal	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Consol. Coal	100	....	....	....	....	....	....	20	....	....	....	....	....	200
Del. & H. C.	100	....	....	116⅛	114¾	116	115¾	116	115⅞	116¾	116	118	116¼	9,593
D., L. & W. RR.	50	135¼	135⅛	137⅜	135⅝	137¼	136½	137	136	137¼	136½	138⅝	136⅝	108,133
Hocking Valley	100	25¼	....	25¾	....	26	....	26¾	26	27	26¼	26½	....	1,940
Hunt. & Broad Top	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Do. pref	....	....	....	39⅝	39½	39¾	39½	39½	....	....	....	....	....	1,106
Lehigh C. & N.	50	....	....	49	....	49½	49	....	....	....	....	....	....	403
Lehigh Valley RR.	50	53½	53¼	53½	53⅝	53½	53⅜	53⅛	53⅜	53⅛	....	....	....	726
Mahoning Coal RR	100	....	....	....	....	....	....	....	....	43	41	....	....	300
Do. pref	....	....	....	....	....	....	....	....	....	....	....	89	....	100
Marshall Con. Coal	100	....	....	....	....	14	....	....	....	....	....	....	....	100
Maryland Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Montauk Coal	50	....	....	....	....	....	....	....	....	....	....	....	....	.....
Morris & Essex	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
New Central Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
N. J. C. RR.	50	83¾	83⅝	84	83⅞	84¼	83¾	85¼	84	87⅛	85¾	88⅞	86⅝	59,145
N. Y. & S. Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
N. Y., Susq. & Western	100	....	....	9	....	9¼	9	9⅜	9¼	9⅛	9⅜	9¼	9⅜	3,440
Do. pref	100	....	....	....	....	32½	31⅜	32⅝	32¼	32⅜	32½	33¼	32¾	10,750
N. Y. & Perry C. & I.	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Norfolk & Western R.R.	100	....	....	19¼	....	19¼	19	....	....	....	....	....	....	220
Do. pref	50	50⅝	....	51	50¼	51¼	51	51	50⅝	51⅛	50¾	51	50¾	3,400
Penn. Coal	50	....	....	....	....	....	....	....	....	....	....	....	....	.....
Penn. Gas Coal	....	†49¼	....	†49¼	....	....	....	....	....	....	....	....	....	.....
Penn. RR.	50	54⅛	54⅛	54⅛	54⅜	54⅛	54⅜	54¼	....	54⅛	54⅛	....	....	4,023
Ph. & R. RR.**	50	64¼	64¼	65⅛	64⅛	66⅛	65⅛	66⅝	65⅞	67⅛	66¼	68⅛	67	235,809
Tennessee C. & I. Co.	100	28½	....	28¾	28⅝	28⅛	28¼	....	....	28½	28¼	....	....	1,000
Westmoreland Coal	100	†68	*67	68	....	†68	....	†68	....	†68	....	....	....	10
Whitebreast Fuel Co.	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Wyoming Valley Coal	....	†48	....	†46⅛	*45⅛	†46¼	*45⅛	†46¼	*45⅛	†46⅛	*45⅛	....	....	.....

*Bid. †Asked.
**Of the sales of this stock, 48,089 were in Philadelphia, and 187,520 in New York. Total sales, 446,417.

San Francisco Mining Stock Quotations.

COMPANY.	CLOSING QUOTATIONS. Aug. 3.	Aug. 4.	Aug. 6.	Aug. 7.	Aug. 8.	Aug. 9.
Alpha	....	....	....	....	....	.....
Alta	1.30	1.30	1.10	1.20	1.10	1.05
Belcher	....	....	....	....	....	.....
Belle Isle	....	....	....	....	....	.....
Best & Bel.	3.45	3.25	3.05	3.15	3.10	2.85
Bodie	1.60	1.65	1.55	1.60	1.50	1.50
Bulwer	.75	....	.65	.65	.60	.55
Challar	2.50	2.40	2 05	2.10	2.20	2.00
C'm'weal'h	....	....	4.25	4.20	4.25	4.25
Con. C. & V	8.75	8.62½	7.87½	7.87½	7.87½	7.25
Con. Pac.	....	....	....	....	....	.....
Crown Pt.	3.60	3.35	2.90	3.20	3.30	2.75
Eureka C.	....	....	5.50	5.25	4.90	.....
Gould & C.	2.80	2.65	2.30	2.45	2.40	2.25
Grd. Prize	2.10	....	....	1.70	1.80	1.05
Hale & N.	5.62½	5.25	4.80	4.95	*4.40	4.25
Mexican	3.00	2.85	2.65	2.75	2.55	2.40
Mono	1.15	1.25	1.00	1.10	.90	.90
Mt. Diablo	....	....	....	....	....	.....
Navajo	1.55	....	1.50	1.55	1.50	.....
Nev. Queen	5.12½	5.00	4.85	4.75	4.50	4.25
N. Belle I.	3.10	3.00	3.00	....	2.75	2.55
Ophir	5.50	5.50	4.95	5.00	4.75	4.50
Potosi	2.10	1.90	1.85	1.75	1.75	1.60
Savage	2.80	2.50	2.45	2.30	2.20	2.05
Scorpion	....	....	....	....	....	.....
Sierra Nev	2.60	2.65	2.25	2.30	2.20	2.15
Sutro Tun.	....	....	....	....	....	.....
Tip Top	....	....	....	....	....	.....
Union Con.	2.90	....	2.55	2.60	2.50	2.35
Utah	1.15	1.10	1.05	1.10	1.05	1.05
Yellow Jkt.	3.60	3.50	3.35	3.35	3.40	2.80

* Ex-dividend.

was generally understood that, unless there is a brisker demand in the near future, the outputs will be further restricted by the Board of Control.

The rail market is very quiet, no new business of moment being reported. There is a decidedly more hopeful feeling in the pig iron market. The demand for forge irons is especially noticeable, and several large contracts have been closed, mostly on private terms, although in one case $15 at furnace for Gray Forge was accepted by a Pennsylvania company.

Inquiries are much more frequent, and for large amounts. There is no tendency to advance in prices Sellers of Southern irons are hoping for reductions in freight rates.

Scotch irons are firmer abroad, and are a little firmer here. There have been several low quotations of Coltness iron made in the last few weeks, but we are not able to learn that any has been sold as low as $19.50, which has been quoted. In fact, we learn of one sale at $20.

Bessemer pig is very quiet and quoted $16@$17.50 at furnace, according to quality. This practically rules out foreign.

Makers of structural iron report a very fair business, but no great press of work.

Bar iron manufacturers are feeling very much better about the future. Some mills are much more fully employed, and there are considerable inquiries.

Cast iron pipes are quoted $25@$32 according to size. The business is excellent.

Old rails are decidedly more active and firmer. There is considerable inquiry, over $21 being offered by first-class buyers for tees on cars at Jersey City.

For quotations see table of weekly price, current, on another page.

Louisville. Aug. 7.

[Specially reported by Messrs. HALL BROTHERS & Co.]

The same firm tone that pervaded the market during the past week is still one of the most prominent features. The situation, however, has undergone no material change in the matter of prices. Most of the furnace companies are holding very firm, while some of them are still willing to enter orders at the old figures. Deliveries are confined principally to three or four months hence. There is a better request for charcoal irons, though they have not felt such a demand as the coke irons, and very little or no change in prices. Quotations for cash f.o.b. cars at Louisville will be found in our weekly register of prices.

Philadelphia. Aug. 9.

[From our Special Correspondent.]

Most of those who have orders for pig-iron to place are holding off, purchasing in the meantime small lots to see them along from week to week. There is an uncertainty among buyers here as to how much business there will be here this fall, how much will come from the East, West, and South, and whether quotations will drop any further. Prices have not varied 25 cents per ton for several weeks. Southern iron makers have almost given up the idea of doing any business in this market for the next month. They have made several offers and booked a few small orders, but so far below what they had expected that there is nothing to say about business. Some brokers tell us that there is a great deal of business held in abeyance, and this, in a certain sense, is correct. Quotations remain the same. In the choice brands of iron it is impossible to obtain concessions because those who are making choice brands are willing to let the iron accumulate because they know that later they can get their prices. Muck bars are unchanged. There is no business doing in foreign material of any account. Yet all of the importers say there is going to be. Quotations for domestic blooms and slabs are said to be firmer, and the light concessions that were made a month ago are not heard of now. The bar mills all over the State are doing what the managers call a fair business; that means, substantially, that consumers are purchasing from hand to mouth. These is no inducement to place large orders. At present quotations manufacturers do not care to load themselves up. Skelp iron sales show that a trifle more is being paid. Quotations for nails are unchanged, and business is moderate. The past week in general has been very quiet. Any discounts on wrought iron pipe have not been large and a good deal of business is heard of. The only direction in which an improvement can be relied upon is in merchant steel, but this is made up of a multitude of small orders. All kinds of merchant steel are in fair request this week, particularly No. 2 and crucible. There is also considerable sheet steel selling. The plate and tank makers talk of better prospects, and are too anxious to sell to think of better prices. The point now is to get business even at the low rates ruling. Three or four sheet iron manufacturers doing business here are a little better off than they were a month ago as to business. It is impossible to say a favorable word about steel rails. The secretary of the association here refused to say a word as to what was done. There is a good deal of inquiry for railroad fastenings. Structural iron will be in better demand in the course of a few weeks, we are told. Just now business is light on account of the limited stocks of old rails and the number of inquiries that have been made or received from mill men. Asking prices have moved up fifty cents. The scrap iron market is dull.

For quotations see table of weekly prices.

Pittsburg. Aug. 9.

[From our Special Correspondent.]

The iron market continues firm, with a fair trade demand. The advance previously noted has been fairly maintained. Standard brands of gray mill iron continue scarce. Furnaces in and around Pittsburg are well sold up, and are not desirous of placing any more orders at present prices, nor are they disposed to contract for future delivery, having an abiding confidence that the upward movement in prices lately inaugurated will be continued. Common grades or unknown brands are not much fancied; buyers generally prefer the better article, being willing to pay the difference; confidence in prices is based on some large operations in crude iron and increased inquiries for material for September and October deliveries. Certain buyers show some anxiety to contract for stock sufficient to last for some time, while holders show no anxiety about the present or the future. The trade at large is not able to discount the future. Among the elements of uncertainty are these: The possibility of a smaller demand than now is apparent, and the probability of a heavy influx of Southern and Western irons. The difference between now and thirty days ago is that there are no concessions talked of; for reasons no doubt satisfactory, buyers don't fancy Southern irons—they are more favorably disposed to Western iron.

The starting up of additional furnaces will help the coke trade. Manufacturers are hopeful for better prices early in September, if not sooner. Present prices don't cover cost of production; one dollar per ton leads almost like a romance. The demand is on the increase and idle ovens will be started to meet the increasing demand.

Coal and Coke Smelted Lake Ore.	
2000 Tons Bessemer	17 25 cash.
2000 Tons Bessemer	17.20 cash.
2000 Tons Gray Forge, Valley Furnace	14.00 cash.
3000 Tons Gray Forge, Valley Furnace, September and October delivery	14.10 cash.
500 Tons Gray Forge	14 70 cash.
500 Tons Gray Forge	14.75 4 mo.
300 Tons White and M. Bessemer	14.75 4 mo.
200 Tons Special Bessemer	22.00 cash.
200 Tons Special Bessemer	22.00 4 mo.
50 Tons Bessemer	17.50 cash.
Coke, Native Ore.	
500 Tons Gray Forge	15.00 4 mo.
200 Tons Gray Forge	14.40 cash.
100 Tons Silvery	16.00 cash.
50 Tons Silvery	15 50 cash.
50 Tons Silvery Extra	19.00 cash.
Charcoal.	
25 Tons No. 2 Foundry	23.00 4 mo.
25 Tons No. 2 Cold Blast	25.00 cash.
Muck Bar.	
1000 Tons Neutral August and September	27 00 cash.
500 Tons August	26.50 cash.
1000 Tons Neutral August and September	27.00 cash.
500 Tons August	27.25 cash.
Steel Slabs and Billets.	
500 Tons Billets delivered	29.00 cash.
500 Tons Nail Slabs delivered	28.50 cash.
1000 Tons Billets delivered	29.00 cash.
500 Tons Slabs delivered	28.50 cash.
Crop and Bloom Ends.	
1500 Tons Bloom Ends	17.25 cash.
1000 Tons Bloom Ends	18.00 cash.
300 Tons Bloom Ends	17.00 cash.
500 Tons Bloom Ends	18.00 cash.
Steel Scrap.	
1000 Tons Steel Scrap....Gross	17.50 cash.
300 Tons Steel Mixed....Gross	16.50 cash.
300 Tons Steel Scrap....Gross	16.70 cash.
Steel Wire Rods.	
400 Tons American fines	42.50 cash.
350 Tons American fines	43.00 cash.

FINANCIAL.

NEW YORK, Friday Evening, Aug. 10.

The mining share market drags along in a dull and uninteresting way. The transactions are small, and price shows but little change.

The business in California stocks was small. Amador, Middle Bar, Hollywood and Astoria were the most active. They sold respectively at from $2.15 to $2.20, 44c, 39@40c., and 24@25c.

Bodie Consolidated has shown more life and was dealt in to the extent of 1600 shares at from $1.50@$1.65. Bulwer shows a sale at 70c., Standard at $1.20, and North Standard at 11c.

Brunswick has declined to 11c.

Colorado stocks were dull. Leadville shows the largest business, selling at from 20 to 30c. Plutus at from $1 to $1.10. Small Hopes at $1. Robinson Consolidated at 90c. Little Chief at 22c. Monitor at 11@10c. Denver City at 20c.

Consolidated California has declared its usual monthly dividend of $108,000. The stock shows a downward movement, and the last sale reported was made at $7.50. The other Comstocks were weak with a small business. Savage declined from $2.85 to $2.20. Hale & Norcross, notwithstanding the dividend, went from $5.50 to $4.70.

Sutro Tunnel shows a small business; the price continues to be firm at from 8 to 10c.

Belle Isle sold at from $2.95 to $3.

Barcelona shows no sales.

Eureka Consolidated was quite active but declined from $6 to $5.

Some activity was shown in Homestake at declining prices, going from $11.50 to $10.25. Deadwood was neglected. Caledonia sold at $2.60, and Father de Smet at from 45 to 50c.

The price of Proustite remains unchanged at $1. Castle Creek appeared at 5@6c. Holyoke at 6c., and Shoshone was steady at 12@13c.

The upward tendency of Ontario continues, and this week the price reached $35. The sales were large, considering the usual business done in this stock, and amounted to 3287 shares. Horn Silver sold at 80@81c.

One sale of 150 shares of Kingston and Pembroke is reported at $2.75.

Rappahannock remains unchanged at 11c.

El Cristo declined from $1.10 to 95c. but little is doing in the stock; only 1800 shares changed hands.

Little is doing in Silver King, which is firm at $2.25.

Stormont which is rarely dealt in shows a sale of 100 shares at 5c. per share.

Meetings.

Dunkin Mining Company, Boston Block, Leadville, Colo., September 15th, at twelve o'clock, noon.

Muriate Chemical Company, at office of Fairfield Chemical Company, 71 Wall street, New York City, August 28th, at eleven o'clock A. M., for the purpose of increasing the capital stock of the company to $30,000.

Dividends.

The following dividends have been declared:

Caulmet and Hecla Mining Company, of Michigan, $5 per share, or $500,000, payable September 5th, in Boston.

Consolidated California & Virginia Mining Company, of Nevada, dividend No. 20, fifty cents per share, or $108,000, payable August 11th.

Hale & Norcross Mining Company, of Nevada, No. 40, fifty cents per share, or $56,000, payable August 8th, at Room 58, Nevada Block, San Francisco.

Philadelphia (Natural Gas) Company, dividend No. 34, one per cent, or $75,000, 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
Beaver Oil, Dak	1	July 23	Sept.11	Sept.28	.001
Belcher, Nev	35	July 18	Aug. 22	Sept.12	.50
Big Hole Pl., Utah	3	May 7	*J'ne12	Aug 15	.01
Challar, 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
Dickert & Myers, Ut.	1	June 13	July 21	Aug.15	2.50
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
Gould & Curry, Nev.	59	June 22	July 6	Aug.16	.50
Great N. West Oil, Dak	5	June 27	Aug. 4	Aug.25	.00½
Iron Hill, Dak	13	June 27	July 30	Aug. 18	.04
Keyes, Nev	2	July 19	Aug. 24	Sept.24	.50
Live Oak Drift, Cal.	9	June 13	July 17	Aug 16	.05
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, Nev	20	Aug. 4			.20
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. 8	Sept. 5	Sept 25	.50
Scott Bar, Cal	1	July 28	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, 49 Broadway, report as follows for the week:

The petroleum market this week has been quite strong, rising to within a fraction of 90 cents, closing to-day, however at 87 cents, with very little activity. The principal reason assigned for this advance in crude is that a demand for refined set in from Europe, and buyers there are encouraged to pay better prices when they see the crude market stiffen up. The activity in crude was short lived, and plainly did not result from public speculation. We think the market a sale on any further rally.

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Aug. 4	84c.	84⅜c.	83⅜c.	84c.	423,000
6	84⅛	86¾	84⅜	86¼	1,372,000
7	86⅛	88⅜	85¼	88¼	1,078,000
8	88¾	89½	87	87¼	1,974,000
9	87⅛	88¾	86⅛	86⅞	1,390,000
10	87	87¾	86½	86⅞	655,000
Total sales in barrels					7,492,000

NEW YORK STOCK EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Aug. 4	84⅛c.	84¼c.	83¼c.	84c.	179,000
6	84⅛	86⅜	84¼	86⅛	837,000
7	86⅛	88⅛	85¾	88	636,000
8	88⅛	89½	87	87¼	1,048,000
9	87⅛	88⅛	86⅜	86¾	968,000
10	87¼	87¾	86⅜	86¾	548,000
Total sales in barrels					4,016,000

Boston Mining Stocks. Aug. 9.

[From our Special Correspondent.]

The boom in the market for copper stocks has proved rather short-lived, and the transactions this week are in marked contrast to those of last week, both in volume and price. Calumet and Hecla took a downward leap from $275 to $268, but speedily recovered again to $275 on the announcement of a dividend of $5 per share, reacting again to $273.

Boston & Montana declined to $48, with a rally of only $⅝ to $48¾, and small sales at that.

Franklin has been the most active feature, with its decline from $23½ to $19½, with later sales at $20.

Osceola and Atlantic have been very dull and in-