THE ENGINEERING AND MINING JOURNAL AND COAL

Entered at the Post-Office of New York, N. Y., as Second-Class Matter.

VOL. XLVI. AUGUST 4. No. 5.

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THE SCIENTIFIC PUBLISHING CO., Publishers,
P.O. Box 1833. 27 Park Place, New York.

CONTENTS.

CONSULTING ENGINEERS.

There are very many mining companies and individual or firm mine owners—indeed the great majority—who can not or do not employ specially trained engineers at their mines, and are obliged, when an emergency arises, to look to an expert for advice. This means a special study of each separate case by the expert, and the work is done under disadvantages to both parties. The engineer who is thus called upon has to visit the ground and familiarize himself with the conditions and requirements. This takes time, and the expenses are proportionate, while the result may not be so satisfactory either to himself or his employers as it ought to be. Such irregular, scattered and uncertain jobs necessitate large fees. Now, if a practice which is common abroad were more generally adopted here there would be a gain on both sides. A comparatively small stated salary would command the regular services of an efficient man near the home office, and as he would have time to look after a number of properties simultaneously, especially if located in the same district or neighborhood, the saving in time and labor would offset the change from large but irregular fees. Almost every consulting engineer finds a great part of his time unoccupied, while there may come a rush of work which he is unable to perform. There is another argument in favor of the system recommended: It usually happens that at the home office there is not a single man who is acquainted with the technical details of mining and metallurgy. No matter how familiar the officers and directors may be with the purely business conditions, they are frequently at a loss when some small question comes up, which could be referred to and easily settled by their consulting engineer, if they had one. It would not be necessary for him to make a personal inspection in most cases. A trip to the mine or works once or twice a year, and study of the plats and reports as they are kept up, would make him familiar with the requirements, except where new developments are made, or important changes are projected.

Practical working superintendents and foremen do not like to have their work interfered with, but they are willing enough to accept advice, which is not interference but assistance, and they almost always have such a regard for the property with which they are connected as to wish for the best results, so that there is no difficulty on this score. As a matter of fact, the system advocated is found to work well so far as adopted, and we commend it to the attention of mine officers and owners as a means of securing economy and efficiency in the management of mining property.

THE RESTRICTION OF PAUPER IMMIGRATION.

Our New York daily contemporaries have been for some time endeavoring to awaken the attention of Congress to the necessity of restricting pauper immigration, and appear to have met with some degree of success. A congressional committee has recently been "slumming it" in New York, and some action will probably soon be taken, especially since the Italian government is inclined to aid in suppressing the contract or "padrone" system, against which the newspaper attacks are more particularly directed. This, however, is but a step in the right direction, for there is no reason why paupers and criminals of all nationalities, French, German, Irish, Poles, so called "Hungarians," as well as Chinese should not be included in the restriction.

These outcasts of Europe are dropped on our shores by governments wishing to be well rid of their criminals, by steamship companies in search of the few dollars passage money, by contractors and capitalists so thoroughly engrossed in the pursuit of wealth as to be blind or indifferent to the blows they are striking at the very foundations of our national stability. They come pouring in in numbers far too great to be assimilated by our people without grave risk of materially lowering our national moral standard. The pauper and criminal classes remain, in the larger cities, while the more able-bodied seek the West, there in some cases to found colonies in which their national faults and prejudices are perpetuated. It is time the United States retired from the sentimental position of being the "home of the oppressed." It is the American who is now becoming the oppressed and needs protection.

Aside from motives of patriotism or desire for the national morality, it is questionable if this foreign influx, in such great numbers, and the subsequent employment of these cheaper grades of labor, is advantageous to the country. A manager of one of the leading mining establishments in Pennsylvania, in remarking upon the fact that many superintendents refused to be "bothered" by young college graduates working in the mines in order to learn the practical details of their profession, said: "When I can get brains as well as muscles for a dollar a day, I do it every time, even if they (referring to the graduates) stay but a month. I can get plenty of muscle and brute strength, but brains are a scarce article in the market." This is probably the opinion of the majority of employers, possibly not in connection with college graduates, but in the sense that a really skillful laborer is always cheaper than the unintelligent workman, and the best man in his trade is always the cheapest for the employer.

A visit to Castle Garden after the arrival of an emigrant steamer will convince most people that the majority of foreigners reaching us belong to the lowest, least intelligent, often the most degraded classes. They pollute our country, and their influx should be stopped, or serious troubles, of which the Anarchist murders in Chicago were but a faint indication, will surely follow.

THE ROLE OF IGNORANCE IN MINE EXPLOSIONS.

On March 29th last there were two explosions in the mine No. 6 of the Keith & Perry Coal Company, at Rich Hill, Mo., which caused the death of twenty-three persons by asphyxiation. The report of an investigation into the cause of the accident which has just been made to the "Commissioner of Labor Statistics" by the State Mine Inspector, by Prof. W. B. POTTER and others, contains some points of wide interest, as showing the need of that elementary "training" of miners which we have recently advocated in these pages.

It appears from the report that the mine is opened on a coal-bed about five feet in thickness, at a depth from the surface of 247 feet. It is worked on the usual double entry, pillar and room system, the entries 9

to 12 feet wide, and the rooms about 25 feet, and is well ventilated by an exhausting fan. In fact, the mine is well laid out and efficiently managed, carefully inspected for fire-damp, and every reasonable precaution taken by the owners against "accidents" of the kind which has overtaken it. The mine makes scarcely any water, and is very dry and dusty.

Like most of the Missouri coal-beds, this one produces constantly small quantities of fire-damp. Large outbursts or blowers have not, however, been met with, and the use of open lights in the mine was universal. There is unanimous testimony to show that in this, as in other respects, the mine was a "safe" one.

Though it is impossible to determine absolutely from an analysis only, or from the proportions of its constituents, the exact degree of inflammability or explosiveness of coal-dust, yet there is nothing in the following analysis, made by Professor POTTER, to indicate this dangerous quality; indeed, the very high proportion of ash and only moderate percentage of volatile matter would indicate a rather uninflammable coal, and the practice of the miners in blasting with enormous charges of powder and frequent "blow-out" shots sufficiently prove that this coal-dust becomes explosive only under the most severe provocation.

	Moisture.	Vol. matter.	Fixed carb.	Ash.
Lump coal	5·05	34·40	40·50	16 05
Nut	5·16	35 48	37·24	22·12
Pea	4·50	34·95	35·57	23·98
Average dust	6 00	33·08	34 67	26·25
Dust passing 40 mesh	6·40	31·44	30·75	31·41

This dust was taken from the floor of the mine, and that of it which passed through a 40-mesh screen is given in the last line. It is probable that the dust collected after such an explosion had lost some of its volatile hydrocarbons.

Under the law of Missouri, enacted at the dictation of the miners, the miner must be paid equally for all the coal broken without regard to whether it be lump coal or fine slack. There is, therefore, no inducement for the miner to lessen the proportion of fine coal. This, in practice, appears to have led the men to use powder in the most lavish manner to replace skill in mining. They do not undercut the coal or even side cut it in the entries, and, as though that were not enough to leave the powder to do, the holes from 4 to 6 feet in depth, 2½ inches in diameter, were made perpendicular or very nearly perpendicular to the face of the coal, and were charged with enormous quantities of powder (from 1 to 2 quarts to the hole) and fired, as Professor Potter says "without regard to consequences."

As demonstration of the enormous waste of powder in this mine, it is of record that during the month of March up to the date of the explosion, there were obtained only 18·81 tons of coal to the keg of powder (25 pounds) used, while the average output of coal per man per day was 5·31 tons, a consumption of more than seven pounds of powder per man per day. The average "get" of coal per keg of powder for the whole State of Missouri was last year 82·12 tons, and in Illinois the average was 59·6 tons per keg, and in St. Clair County, Illinois, where the bed chiefly mined is six feet in thickness, the "get" of coal was 194·3 tons per keg of powder.

The testimony shows that, blown out shots in this Rich Hill mine frequently would send flame 30 to 50 feet, along the entry, and on this occasion three of these shots were fired in the face of the entry, and at least one of them was a "blown out" shot; it threw a block of coal weighing 195 lbs. a distance of 84 feet, and exploded a keg of powder carelessly left open in the entry. This indeed appears to have so intensified the heat that the long suffering coal dust, which must have filled the air of the mine after 18 or 20 blasts had been fired in quick succession, finally exploded, destroyed the brattices, stopped ventilation, and suffocated 13 men before they could reach the shaft.

Another explosion occurred in the other side of the mine (a separate split of air) about an hour later, due no doubt to the derangement of the ventilation and the accumulation of coal-dust and small quantities of fire damp.

It is highly probable, in fact almost certain, that fire-damp in small quantity, less than 1½ per cent or 2 per cent, or less than can be detected with an ordinary lamp, contributed to propagating the flame in the dust, and of making it "explosive," but there can be no doubt that the chief explosive was the coal-dust itself. Some of the inspectors speak learnedly and obscurely about CO, CO_2, CH_4, etc., and attribute the explosion largely to CO from the powder smoke! but there is in reality no mystery about the "accident," it is shown clearly enough to be primarily due to the barbarous system of mining by blasting in the solid without undercutting and in total ignorance of how to "pitch" the holes. It was brute force without intelligence, and since the advantages to the miner in pitching his holes at a proper angle are so easily demonstrated that, however ignorant he might be, he would learn this advantage, we are inclined to place some of the blame for the "brutal" mining methods practiced in this colliery on the underground foremen, who might have bettered it by a very little instruction and a few examples made of those who made "blow out" shots.

The ideas of the ignorant miners employed seemed to go no further than to put in plenty of powder, and let it go—as one of the unfortunate men who fired the fatal shots, and lost his own life through his ignorance, said to another miner: "I am going to blow hell out of it;" and he did.

THE PROPOSED EUROPEAN LEAD COMBINATION.

We have received, through the courtesy of a correspondent, full particulars of the recent conference (June 29th) in Paris, which was called with the object of devising means for "bettering the condition of lead producers." As the following list will show, nearly all the great European producers were represented at the meeting, at which the subject was discussed, and the views of some who were unable to attend were presented in writing: T. Sopwith & Co., Ltd.; The London Lead Company; The Société de Rhein-Nassau, of Stolberg; The Mechernich Company; The Mines et Usines d'Ems; The Stolberg & Westphalia Company, of Aix-la-Chapelle; S. B. Goldschmidt, proprietor of the Braubach mines; The Spanish Peñarroya Company; Rothschild Bros.; The Compagnie d'Escombrera-Bleyberg; The French Pontgibaud Company; The Spanish Compagnie de la Cruz, at Linarès; The Spanish Mines d'Aguilas; M. Raunheim, of Paris; Ignacio Figueroa, and Luis Villanova, large Spanish producers, and many other Spanish producers.

The report of the meeting of German producers which was held at Cologne on June 12th, was presented as expressing their views.

Without repeating the details of our well-informed correspondent's communication, it is evident that there was unanimity of opinion on only one point, namely: that the price of lead should be higher than it is, but there was considerable diversity of opinion as to the way to bring about this much desired end.

Many of those at the meeting seemed to think that a strong syndicate should or might be formed to buy the lead from the different producers at a minimum price based on £14 in London, and to sell it at £16, £18 or even £20, dividing the advance realized over £14 with the producer about in the manner the copper syndicate is doing: There was not much light thrown on the somewhat important point as to who would provide the capital for the syndicate, but the representative of a Spanish company suggested that the syndicate be named the "*Compagnie Générale du Plomb*," that it be composed exclusively of smelters and miners, and that the stock of the company be paid for either in lead at £14, or in cash, pointing out that the company could thus get all the stocks of lead in the market. It was intimated by another gentleman that some of the producers would want cash for their lead to pay wages, etc., so the former proposition did not receive much approval.

Another gentleman, representing the lead interest of a great banking house, suggested that the only way to maintain prices would be to consign all the lead to one London house, who would sell it on commission for the benefit of producers, a proposition promptly rejected by the German producers, who have a home market for nearly all their lead, and want to do their own selling and save the commission.

The discussion then turned on whether there would be any need of limiting the production, the sanguine ones thinking that the markets can absorb the 300,000 tons a year at which the present production of lead in Europe is estimated, and others pointing to the stock of lead in London, estimated at 12,000 tons, as a proof that production is too great. Finally, a committee was appointed at the close of the meeting to consider the questions raised. This committee wisely resolved that it is unnecessary to investigate the question whether there is too much lead produced since the market price demonstrates that, but it proposes to submit to the next meeting of producers, to be called a few months hence, propositions to reduce production 10 per cent, and to allow the trade of each country to be managed by a sub-committee, and a central committee to keep all in harmony.

After carefully perusing our correspondent's communication, it is evident that absolutely nothing practical was accomplished at the recent meeting, and the most important questions appear to have been almost altogether ignored.

It goes without saying that all the producers would be delighted to have a strong financial syndicate guarantee them £1½ to £3 per ton more for their lead than they are now able to obtain, to say nothing of the possibility of £9 or £10 per ton, which some of the gentlemen thought might yet be the price of lead if no combination be formed.

But how to get a satisfactory guarantee for the price was an unsolved question. One of the gentlemen stated incidentally that, before the courts the syndicate engagements would have no value. It would (like the arrangement between our anthracite companies) be merely "an engagement of honor," though it was said that the producers should put up a penalty or forfeit to insure good faith on their part.

No particular attention appears to have been directed to what appears to us the most important question of all, namely, the effect of the high prices, which the proposed syndicate would be organized to secure, on the production of lead by mines not in the combination.

One gentleman, Mr. LUIS VILLANOVA, our correspondent informs us, did indeed lay before the meeting the opinion that—

"From the moment that, by means of a combination, the production is brought to such a limit as to increase the price to the desired point, an infinity of mines now stopped or unopened will commence producing and will render sterile the sacrifices of the great producers. The conditions in Spain are very favorable for this, owing to the great number of mines, the greater part of which are watching the market, ready to commence work when the price becomes remunerative. It would be a matter of six, eight, or ten months to get the higher prices so steadied as to encourage the opening of new mines, and if there be another country situated like Spain, it is not too much to expect that in a short time the market would see lower prices than the present."

Some anxiety was shown concerning the large production of Australia, which was said to be now sending 14,000 to 16,000 tons a year to England. As a matter of fact, a single company, the Broken Hills Proprietary Company, is now producing at the rate of 20,000 tons a year, so that Australia will, no doubt, ship to Europe, next year, as was suggested by some of the gentlemen present, fully 30,000 tons of lead.

Not a word was said concerning the lead production of the United States, which this year will probably amount to 160,000 gross tons, or more than one third the entire production of the world.

Why is it that Australia, with 20,000 tons a year, has become a source of anxiety to the European markets, while this country is not even mentioned in a meeting of their lead producers? Yet some day we shall make more than we can consume, and will probably export it, in manufactured form, to an extent that will attract attention.

There was nothing at this great meeting of European producers to indicate the probability, or, perhaps, even the possibility of establishing an efficient syndicate to advance the price of lead; and, notwithstanding the hopeful general expressions of the gentlemen who took part in it, we do not believe any thing will be accomplished. There was, in any case, no suggestion to have the organization become operative before next January.

CORRESPONDENCE.

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

Gneiss-Dunyte Contacts of Corundum Hill, N. C.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: The abstract of my paper on Gneiss-Dunyte Contacts (Bulletin No. 42, U. S. Geological Survey) in the JOURNAL for July 21st, contains one or two statements to which I desire to call attention.

In speaking of dunyte, the abstract calls it "a pale green magnesian rock, consisting almost entirely of chlorite"; the word "chlorite" is evidently a slip of the pen for "olivine."

Again we find, "it is open to question as to whether the dunyte was anterior or posterior in formation to the gneiss and purely chloritic minerals. An igneous theory would be the simplest, yet the dunyte furnishing magnesian, and the gneiss aluminous solutions, would explain the observed alteration products satisfactorily." Now this does not express, exactly, the statements of the original paper, for the dunyte is considered as posterior to the gneiss, by all who have written on the subject, though they differ as to its origin, whether igneous, sedimentary or chemical, and it was my purpose to show that the chemical reaction for the formation of corundum would be the same no matter which theory of origin might be adopted. In the "conclusion," recalling what had been said before, the expression "or even vice versa" is used, meaning that these reactions would be unchanged even if the gneiss were considered as posterior to the dunyte.

In speaking of corundum crystals enveloping plates of chlorite, the abstract says: "While perfectly formed crystals of pure corundum are not uncommon, crystals simply with regular faces are more frequent, which were apparently formed in a solution, etc." The words of my paper are: "While perfectly formed crystals of pure corundum are not uncommon, we frequently find crystals with regular faces but apparently formed in a solution having large numbers of small plates of chlorite or vermiculite floating in it, etc."

Though the change of language here is slight, it concerns one of the important points in the discussion of a much disputed subject, and is therefore noted.

THOMAS M. CHATARD.

WASHINGTON, D. C., July 27, 1888.

Some "Alleged" Copper Mines at Butte, Montana.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: History repeats itself. The success of the Boston & Montana Copper Company in disposing of its shares and the large profits made thereon, has brought forth schemes to organize companies under the name of copper and silver companies, on silver mines, pure and simple, only using the name "copper" to profit by the copper boom.

It is generally known that the most important and best copper mines at Butte City, Montana, are in the hands of the Anaconda, the Boston & Montana, and the Parrot companies.

A few more copper mines are scattered in the hands of individuals. It is claimed that some time ago A. T. Davis, of Butte, sold out his mines to a syndicate of Eastern people, who bring them out as the "Boston & Butte Copper and Silver Mining Company," and endeavor to float the concern with a capital of two million dollars in stock and one million dollars in bonds, and I understand these are already being offered in New York. Among the mines they own are the Belle of Butte, the Midnight, Josephine, Flag and La Plata—all silver mines—and the Greyrock, which is the only one carrying copper, and that in very low percentage, whatever the prospectus may say.

It is a fact that one of the most prominent Butte copper smelters, jointly with one of the ablest superintendents at Butte, leased the "Greyrock," but it did not pay them to work, and they lost over $10,000 on the lease. Therefore, it seems pretty sure that it will not pay to work this mine for copper, though they may find from time to time a specimen of rich copper to deceive the tenderfoot. I am not going into the merits of the silver mines, though I hardly believe they will ever pay two per cent interest on the invested capital of three million dollars.

Should it be of interest to your readers, I shall give you the history of some of these mines. For the present I simply wish to prevent investors being misled and to put them on their guard. Whatever they may get they certainly are not buying "copper" stocks.

The reputation of Butte stands too high and its copper mines are too well known all over the world to be abused by being made the hunting grounds of schemers and promoters.

R.

NEW PUBLICATIONS.

PETROLEUM AND ITS COGNATES: (*Das Erdöl und Seine Verwandten*). *The History, Physical and Chemical Constitution, Occurrence, Origin, Discovery and Extraction of Petroleum.* By HANS HOEFER, *Professor at the Imperial Royal Mining Academy of Leoben, etc., etc. With Woodcuts in the Text. Being also a part of Volume I. of the Hand-book of Chemical Technology.* Braunschweig: Vieweg & Son, 1888. 8vo, 179 pp. Index.

Nearly all of the installments constituting the eight volumes of the great "Handbook," begun by Bolley and Birnbaum, and edited since their death by Professor Engler, of Carlsruhe, have now appeared. The portion of the first volume devoted to mineral oils is one of the last to be published; and the book before us is the first part of that. The second part is to be furnished (we have not yet heard of its publication) by Dr. Ferdinand Fischer, of Hanover, and will deal with the technical processes and apparatus of extracting, refining and testing petroleum, and of its various uses.

Professor Hoefer's monograph is the first comprehensive and systematic summary of this subject which we have encountered. We think it is the first that has been written in any language, though numerous special treatises, exhibiting various degrees of accuracy and ability, have appeared during the last decade. It was high time that these local contributions should be combined, compared, criticised and utilized as the basis of a wider induction; and no one is better qualified for this task than Professor Hoefer. His book, appearing just after his previous contributions to professional literature have been recognized in the bestowal upon him of the rare distinction of honorary membership in the American Institute of Mining Engineers, constitutes a graceful and welcome response to his colleagues and friends in this country.

Let us observe at the outset that this treatise, apart from the theories it expounds, furnishes, in the abundant references which crowd its footnotes, an invaluable guide to the student. The evidences of the author's exhaustive industry are on every page; and his views gain much weight from the wide and patient research, as well as personal observation, by which he has been enabled to gather facts from every quarter of the world, and thus to check the deductions of those who have reasoned from the conditions of single localities only.

The list of the countries in which the mineral oils are known to occur will surprise those who have made no thorough inquiry on the subject. It includes India, China, Japan, New Zealand, Roumania, Galicia, Hungary, Germany, Holstein, Alsace, France, Italy, and Trinidad, as well as the United States, Canada and Russia, which are the chief producing regions. It must be remembered that for solving the problems of the origin and occurrence of petroleum, the testimony of localities which have not hitherto furnished it in commercial quantities may be important—may, indeed, sometimes furnish clues which the very abundance of the product has elsewhere obliterated.

Passing over the description and history of the several oil-regions, and the discussion of the physical and chemical properties of petroleum, we come to the two chapters on its manner of occurrence and its probable origin. In the first of these, Professor Hoefer states again and supports with fresh evidence the "anticlinal" theory of which he is so prominent a representative. Qualified in statement as it now is, and reinforced with illustrations from other countries, it will perhaps be accepted, even by those who have heretofore opposed it. But in its accommodation it has lost something of definiteness and practical value. As formerly understood, at least by its adversaries, it was "very important, if true." Now it may be more probably true, but it is less important. This criticism needs to be explained by a sketch of the theory as now set forth by Professor Hoefer.

According to his classification, an oil-deposit may be primary or secondary, according to its occurrence in the rocks where the oil was originally formed, or in other rocks into which it has passed. (If we understand him correctly, he does not reckon among possibilities the formation of gas in one rock, and its condensation as oil in another. But if he did, he would probably call the deposit "secondary," because it did not occupy the stratum containing the organic remains which yielded the gas or oil.)

The primary deposits may, however, enlarge themselves by impregnating adjoining strata. The secondary deposits proper are fissure-fillings, surface-accumulations, impregnations of porous strata through fissures from the primary deposits, and small bituminous deposits in eruptive rocks. The author condemns with ridicule the ancient picture of a subterranean cave, with water at the bottom, oil in the middle and gas on top, which is still going the rounds as an ideal representation of the conditions of an oil-deposit. We believe it originated with Professor Andrews of Marietta, many years ago, when American petroleum was a mysterious novelty. Professor Hoefer says it has recently (1885) appeared in a French work by Fernand Hue, and thinks it is high time this "inherited woodcut" disappeared from literature.

Oil-deposits are found in fact to occupy certain belts or lines. At

least, this is the case in many or most districts. Such a line may be related, (1) to the strike of the oil-bearing strata; (2) to an anticlinal; (3) to a fault. Under the second head, after a summary of the views of Lesley, Carll, Wrigley, Ashburner, Chance, Orton, etc., our author states his conclusions as follows:

"A fold of the strata, whether anticlinal or synclinal, cannot as such be positively declared to be oil-bearing. A porous rock, to imbibe and yield the oil, is also necessary. Where this has been bent to a certain extent, it will be richest in oil; and the anticlinals of porous rocks are for the most part richer in oil than the synclinals."

The cause of this last phenomenon is explained by extending the explanation given by Chance for a similar fact as to natural gas, namely, that the synclinals are more likely to be occupied by water.

In other passages, Professor Hoefer shows that he attaches no further significance to an anticlinal than is involved in the probable alternation of rock-texture which it indicates. And from the vague term "to a certain extent," in the above quotation, we may fairly infer that it is not claimed that very gentle anticlinals—mere "ground swells," to adopt a nautical phrase—would count for much. Now it happens that in the most important districts of Pennsylvania, this is the precise character of the anticlinals. Consequently something else than the almost imperceptible reversal of dip must in those districts indicate the richer parts of the oil-deposits. In our judgment, Messrs. Carll and Ashburner were quite right in laying principal stress upon the local petrographic character of the oil-bearing stratum. Prof. Hoefer concedes that this is essential, but claims that anticlinals of a certain degree of flexure add another favorable condition. This is true, though indefinite. Indeed, we think that his argument on this head would be stronger if he laid more weight on Chance's suggestion about water, and urged that the occupation by water of the synclinal troughs would tend to drive the oil up towards the anticlinals. This is a matter relatively independent of the greater porosity of the rock on the saddles.

The trouble with the theory is that in our most important districts it is valueless as a practical guide. It does not explain the discontinuous deposits to which our geologists have given the non-committal but very descriptive name of "pools": or rather it does not explain the gaps between them. On the other hand, this does not justify us in overlooking the array of evidence which goes to show that there is often, though not invariably, a connection between the localities of oil-deposits and some condition indicated by anticlinals, and the anticlinal theory may therefore be accepted as proposing a *vera causa*, thought not a complete explanation or guide.

THE ORIGIN OF PETROLEUM.

Concerning the origin of the oil and of the deposits, Prof. Hoefer presents a masterly and, we are inclined to think, a conclusive statement. He reviews first the theories of an inorganic origin suggested by Berthelot (1866; reaction of carbonic acid on alkaline metals, forming, in the presence of hydrogen, acetylene, C_2H_2, out of which oil and tarry products separated); Byasson (1871; mutual reactions of steam, sulphureted hydrogen, carbonic acid and iron at white heat); Mendelejeff (1877; reaction of water on glowing metallic carburets in the earth's interior); Cloez (1877 and 1878; reaction of sulphuric acid or even boiling water upon metallic carburets); also the earlier notions of Humboldt, Rozet, Prott and Thoré. The inadequacy of all these is clearly shown; and our author passes to consider the views of those who consider petroleum to be a condensed hydro-carbon gas, but do not undertake to explain the origin of the gas (Coquand, Hitchcock, Dumas, Rose, Bischof, Ochsenius, etc.). This, which is, as he justly says, only a half-explanation, brings him to the hypotheses of organic origin.

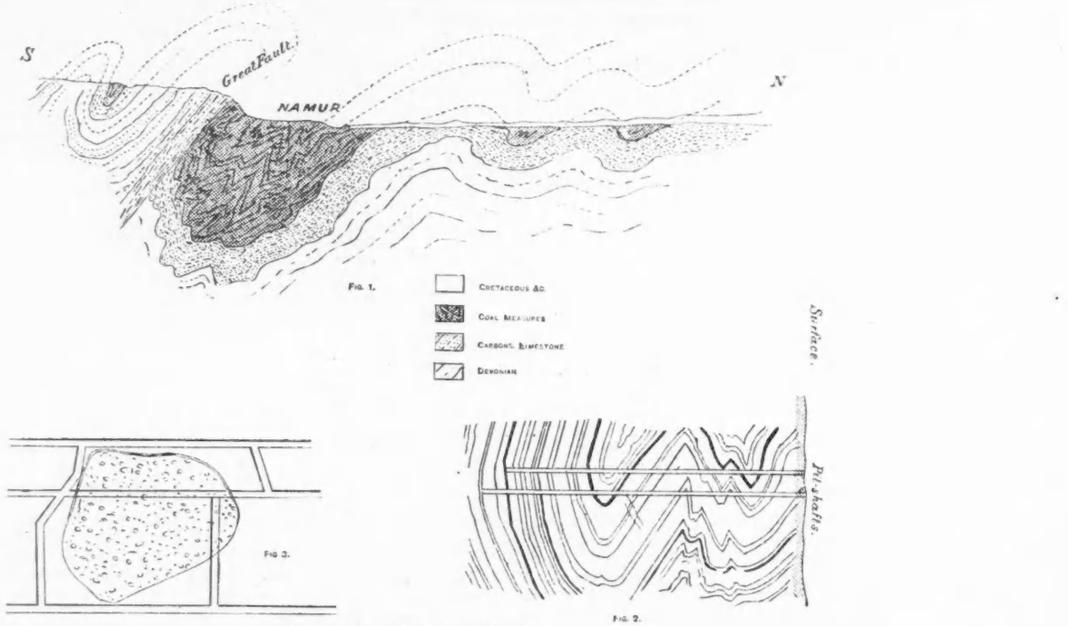
The first group of these theories ascribe the oil to plants or coal. American geologists and chemists have, we think, generally abandoned the coal, but adhered to the hypothesis of a vegetable origin—for our principal oil-fields, the Devonian shales—adding, however, in recent years, an alternative or even combined animal origin.

We regret that we cannot follow Prof. Hoefer through his admirable survey of this discussion. His own conclusion favors an exclusively animal origin; and this has received, since the book before us was written, an interesting and striking confirmation from chemical synthesis. We refer to the article by Dr. Engler in the *Berichte der deutschen chemischen Gesellschaft* for 1888, No. 9, page 1816, reporting that he has succeeded in producing from animal fats, etc., *by low heat under pressure*, 60 per cent of crude oil, nine tenths of which consists of hydrocarbons. These are the precise conditions postulated by Prof. Hoefer, and the demonstration of the possibility of such a process in nature is therefore complete.

Hasty and inadequate as our review of this important book has been, we are sure it will suffice to prove to all American geologists, who are concerned in its subject, the indispensable importance of studying carefully the work itself. *

COAL MINING IN BELGIUM.*

The coal-fields of Belgium are very remarkable. Their coal seams are thin, awkward to work on account of the high angle at which they lie, and have to be exploited by sinkings of great depth and costly development. The coal measures are of true Carboniferous age, probably deposited at the same period with the British fields. In Belgium they are confined to a narrow strip of country, extending across the kingdom in a nearly east and west direction, in the shape of two or three elongated basins to troughs. Their length is about 105 miles, with a width varying from 3 or 10 miles. The extent of the Belgian coal-field has been estimated at 326 square miles, and at Mons, the total thickness of the coal measures is stated to be 6500 feet. They rest upon the Carboniferous limestone, which outcrops on both the north and south sides of the basins, and they are overlaid by the marls, chalk and gravel beds of the Mesozoic and Tertiary ages. There seem to be no representatives of the Permian rocks in Belgium, and the Triassic are not developed to any large extent. In the province of Hainaut are rocks of the Wealden and chalk formation, many of the shafts near Mons being sunk through these strata to reach the coal.



BELGIAN COAL FIELDS.

At the close of the coal period, says Professor Gosselet, an uptilting of the district occurred, and all the Paleozoic beds were inclined, folded, and often broken by faults, forcing the strata sideways, and crumpling the coal measures as seen in Fig. 1. Denudation has planed off the upper foldings, leaving only the lower, or synclines, in the form of pockets or basins. So great was the thrust or earth-movement that Devonian beds were actually forced over on top of the coal-measures, and shafts sunk at Liége have penetrated inverted rocks of the carboniferous limestone and Devonian series. The excessive squeezing and crumpling of the coal measures in the flanks of the Ardennes has altered the highly bituminous coals into "dry coal" and anthracite.

The coal-fields of Belgium contain a greater number of separate beds of coal than any other so far discovered in the world. There are as many as 160 seams known by name, 100 being recognized at Liége. They are very thin, and rapidly alternate with other strata. In one shaft, less than 300 feet deep, 500 different layers of shale, clay, coal, etc., being passed through, and when this is taken into account, together with the contortions of the strata, and the capping of wet beds of chalk and gravel, the ability of the Belgians to successfully compete with outsiders in the market, and yet earn a profit, proves that they possess high skill in the art of mining.

Belgian coals, especially from Mons, are classified into "*Flénu*,"

* Abstract of a paper read before the British Society of Mining Students by W. S. Gresley.

"*Charbon de forge*," and "*Charbon sec*" or "*maigre*." The *Flénu* coal comes from the upper measures. It burns with a long flame, without coking, giving off gas at the rate of 11,650 cubic feet per ton. It is very free from sulphur, but its coke is small and soft. From lower down comes the *Charbon de forge*, a short flame, coking coal, yielding an excellent coke for iron furnaces. The lowest coal seams produce the hard, dry, slow-burning *Charbon sec*, largely employed for brick and lime burning. An average of analyses from ten seams of smokeless coal from the Liége basin, gave: Volatile matters, 14·27 per cent; carbon, 82·20 per cent; moisture, 0·76 per cent; ash, 2·77 per cent. A sample of anthracite gave percentages as follows: Carbon, 91·98; hydrogen, 3·92; oxygen and nitrogen, 3·16; ash, 0·94. Regnault obtained from a *Flénu* coal: Carbon, 84·67; hydrogen, 5·29: oxygen and nitrogen, 7·94; ash, 2·10. The coal from the Mons basin yields from 77 per cent to 80 per cent in coke; the Charleroi even as high as 86·58 per cent, while the Seraing coals give only 67 per cent, which, however, is still above the average in other countries.

The government reserves the coal lands in Belgium, but grants leases, or "concessions," for various periods, to work a definite number of seams. In one case this limiting to certain seams is carried so far that the five upper ones belong to one company; the following fifteen to another, the next eight to still another, while the *Société des Flénu Produits* owns the minerals downward from the twenty-ninth seam.

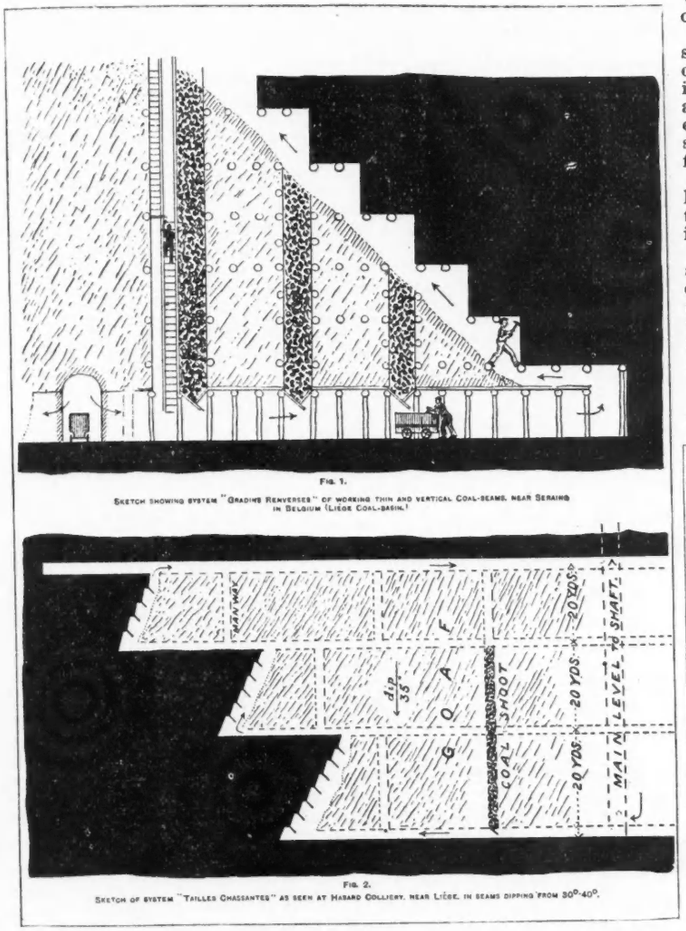


FIG. 1.

SKETCH SHOWING SYSTEM "GRADINS RENVERSES" OF WORKING THIN AND VERTICAL COAL-SEAMS, NEAR SERAING IN BELGIUM (LIÉGE COAL-BASIN.)

FIG. 2.

SKETCH OF SYSTEM "TAILLES CHASSANTES" AS SEEN AT HASARD COLLIERY, NEAR LIÉGE, IN SEAMS DIPPING FROM 30°-40°.

One of the first difficulties besetting the Belgian coal miner is the vast quantity of water which pours into the shaft from the chalk and gravel beds. Various plans were tried in the past, some of which are still practiced. The Kind-Chandron process of lowering tubbing has been in use, and Poetsch's method of freezing the water in the rocks surrounding the shaft by the powerful freezing action of a solution of chloride of calcium, circulating through vertical pipes, has met with success.

The most recent method of lining circular shafts is that adopted at the Marihaye collieries between Namur and Liége. The ordinary brick walling is replaced by wrought-iron rings and oak planking. From an oak framework at the top of the shaft is suspended a series of wrought-iron rings, which consist individually of four channel irons 5 inches high, 2¼ inches wide, and § inch thick, connected together by cast-iron fish-plates fitting in the channel.

The rings are connected together by eight vertical bars of channel iron about 4 by 2 inches, turned up at each end and secured by bolts and nuts. The rings are 3 feet 3 inches apart for a depth of 127 meters and 3 feet below that, and the space between the rings is filled up with oak spiles 2 inches thick.

In driving out from the shaft the measures are cross-cut, to the several coal beds. In some of the mines, where there is great danger from gases, these cross-cuts and levels are driven without the use of explosives. Rows of holes are bored across the face of the drift to a depth of a meter (39·37 inches) and the rib between these holes is then broken out by steel wedges driven by striking machines balanced on a swivel. The drifts are 10 feet wide, by 9 feet high, and when driven by this method an advance of 8 feet is considered a good week's work.

METHODS OF MINING AND EARNINGS OF MINERS.

The seams having been thus cut by levels, level roads are run right and left on the strike of the various seams, and an upraise is made in the coal to the main level above for ventilation. The working faces are carried forward in a manner similar to overhand stoping. The faces consist of a series of overhanging steps (Fig. 1), each step about 6½ feet high. The coal is broken down by wedges, and sometimes the pressure of the confined gases is sufficient to bring it down after it has been partially "holed." The dirt bands in the seams are picked out and thrown into the goaf, together with bundles of sticks and brushwood, while the coal is sent down through chutes into the trams, to be drawn to the main shaft. In some cases, to avoid the jamming which will often occur in chutes, board troughs are laid on the débris under the steps, down which the coal slides.

An average miner in these very steeply inclined measures will advance during a shift a distance of five feet, in a three-foot seam, taking out the coal through a height of ten feet.

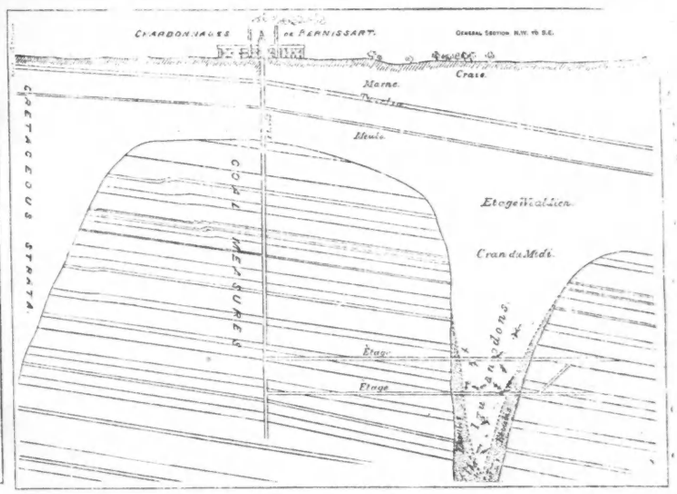
Smaller seams are worked by opening off short ranges of slightly stepped faces on either side of a tunnel which crosses the measures. The distance, in this case, between the main levels is about 60 yards. This is divided by two levels in the seam about 20 yards apart, and with about 20 yards of coal to the rise and the same to the deep, thus dividing each range of working places into three equal series of short steps, as shown in Fig. 2. Four miners work in each stall, the lowest one being farthest in advance.

A third method of working, called "*épilage*," consists in driving parallel levels with thirlings between them in the seams to the boundary, and then bringing the coal backwards to the shafts in a series of stalls, one in advance of the other.

The Belgian miners produce on an average three tons a day, but they are paid by the square meter, an average day's wage (women and children included) amounting to about 2·73 francs (56c.). The night shifts merely prepare for the active mining of the succeeding day, by filling in the empty spaces, cutting height for the roads leading to the faces, setting timbers, and laying rails for the trams.

VENTILATION, UNDERGROUND HAULAGE, AND SURFACE IMPROVEMENTS.

The laws relating to ventilation are very stringent. Each set of faces or stalls must have its own current of fresh air, which is conveyed up through a ventilating shaft to the main return air course after serving a single gang of workmen. Air-ways must be separated by walls of sufficient thickness to resist an explosion, while air tubes and partitions are only allowed in temporary works. Boreholes in advance are compulsory when cavities containing fire-damp are suspected.



BELGIAN COAL MEASURES, SHOWING "NATURAL PIT."

Underground haulage is done by engine power, although horses are used to some extent, and are considered more economical on roads of not more than 1000 yards in length. The endless chain system is used in many of the largest collieries, one at Hasard conveying tubs, which in Belgium are always made of iron or steel, through a tunnel 3500 yards in length. The chain weighs about 70 tons, and is carried on top of the tubs or trams, which, when loaded, weigh 14¾ cwts. The total moving load is said to be 246 tons, which is driven by a massive pair of 100 horse-power, 25½-inch diameter and 3 foot 11 inch stroke horizontal steam engines, driving grip pulleys.

The surface arrangements at the Belgian mines are particularly interesting and worthy of imitation. Order and neatness prevail everywhere; bath-houses are provided for the miners; hospitals are maintained in case of accidents or the outbreak of epidemics, and unsightly accumulations of waste material are avoided. The shaft-houses are models of systematic arrangement, every thing being condensed into the least possible space, and all placed under one roof, even to the sheds for washing the coal, upon which final preparation of the product of the mines for market they bestow a great deal of attention.

INTERESTING GEOLOGICAL DISCOVERIES.

In working the mines in the provinces of Hainaut and Liége, some exceedingly interesting geological discoveries were made. A species of fault in the coal measures is known in Belgium as "*puits naturel*." These are no-

mere dislocations of the strata, but are pits or pipe-like excavations, which frequently, but not always, extend up into the overlying marls and chalk formations. They are, as a rule, narrower toward the surface and widen downwards. A cross section of one, at a depth of 1800 feet, is shown in Fig. 3. They are filled with débris of coal, rock, shale, clay and sand, and often contain considerable water.

Their depth is unknown, only one having been found to come to an end upward in the coal measures. They never accompany a true fault or throw. Their sides are rugged, but no branches or off-shoots have been found. No evidence has ever been obtained to account for their origin, and all that can be said is that they probably were formed from below, not from the surface downward. Mingled with the debris in these pits are fossil remains in great abundance. The most remarkable of these are perfect skeletons of the iguanodon, an extinct reptile of mammoth size, attaining a length of 50 to 60 feet. In Fig. 3 is given a vertical section across the colliery of Bernissart, between Mons and Tournai, where one of these curious pits containing remains of the iguanadon is shown. Two perfect skeletons were, after great labor, reconstructed, and have been mounted in a huge glass case in the courtyard of the Royal Museum of Natural History at Brussels.

THE COST OF MAKING PIG-IRON IN THE SOUTH AND THE WEST.

Recent articles by Mr. E. C. Pechin, in the *Iron Trade Review*, call attention to some favored localities in the South and West for the production of pig-iron. We have already referred editorially to Mr. Pechin's remarks concerning Sheffield, Ala. We shall now summarize what he has to say about other points.

Until very recently, Anniston has been engaged in turning out 20,000 or 25,000 tons per year of "Woodstock" charcoal iron, but now two 75-foot × 17-foot coke furnaces have been erected, and it is for furnaces using this fuel that Mr. Pechin's estimates are made. The ores are found in the immediate vicinity. An average analysis gave metallic iron, 55·53 per cent; silica, 2·23; phosphorus, 0·05, though it is stated that the iron sometimes runs as high as 67 per cent, and the phosphorus occasionally 0·40. The pig made from this ore with charcoal fuel contains on an average about 0·08 phosphorus, one analysis showing 0·44. The coke will be supplied from Blockton in the Cahaba field, where a plant of 300 ovens has been erected. The coal seams worked there are 3½ feet and 5 feet thick respectively, and yield 1200 and 400 tons per day of coal, which is said to make an excellent coke, though analysis shows it to contain 4·508 per cent of volatile matter, indicating, as Mr. Pechin observes, faulty coking. When the new railroad is completed the coke will be carried 90 miles direct to Anniston, at an estimated charge of 75 cents per ton, bringing its cost up to $2.75 per ton at the furnace.

With these figures the cost per ton of pig-iron at Anniston is estimated to be $10·25, made up as follows:

2 tons of ore at $1.75	$3.50
1¼ " coke " 2.75	3.40
½ ton limestone at $1.00	.50
Labor, $1.75; supplies, .15; repairs, .50; sand, .10; water, .10; general expenses, .25	2.85
	$10.25

Birmingham is more favorably situated for cheap coke than is Anniston, the mines and ovens being in the immediate vicinity of the city; for iron ore there is little choice between them. The ore-bed here is very thick, furnishing the soft ore near the outcrop, and below water level the hard, the composition being shown by the following analyses:

	Soft ore.	Hard ore.
Metallic iron	48·88	38·80
Silica	21·48	11·60
Alumina	4·33	0·20
Carbonate of lime	0·28	29·29

The supply of soft ore being limited to the outcrops, Mr. Pechin's estimates of the cost of iron in the Birmingham district are based on a 40 per cent ore. He believes that owing to faulty construction and careless management, no furnace in the district can show accounts covering a blast where the cost of iron is less than $11.00 per ton, but he states that an "outside party" making long term contracts with responsible persons could make iron at $10.15 per ton, costs distributed as follows:

2½ tons of ore at $1.25	$3.12½
1½ " coke at $2.25	3.37½
½ " limestone at $1.00	.50
Labor, $2.00; repairs, .50; water, .15; sand, .10; supplies, .15; general expenses, .25	3.15
	$10.15

Where a company owns the coal and iron mines, the estimated cost at Birmingham is given at $9.20 per ton, as follows:

Two and a half tons of ore at $1	$2.50
One and three quarter tons of coke at $2	3.50
One half ton of limestone at $1	.50
Labor, $1.75; repairs, .50; sand, .10; supplies, .15; general expenses, .20	2.70
	$9.20

Mr. Pechin does not explain why a company owning its own mines should use one quarter ton more of coke per ton of iron than one which buys its coke. He states that he was informed that one company turned out its iron at a less cost even than that given above.

At Sheffield, owing to the greater distance from the mines, the cost per ton is greater than at Birmingham or Anniston; but this increase is, in a measure, compensated by the closer proximity of the Western markets. There are five furnaces built or building, though but one is now in blast. The ores used are brought a distance of about twenty-five miles from either Franklin Co., Ala., or Lawrence Co., Tenn., analyses showing nearly the same composition for each.

	Franklin County.	Lawrence County.
Water	11·301	10·903
Silica	10·840	15·300
Alumina, lime, magnesia, manganese	4·840	5·647
Sulphuric acid	·015	·030
Phosphorus	·508	·507
Metallic iron	50·290	46·960

This ore is worth $1.40 per ton on the car at the mine, or adding 25 cents for freight, $1.65 at the furnace. The limestone is brought a distance of twenty miles and costs 75 cents laid down. No good coking coal is found in the neighborhood, the coke having to be brought about 85 miles to the furnaces at a charge of 70 cents, bringing its price up to $2·70 per ton, delivered. With these figures the following estimate is made for making iron at Sheffield:

1½ tons of coke at $2.70	$4 05
2½ " ore " 1.65	3 71
¾ " limestone at .80	.60
Labor, $2; repairs, .50; supplies, .10; sand, .06; general expenses, .25	2.91
	$11.27

This estimate is made for a furnace producing 30,000 to 40,000 tons per year. There might be a reduction in labor and general expenses, by having a larger plant under one management, and the fuel consumed might be lowered by the use of a better coke, all of which would slightly lessen the above estimate.

In a later communication Mr. Pechin adds to his estimates of cost in the South, figures from three of the leading iron centres of the West: Mahoning Valley, Cleveland and Chicago.

Non-Bessemer ores containing from 57 to 60 per cent of iron have been selling at Lake Erie ports for $3.50 per ton. The freight rates to the Mahoning Valley (to Youngstown as a centre, 67 miles) are 70 cents, making the cost per ton of ore at the furnace $4.20, or 7½ cents per unit of iron, 1½ tons of Connellsville coke are used, and with the ore is mixed 30 per cent of mill cinder containing 50 per cent iron at $2.50 per ton, or 5 cents per unit.

COST OF ONE TON OF PIG-IRON IN THE MAHONING VALLEY.

70 per cent of lake ore at 7½ cents per unit	$5 07
30 " " mill cinder at 5 cents	1.50
1¼ tons of coke at $2.50	3.13
¾ " limestone at .80	.60
Labor, $1.25; repairs, .50; oil, etc., .15; general expenses, .25	2.15
	$12.45
By using all ore, the additional cost	.68
	$13.13

It is stated that better results may be obtained on the Cuyahoga River, at Cleveland, 58 per cent ore costing there $3.60 per ton, or 6.2 cents per unit, and Connellsville coke, $3; both delivered. No cinder is used here.

COST OF ONE TON OF ALL ORE PIG-IRON AT CLEVELAND.

100 units iron at 6.2 cents	$6 20
1¼ tons of coke at $3	3.75
½ ton of limestone at $1	.50
Labor, etc., as above	2.15
	$12 60

Chicago gets cheaper ore, but coke is there $1 per ton more than at Cleveland.

COST OF ONE TON OF PIG-IRON AT CHICAGO.

100 units iron, at 5.8c	$5.80
1¼ tons of coke, at $4	5 00
1¼ tons of limestone, at $1	.50
Labor, etc., as above	2.15
	$13 45

The following table shows the distribution of the principal items making up the cost of a ton of pig-iron, both South and West, in average values taken from the figures quoted above:

	South.	West.
Ore	$3.44	$6.19
Coke and limestone	4.14	4.49
Materials	$7.58	$10.68
Labor and supplies	2.97	2.15
	$10.55	$12.83

These values show that in the West a cheap ore is needed to compete with Southern irons, the cost for labor, limestone and coke being nearly the same in each case. Materials are $3.10 less, and labor and supplies 82 cents more per ton in the South than the West. The lower cost of labor in the West (50 to 75 cents) is attributed to the better climate and superior character of the men to be obtained.

Mr. Pechin concludes his letter with some remarks which will bear repeating:

"If the cost accounts heretofore given are materially correct, the following conclusions seem to fairly follow:

That the Southern iron makers hold a certain territory absolutely, subject only to competition among themselves, either by reason of overproduction, or the ability of certain makers to produce iron cheaper than others, and that their true policy is to develop to the largest possible extent the use of their raw material within this area; that another section is neutral ground, in which they must meet Western iron in a competition going more and more against them as their freight rates increase, or the prime cost of Western materials decline.

That the West must recognize that a new and most powerful competitor has come to stay, and that, in the future, so far as non-Bessemer irons are concerned, excessive royalties on ores must be reduced, that low rates of transportation from the mines to the furnaces must be permanently maintained, and that all available economies in mining and manufacturing must be practiced. In each section such prices may be established as will properly remunerate the maker, and yet be just and most attractive to consumers. The rapid natural increase in population will soon catch up with the present capacities for producing, and South and West will be profitably busy in supplying the wants of those properly dependent upon them."

A Gigantic Fossil.—Professor F. W. Cragin, of Washburn College, recently discovered at Downs, Osborne County, Kan., the petrified remains of a huge fossil. Professor Craigin pronounces it the most remarkable specimen found since 1877. The animal complete was a little over 16 feet in length. The jaws measure 3 feet 8 inches, the neck between 4 and 5 feet long, and the body about 9 feet long, and three or four feet through. It had immense teeth, about three inches in length. It had flippers quite similar to a seal's, and its feet, two in number, were short. It is plain that it was an aquatic animal of the reptilian age.

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

By Joshua E. Clayton, M.E.

The Drumlummon mining district is situated about eighteen miles northwesterly from Helena, Montana, and is about two and a half miles east of the Summit Ridge of the Rocky Mountain ranges. A small stream called Silver Creek has its source in a number of small ravines in the east flank of the summit that converge together in a basin of erosion about 1500 or 2000 feet N. W. of the "Drumlummon Group" of mines.

The central portion of the "Basin" is a friable, eruptive granite of a light gray color; showing small crystals of hornblende and black biotite mica. The high ridges surrounding this granite nucleus are, in most part, a slaty metamorphic schist and shales of the magnesian type or series, while the contact line between the eruptive and bedded rocks is exceedingly irregular and jagged. The general form of the granite mass is domelike, the flanks dipping outward from the center and underlying the surrounding bedded formations at greatly varying angles from the horizontal plane.

Along the southeast and east flank of the granite nucleus, where the Drumlummon mines are situated, the contact line dips very steep, in fact, is nearly vertical in places. The average underlie is apparently about the same as the underlie or dip of the Drumlummon lode.

As this easterly flank of the granite nucleus of upheaval is the only portion of the country-rock of any practical importance to the Montana Company, Limited, I will not trouble you with any details of other portions of the district.

There is no well defined or continuous line of contact between the granite and the flanking metamorphic beds. The two formations are interlocked by projecting spurs and dykes of granite that penetrate the bedded formations in greatly varying directions. The jagged edges and partially detached masses of the bedded country rock are inclosed in the flanks of the eruptive granite, in some instances penetrating a distance of 200 feet or more, showing irregular jagged terminations, just as angular stones may be enclosed in a bed of mud or cement.

The metamorphic bedded formations along this easterly flank of the granite have a general strike of S. E., N. W., and dip N. E, varying from 40 to 70 degrees below the horizon, while the general line of contact is S. 15 degrees to 20 degrees W. Hence the broken edges or ends of the beds abut against the granite at an obtuse angle of 60 to 70 degrees. These facts all show that the granitic mass was eruptive and plastic in its condition at the time it was forced up into the rents made in the metamorphic schists and slaty shales, thus enabling the intrusive plastic mass to conform to all the irregularities of the broken edges of the beds, to fill all the rents and fissures along the flanks of the break, and to inclose masses and fragments of the slaty beds along the broken lines of contact.

I do not mean by the word "plastic" that the eruptive mass was in a state of igneous fusion, but that it was in a hot, pasty condition, like a stiff mortar, and probably containing water in combination somewhat like the trachytic hot mud that sometimes flows from volcanic vents. That the eruptive mass was not in a state of igneous fusion is evident from the fact that the inclosed fragments of slaty schist retained their form without any signs of fusion, even on sharp edges. The only alterations I have observed are chemical changes and combinations of the constituent minerals, and, in some cases, an evident interchange of minerals with the granitic mass inclosing it or in contact with it.

By this process of chemical interchange between the eruptive mass and the ruptured beds, the two diverse formations became welded together so firmly that there is no absolute line of parting or contact cleavage between them.

The bedded formations flanking the granitic core of upheaval have been greatly disturbed and changed from their original nearly horizontal position. They have been tilted and partially folded into anticlinal and synclinal curves, incident to the lateral pressure that produced great continental uplifts and the development of mountain ranges along the longitudinal axes of upheaval. These general causes of disturbance and change of level are always modified and complicated to a greater or less extent by local causes, such as the rupturing and faulting of the folded beds, and the issue of vast bodies of "volcanic" rock, namely, basalt, trachyte, porphyry, and eruptive or porphyritic granite. In the special case under consideration, the local disturbances of the bedded rocks flanking the granite are very extensive and complicated. An instance in point is seen in the position of the beds inclosing the southeast and east flank of the granite where the Drumlummon group of mining properties is situated. All along that portion of the ridge south of Silver Creek, starting just below the 60-stamp mill, and going southerly along the line or trend of the Drumlummon lode, the bedded rocks are tilted up at a high angle with a dip of 40 to 70 degrees towards the northeast, and a strike or course about southeast, while the general line of contact is nearly parallel to the strike of the lode, or S. 15 degrees to 20 degrees W., thus bringing the beds at an oblique angle endwise against the granite; whereas, north of Silver Creek the beds lie nearly flat, with a short anticlinal fold or buckle near the contact with the granite.

CHARACTERISTICS OF THE BEDDED ROCKS.

The stratigraphical characteristics of the metamorphic beds of slaty shales and schists are very simple, being a succession of thinly bedded deposits, aggregating several thousand feet in thickness. The predominating materials are silica, clay, and carbonate of magnesia in the bedding planes of sedimentation. In its original state it was a succession and alternation of magnesian clay shales and siliceous schists. During the long process of consolidation and chemical changes, usually termed "metamorphism," the constituent minerals became individualized to some extent, so as to give distinctive colors to the predominating minerals, thus presenting alternating bands of quartzite, clay shale and magnesian schists, the clay shale bands showing dark and purplish colors, the magnesian beds dark greenish seams of serpentine, and the quartzose schist showing various shades of gray and bluish quartzite, giving the whole series a beautifully banded appearance. On weathered surfaces, nearly all these beds change to light gray and creamy tints, owing, in most part, to the large amount of the magnesian minerals contained in the bedded structures. At and near their contact with the eruptive granite, still further chemical changes have taken place, such as the development of garnetiferous masses and an impure serpentine, with seams of quartz and spar in fracture cleavages. Where these beds were very siliceous, the chemical changes have made them remarkably hard and tough and much more difficult to drill and break than pure quartz or ordinary compact quartzite would be.

The spurs and dykes that radiate from the granite into the adjoining bedded formations are rarely identical in structure and crystallization with the central mass. As a rule, the crystals are coarser, the hornblende crystals are larger and more abundant, in some cases giving them the appearance of true syenite. Such is the appearance of the dyke on the 400-ft. level in the hanging-wall of the Drumlummon lode at Shaft No. 1. A similar dyke is seen on the surface further south, penetrating the slaty beds southeasterly, in the "Marble Heart" lode claim. Other dykes and spurs are composed mainly of coarse feldspar and quartz, with occasional large crystals of hornblende and a little silvery white mica. In addition to these, there are a few narrow dykes of hornblende trap, of brownish and greenish black colors, consisting in most part of very finely interlocked crystals of hornblende, inclosing small grains of feldspar and quartz. I also observed small globules of bluish translucent agate in two or more of these black dykes.

The physical and mineralogical characteristics of the geological formations of the district, as given above, include all the prominent features relating to the structure of the country in which the Drumlummon group of mines occur.

VEIN FISSURE SYSTEM.

There are three distinct vein systems in the district, that are well marked and easily recognizable.

First—The "North Star" or "Armitage" lode system has a course or strike of about N. 50 degrees E., and S. 50 degrees W., and a nearly vertical dip. This vein or lode is the strongest and most persistent of this series, and cuts through the granite nucleus intersecting the course of the Drumlummon lode at a point about 400 feet north of the main working shaft (No. 1) on the 400-foot level, and continuing northeasterly across the Castletown lode and beyond into the metamorphic bedded formations a distance of 1000 feet or more. The North Star is older than the Drumlummon and Castletown lodes, and is cut by them. They being much larger lodes than the North Star, and of later date, the point of intersection was not seen in driving the levels north from the main shaft. In fact, the exact point of intersection was not known until recently. A level has been driven on the North Star from the 400-foot tunnel to the same level north on the Drumlummon. Just how far the North Star lode or vein has been shifted or "faulted" where it is cut by the Drumlummon is not yet known with certainty, neither do we know the exact point of its intersection with the Castletown lode. Near the mouth of a short tunnel, known as "Attwood's Prospect tunnel No. 2," a vein was cut that looks very much like the North Star. It is three or four feet wide, and stands nearly vertical, showing a slight underlie to the south. (I will refer to this again further on.)

There are a few other vein fissures in the granite nucleus, both north and south of the North Star, having approximately the same strike, but they are all small and unimportant.

Second—The next system of parallel vein fissures is confined, with a few exceptions, to the granite central mass, and has a strike or course of about N. 45 degrees to N. 60 degrees W., and variable south dip from 40 to 60 degrees below the horizon.

Nearly all of this network of small quartz veins in the granite are gold producing to some extent. Small bunches of good ore have been found occasionally, but a majority of them are barren.

Third.—The third system of vein fissures, including the Drumlummon, has a general strike nearly north and south magnetic, and the veins are confined almost entirely to the east and west flanks of the granite. These north and south flanking lodes appear to be later in origin than those of the other systems above named, as they cut the others at all points of intersection.

I will remark here that the network of interlacing veins, or at least a large majority of them, seen in the granite nucleus of the district, can hardly be called true fissure veins. They look more like "gash veins," or segregated veins formed in cracks, due to cooling, rather than to true fissuring or faulting of the country rock. True fissures are caused by great changes of level, by upheavals, or by subsidences, due to profound dynamic forces that culminated at the close of geological epochs. By far the larger number of the great mines in the Rocky Mountain ranges, and in the entire Pacific slope of the American continent, were produced by the great geological changes and volcanic forces that closed the Tertiary age. This was, in my opinion, the mineralizing period of the Rocky Mountains, and the west slope of the continent. Whatever the geological age of the country may be at any one mining district, the general facts as I have observed them show that the vein fissuring was produced during, and principally at, the close of the Tertiary age. At that time the whole western flank of the American continent was in a state of volcanic disturbance. The entire drainage system of the West was obliterated, the whole continental divide was broken up, large areas sank down, and other areas were elevated. In short, the arch of the continent was crushed by the unequal lateral pressure (the western flank of the anticlinal curve of the earth's crust being much shorter and steeper than the eastern one). Then a complete readjustment of the rock masses took place. During these vast geological changes, and for long ages following them, the escape of interior heat up through the rents and fissures made was on too grand a scale to be fully comprehended by men of ordinary caliber. Geysers like those at Yellowstone Park were common throughout the disturbed region, and every fissure that penetrated deep enough to tap the source of heat was a vent for the escape of hot gases and thermal mineralized solutions. Hence only those fissures that penetrated to the source of the metals, and also had a line of escape to the surface, could have the hot mineralized solutions passing up through them. All other fissures in any given district that did not penetrate to the source of the metals, or that were capped over too deeply to allow an escape of the pent-up hot gases, were left barren, or so partially mineralized as to be practically

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

worthless. Hence a very few lodes in a locality carry all the wealth of the district. Even in the great lodes, the wealth is often confined to a few great shoots or sections, while the remaining portions are practically barren. Those portions of metal-bearing lodes that become "choked" by the shifting of the walls, causing "pinches," or by the crowding in of soft shales, or the intrusion of porphyry clays, or by other local causes, will be barren, while the ore-bodies are formed only in those spaces along the fissure where there was a more or less free escape of hot gases and mineralized thermal waters to the surface.

According to this theory of the mineralization of great "true fissures," the conditions precedent are: *First*, a fissure deep enough to tap the heated zone of the earth's crust; *second*, a shifting of the walls sufficiently to leave openings for the escape of hot gas and mineralized hot solutions up through them.

Under such conditions, the hot gases and waters will rise towards the surface along the lines of least resistance, depositing silica or other gangue stone and ores of the metals along the lines of circulation only, while the "choked" spaces remain barren.

If one builds a fire-place and chimney, or flue, however crooked it may be when the fire is started, the equilibrium of the air is destroyed, the gases of combustion escape upwards through the flue, drawing into it the air surrounding its base, thus establishing a continuous circulation so long as the fire is kept active. The result is that a part of the elements of combustion are deposited on the inner walls of the flue in the form of soot.

The foregoing presents my view of the principles and conditions necessary to the formation of great "fissure lodes," such as the Drumlummon, and other lodes of its class.

In the following discussion of the physical characteristics of the Drumlummon lode I shall endeavor to show the practical application of the mechanical and chemical principles above indicated.

(TO BE CONTINUED.)

New Use for Aluminum.—Aluminum is coming into use as a material for dental plates. It is nearly as light as rubber, but little more than one eighth the weight of gold; has neither odor nor taste; is not affected by the elements of food or the secretions of the mouth, and costs, bulk for bulk, about one-sixth the present price of silver.

Tinning by Simple Immersion.—Argentine is a name given to tin precipitated by galvanic action from its solution. This material is usually obtained by immersing plates of zinc in a solution of tin containing 6 grammes (about 90 grains) of the metal to the liter (0·88 quart). In this way tin scrap can be utilized. To apply the argentine according to M. P. Marino's process, a bath is prepared from argentine and acid tartrate of potash rendered soluble by boric acid. Pyrophosphate of soda, chloride of ammonium, or caustic soda may be substituted for the acid tartrate. The bath being prepared, the objects to be coated are plunged therein, first having being suitably pickled and scoured, and they may be subjected to the action of an electric current. But a simple immersion is enough. The bath for this must be brought to ebullition, and objects of copper or brass, or coated therewith, may be immersed in it.

The Proposed Submarine Tunnel Between Denmark and Sweden.—The report of the Royal Swedish Commissioners, who have been examining M. Delancle's application for a concession to the Swedish Government, winds up with the conclusion that a submarine railway between Sealand and Sconia would no doubt insure several advantages to the international traffic, but that, as the building of it would require a very considerable capital, and the paying of the interest on the cost for a long series of years would necessitate heavy subventions from both the Danish and the Swedish governments, in addition to the profits of the traffic, which would be inadequate for this purpose, the proposal for this new way of communication be abandoned for the present; that should ever, under altered circumstances, the want or the desirability of a submarine railway come into prominence, it ought to be built on account of the State. We referred to this tunnel in the ENGINEERING AND MINING JOURNAL of August 21st and October 23d, 1886.

French Coal, Iron and Steel Production in 1887.—The following figures in metric tons of 2204 pounds are taken from the report of the Minister of Public Works. The production of coal was 21,403,049 metric tons (470,662 being lignite), a gain of 1,493,155 tons for the year.

The pig-iron output increased 64,277 tons, being 1,580,851 tons, of which all but 23,400 was coke iron. The yield of wrought-iron was 774,260 tons (increase, 7,704 tons), and, divided according to the process: Puddled, 619,609; refined by charcoal, 16,195; reheating old iron and scrap, 138,456. Of this product there were converted into rails, 319 tons; plates, 105,896; merchant and special grades, 668,045.

The output of steel was 450,856 tons (increase, 23,267), divided as follows: Bessemer, 288,028 (decrease, 12,137); Siemens-Martin, 126,755 (increase, 25,349); puddle and forge, 14,299 (increase, 4,392); cement steel, 809 (decrease, 703); crucible, 7,174 (increase, 790); reheating old steel, 13,861 (increase, 5,576). This was utilized in making 202,482 tons of rails (decrease, 52,168), 75,306 tons of plates, and 173,068 tons of merchant and special steel.

A Naphtha Refuse Burning Furnace.—A naphtha refuse burning furnace, acting both as a calciner and smelting furnace, has recently been introduced at the Redabeksky Copper Smelting Works of Messrs. Siemens Bros. The ore is charged at the end of the flue near the chimney, and gradually raked down against the flame, and thus calcined. It is then drawn, and the smelting charge made up to contain: Calcined ore, 3611·30 pounds; acid slag from previous process, 15 to 30 per cent; iron ore, 5 to 10 per cent; limestone, 5 per cent. About 5400 pounds of this mixture are introduced in the furnace and melted down in three hours, when about half as much as the first charge is added, and so on for every thirty or forty minutes, until the hearth is full. The regulus is tapped off twice a day. This furnace in a thirty-three days' run smelted 2,076,911 pounds of seven per cent ore, consuming 408,835 pounds of naphtha refuse, at $10·52 per ton, and yielded 810-737 pounds of regulus, containing 25 per cent of copper; or to produce 2000 pounds of regulus required 1008 pounds of refuse, costing $5·32. This is said to work 3·5 times faster that the ordinary ore furnace, and at the above works to be cheaper than when wood is used.

Rolling Stock for Sharp Railway Curves.—The London *Engineer* says: Colonel de Bange has proposed a new arrangement of wheels for facilitating the running over sharp curves, so important for railways in mountainous districts. The axles are fixed, and the wheels turn on axle journals of such a shape that, whilst resting on the wheels through the interposition of a cushion, they admit of the wheels turning on a vertical axis which is in a line with the point of contact with the rail. The cushion is furnished with a cylindrical projection which, fitting into a recess in the flat base of the axle, serves as a pivot, enabling the cushion to follow the slight horizontal rotation of the wheel while attached to the axle by two bands. By this arrangement the wheel always assumes a position tangential to the rail; and by combining this with a longitudinal play of the axles, a vehicle with any number of axles could run round a very sharp curve. This arrangement, moreover, enables the full amount of adhesion to be given to locomotives, combined with a long wheel-base, a great gain for engines designed to run on lines with sharp curves, which often have steep gradients as well. A method of coupling the wheels, whilst leaving them free to adapt themselves to the curves, has been adapted to a small eight-wheeled locomotive, weighing ten tons, and tried in the workshops of the Cail Company in Paris, the axles being arranged for running round curves of only 40 feet radius. A rigid triangular connecting rod is attached to the driving shaft, and guided by two cranks, so that its motion is parallel to the frame; it carries a projecting bar opposite each wheel, inserted into a swivel table fastened to the wheel by a spring, so that the connecting rod guides the wheel in whatever position it may be. The present rigid rolling stock could be readily transformed into the proposed system.

[This arrangement might possibly apply to the desired sharp curves for a loop line on the Brooklyn suspension bridge.—ED. E. AND M. J.]

Cost of Excavating and Handling Rock.—The "Charcoal Iron Workers" publishes a paper on the cost of excavating and handling rock, originally presented by Mr. Roger Rigly before the Western Pennsylvania Mining Institute, of which the following is a summary. The average weight of a cubic yard of sandstone or conglomerate in place is given as 1·8 tons, and of compact granite, gneiss, limestone, or marble, 2 tons, or an average of 1·9 tons, or 4256 pounds. A cubic yard when broken up ready for removal increases about four fifths in bulk, and $\frac{1}{10}$ of a cubic yard, or 177 pounds, is a wheelbarrow load. Experience shows that with wages at $1 per day of 10 hours, 45 cents per cubic yard is a sufficient allowance for loosening hard rock. Soft shales and allied rocks may be loosened by pick and plough at a cost of 20 cents to 30 cents per cubic yard. The quarrying of ordinary hard rock requires from $\frac{1}{4}$ pound to $\frac{1}{2}$ pound and sometimes $\frac{1}{4}$ pound of powder per cubic yard. Drilling with a churn driller costs from 12 to 18 cents per foot of hole bored. Upon these data Mr. Rigly estimates the total cost, per cubic yard of rock in place, for loosening and removing by wheelbarrow (labor assumed at $1 per day of 10 hours), as follows: When distance removed is 25 feet, total cost = $0.537; when 50 feet, $0.549; when 100 feet, $0 573; when 200 feet, $0.622; when 500 feet, $0.768; when 1000 feet, $1.011; and when 1800 feet, $1.401. This is exclusive of contractor's profit.

When labor is $1.25 per day, add 25 per cent to the cost prices given; when $1.50 per day, add 50 per cent, and so on. In hauling by cart, the cost of loading, which will be about 8 cents per cubic yard of rock in place, and the additional expense of maintaining the road must be added. Allowing, then, 851 lbs. as a cart-load, the total cost per cubic yard is estimated, when removed 25 feet, at $0.596; when 50 feet, $0 599; when 100 feet, $0.605; when 200 feet, $0.617; when 500 feet, $0.655; when 1000 feet, $0.717; and when 1800 feet, $0.94. [These estimates of Mr. Rigly are to be taken with much allowance for variations in the kind of rock, its hardness and physical construction, and even then will be counted as applying to limited conditions; but, so far as they go, may be useful to young engineers.—ED. E. AND M. J.]

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 Civil Engineers' Pocket-Book. Thirteenth Edition. Thirty-second Thousand. By John C. Trautwine, C.E. Revised by John C. Trautwine, Jr., C.E., Philadelphia. Published by John Wiley & Sons, New York, and E. & F. Spon, London. 1888. Pages 866, and Index. Illustrated. Price, $5.00.

DIVIDENDS PAID BY MINING COMPANIES DURING JULY AND FROM JANUARY 1st, 1888.

NAME OF COMPANY.	Paid in July.	Since Jan. 1.	NAME OF COMPANY	Paid in July.	Since Jan. 1.
Atlantic, Mich.	.....	60,000	Mammoth, Utah	.....	20,000
Alturas, Idaho	.....	112,500	Mary Murphy, Colo.	.....	35,000
Calumet & Hecla, Mich.	500,000	1,000,000	Montana Lt., Mont.	.....	330,000
Carlisle, N. M.	.....	50,000	Morning Star, Colo.	.....	25,000
Central, Mich.	.....	40,000	Mt. Diablo, Nev	10,000	30,000
Colo. Cent., Colo.	.....	41,000	N. Belle Isle, Nev	.....	200,000
Confidence, Nev	49,920	149,760	Ontario, Utah	75,000	525,000
Cons. Cal. & Va., Nev.	108,000	756,000	Original, Mont.	.....	3,000
Daly, Utah	37,500	300,000	Osceola, Mich.	.....	100,000
Dunkin, Colo.	.....	80,000	Parrott, Mont.	36 000	72,000
Eureka, Nev.	.....	87,500	Pittsburg, Cal.	.....	29,850
Franklin, Mich	80,000	120,000	Plymouth Cons., Cal	.....	80,000
Garfield, Nev	.....	25,000	Quicksilver, Cal., Pref.	64,500	236,500
Golconda, Idaho	.....	120,000	Quincy, Mich.	.....	160,000
Granite, Idaho	.....	10,000	Sherwood, Mo	.....	3,000
Granite Mountain, Mont	100,000	1,200,000	Sierra Buttes, Cal	.....	15,312
Hale & Norcross, Nev.	56,000	168,000	Sierra Nevada, Idaho	.....	10,000
Hecla Cons., Mont	15,000	105,000	Silver Mg. of L. V., N. M.	.....	25,000
Homestake, Dak.	25,000	175,000	Standard, Cal.	.....	50,000
Hope, Mont	.....	50.000	Swansea, Colo.	.....	3,000
Hubert, Colo	4,000	64,000	Tamarack, Mich.	120,000	240,000
Idaho, Cal	24,250	209,250	Viola Lt., Idaho	.....	37,500
Iron Silver, Colo.	100,000	200,000			
Jay Gould, Mont	.....	172,000	Total	1.404.170	7,545,172
Little Chief, Colo.	.....	20.000			

THE METALLURGY OF STEEL.*

By Henry M. Howe.

(*Continued from page* 48.)

In the case of small ingots several of the methods which we have considered might be expected to completely prevent both pipes and blowholes.

In the case of large ingots it should be comparatively easy to prevent blowholes in the layers which solidify first: but it is far from clear that any of these methods should be able to prevent central cavities, or that the compression which they effect should even compensate for the increased proportion of gas in the solidifying metal, due to the immediately preceding liquid compression. To make the center of a large ingot compact, the compression must follow up the contraction till the very central portions have cooled far below their freezing point, which means greatly distorting an enormous mass of already solidified and more or less rigid metal.

The pressure required at the cavities themselves in order to close them is probably slight:[a] the difficulty is to transmit any pressure whatever to them through an enormous thickness of outer and resistance metal.

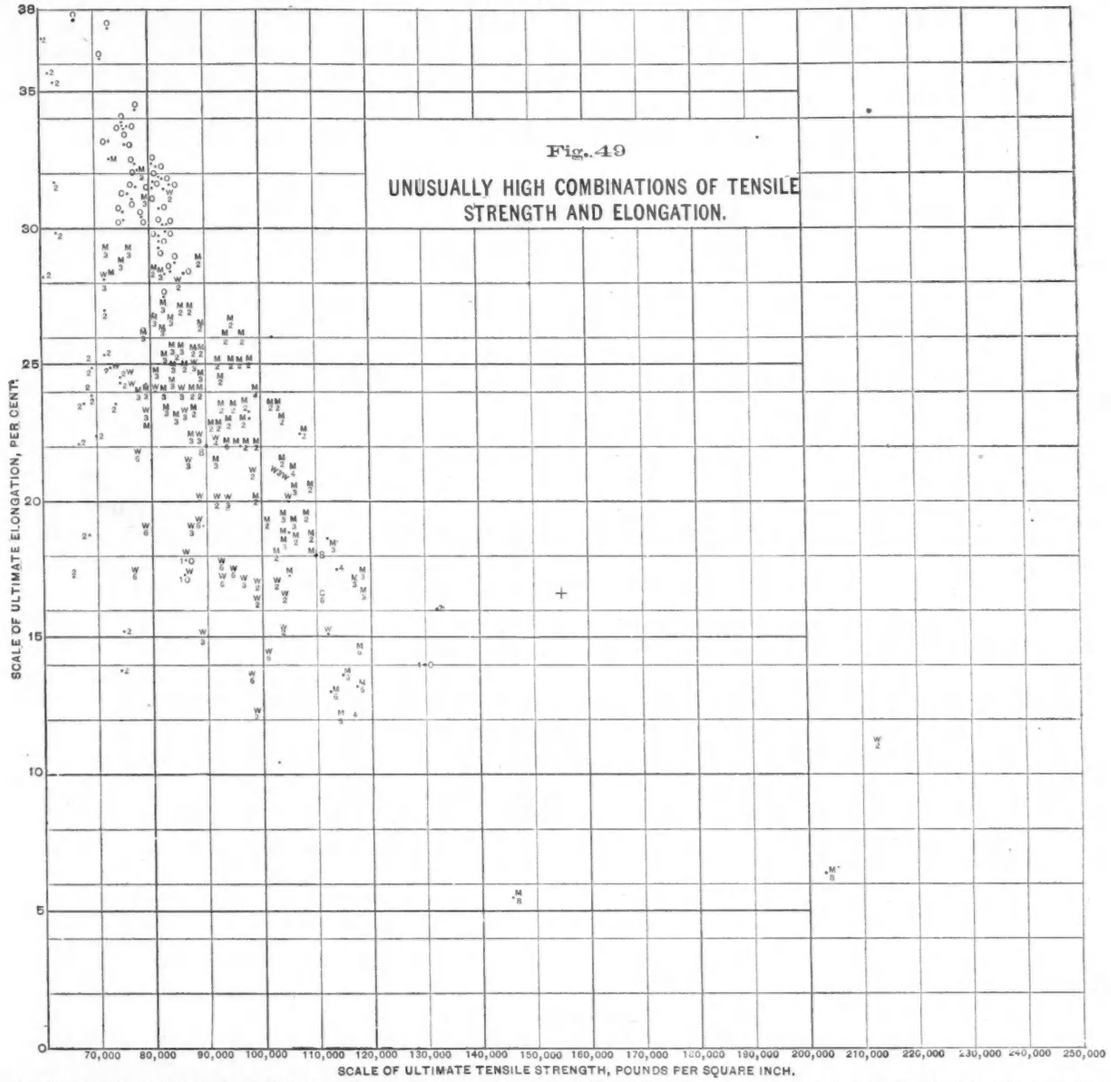
In comparing Whitworth's compression with forging it is to be remembered that, while the former has advantages in acting before blowholes form instead of attempting to efface those already created, and in being applied at a temperature which is higher and hence more favorable to the welding of cavities than is permissible in forging, yet it labors under the disadvantage of having to compress the whole cross-section of the ingot at once, attacking it in the path of greatest resistance. Forging under a powerful hydraulic press has the great advantage of concentrating its pressure on a small portion of the metal, attacking it piecemeal. It is by no means clear a priori that this may not outweigh its disadvantage of working at a lower temperature.

I see no reason to anticipate that liquid compression should benefit the metal otherwise than by preventing the formation of cavities. Indeed one would hardly expect that it could produce the kneading and rubbing together of the particles which forging gives, and which is generally thought to be extremely beneficial, since this implies motion of the particles on each other. It should, however, tend to prevent external cracks.

Evidence of the Effects of Compression.—The only two methods which have stood the test of experience are these

Fig. 49

UNUSUALLY HIGH COMBINATIONS OF TENSILE STRENGTH AND ELONGATION.

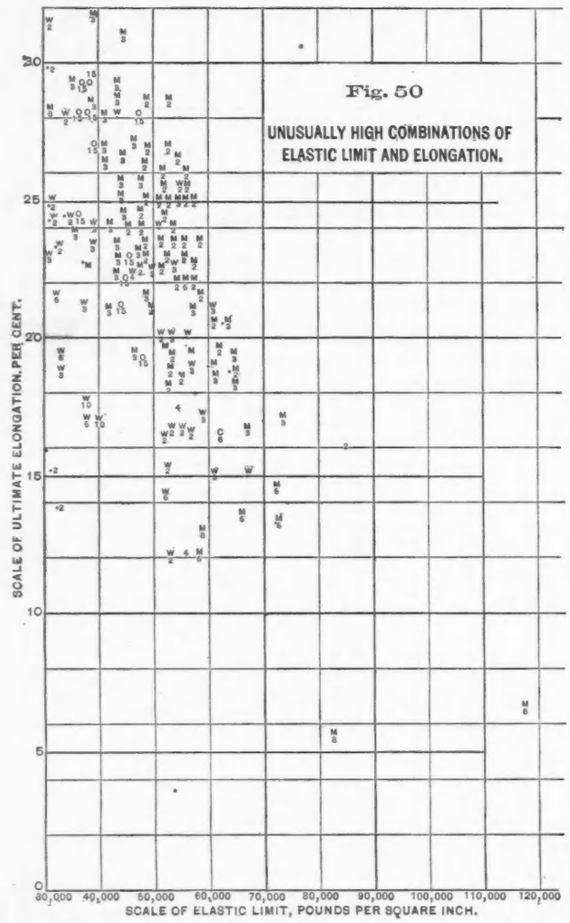


The numerals indicate the length in inches in which the percentage of elongation is taken: the letters indicate the origin of the steel, thus: *C* = Cambria, Johnstown, Pa. *M* = Midvale, Nicetown, Pa. *O* = Otis, Cleveland, Ohio. *W* = Whitworth. + = Unforged castings. Most of the Cambria, Midvale and Otis cases are from the reports of the Chief of Ordnance, U. S. Army, from 1877 to 1886 inclusive.

a Walrand states (Van Nostrand Eng. Mag., XXXIII., p. 362, 1885) that he finds that a pressure of from 74 to 88 pounds per square inch always greatly lessens the blowholes: and Chernoff states (Rev. Univ., 2d ser., VII., p. 149, 1880) that but slight pressure suffices to arrest the escape of gas. The extreme violence with which gas escaped from previously tranquil steel in Bessemer's experiment (§ 188 C.) on lowering the pressure by some 12 to 13 pounds per square inch certainly suggests that a small increase of pressure should materially reduce the escape of gas.

of Whitworth and of Williams. The evidence of the effect of the latter has already been stated: that of the effect of Whitworth's compression is hardly more conclusive than the a priori considerations.

It shows us exactly what we had good reasons to expect, to wit, that compression wholly eliminates cavities from small ingots and diminishes them in large ones, but no more. An ingot about 12 inches in diameter and 33 inches long shown by Whitworth at Paris, cut in two lengthwise and polished, was free from cavities as far as could be judged by examining it through the show-case. I have seen pieces of about this size cut from common compressed rail ingots, containing about 0·32% of carbon, 0·08% of silicon and 1·25% of manganese, which were almost absolutely free from defects.



The numerals indicate the length in inches in which the percentage of elongation is taken: the letters indicate the origin of the steel, thus: *C* = Cambria, Johnstown, Pa. *M* = Midvale, Nicetown, Pa. *O* = Otis, Cleveland, O. *W* = Whitworth. + = Unforged castings. Most of the Cambria, Midvale and Otis cases are from the reports of the Chief of Ordnance, U. S. Army, from 1877 to 1886 inclusive.

It is reported that his compression shortens large ingots by 12·5%, which certainly implies that it greatly diminishes their cavities, but not that it eliminates them completely. It is further stated his compression has been successfully applied only to pieces of simple form, and that even these are subsequently forged.

I know no evidence that his compressed ingots are freer from cavities than steel cast without compression is after it has been forged with suitable apparatus, *i. e.* rolls and hammers for small pieces, hydraulic presses for large ones. I here except the sinking-head portion of uncompressed steel.

Liquid compression probably does not increase the density: Percy finds the specific gravity of liquid-compressed steel identical with that of similar steel uncompressed.[a]

[a] Journ. Iron and St. Inst., 1885, I., p. 29.

Nor do I find any evidence that Whitworth's compression benefits the properties of steel otherwise than by diminishing cavities. We have plenty of vehement assertions on one side and on the other: but the experienced metallurgist, who to his sorrow knows the difficulty of tracing the causal relation, will receive them cautiously till the nature of their supporting evidence is made clear.

Members of the United States Gun Foundry Board of 1883 saw Whitworth's compressing apparatus in actual use. From the board's report, which commends Whitworth's procedure most highly,[b] one might infer that it meant to indorse liquid compression as such. But his procedure consists of two wholly distinct operations, 1, liquid compression, 2, forging under the hydraulic press after solidification. I questioned a member of the board,[c] whose name carries certainly as much weight as that of any of his associates. From his reply I gather that the board was convinced (1) that Whitworth's steel excelled all others and (2) that the action of the hydraulic forging press was far more beneficial to large masses than that of the hammer: but that it did not intend to indorse liquid compression specially, though impressed by Whitworth's conviction that it was valuable. It is possible that they weighed philoprogenitiveness, the inventor's natural parental bias, too lightly.

Indeed, one could hardly know that the admirable qualities of Whitworth's steel were at all due to liquid compression, without comparing a great number of his hydraulic-forged pieces which had been compressed while molten with others similar but not compressed. If such a comparison has ever been made, its results have not, I believe, been offered to the public, nor, I am very confident, to the board. Judging from its report and from the answers of two of its members to my inquiries, it seems to me pretty clear that the evidence which the board obtained was of such a nature that, while it might suggest, it could not begin to prove that liquid compression benefits large masses which are to be forged afterwards under the hydraulic press, otherwise than by diminishing the pipe and preventing external cracks: but we may reasonably doubt whether these advantages would repay the cost of a liquid compression apparatus.

The hold which a long-used brand and a famous name like Whitworth's have on the imagination, and the difficulty of substituting for a familiar material a new one which, though of equal or even greater fitness, differs slightly from it, suffice to explain the frequent belief of gun-makers in the unapproachable quality of Whithworth's steel.[d]

General Benét, commenting on the properties of some steel hoops from Midvale, remarks that they "are fully equal to the highest claimed by Whitworth & Co. for the characteristics of their steel hoops."[e]

(TO BE CONTINUED.)

NOTE.—The publishers of the ENGINEERING AND MINING JOURNAL will thank the readers of this article if they will promptly call attention to any inaccuracies they may observe in it.

[b] Proc. U. S. Naval Inst., X., pp. 633, 637, 642. Also Rept. U. S. Gun Foundry B'd.

[c] Lt. Col. Henry L. Abbot, Private Communications, Feb. 14th and 29th, 1888.

[d] Hotchkiss, the famous gun-maker, stated in August, 1884, that, though forced by government to try Schneider steel, it is very different from (meaning apparently very inferior to) Whitworth steel. Yet in November, 1885, Hotchkiss & Co. state that they use Schneider steel extensively and that it possesses the high qualities needed for guns. Report of Select Committee on Ordnance and War Ships, p. 443.

[e] Rept. Chief of Ordnance, U. S. Army, 1884, p. 12.

PERSONAL.

Mr. J. Hays Hammond, mining engineer, has gone to Mexico on professional business.

Mr. A. H. Shipman, inventor of the Shipman oil engine, died July 30th, in Geneva, N. Y.

Mr. J. H. Collins, F. G. S., of the firm of J. H. Collins & Son, of England, is about to visit the United States and Mexico.

Mr. James D. Hague, Mining Engineer of New York, has gone to New Mexico and California to examine mining property.

Gen. James C. Duane, the recently retired chief of the engineer corps of the United States army, has been appointed aqueduct commissioner by Mayor Hewitt of New York. The other appointees as directors were: Francis M. Scott, Assistant Corporation Counsel; John J. Tucker, a prominent builder, and ex-Assemblyman Walter Howe, a prominent and wealthy lawyer.

Mr. H. C. Dickenson has resigned his position as assayer with the St. Louis & Zacatecas Ore Company, Mexico. He will go to Ouray, Colo., where he will be interested in a mining enterprise.

Dr. W. P. Headden, for the past five years Professor of Chemistry and Geology in the Denver University, Colo., has been elected Professor of Chemistry in the School of Mines of at Rapid City, Dak.

Mr. A. J. Kenyon died at Oswego, N. Y., on July 27th. Mr. Kenyon entered the navy from New York in September, 1861, as a Third Assistant Engineer, and after passing through the intermediate grades, reached that of Chief Engineer in October, 1884. He had seen over twenty years of sea service

Dr. Winslow S. Pierce died July 29th, in Brooklyn, aged sixty-nine years. Dr. Pierce went with the pioneers of 1849 to California, where he remained for some years, later taking up his residence in Indianapolis, where he devoted himself largely to the development of the iron and coal industries of Indiana, and was instrumental in building rolling mills and established the first blast-furnace in that state.

Prof. Albert D. Hager died July 29th, at Chicago, from the effects of an accidental overdose of morphine. Prof. Hager was born at Chester, Vt., in 1817. He learned the carpenter's trade when a young man, but acquired a taste for geological studies and devoted all his leisure time thereto. He was, in 1856, commissioned Assistant State Naturalist of Vermont, and in 1877 became Secretary and Libarian of the Chicago Historical Society, a position which he filled until last year.

INDUSTRIAL NOTES.

Messrs. Hall Brothers & Co., Louisville, Ky., have been appointed sole agents for the sale of the "De Bardeleben" brand of pig-iron.

The Rock nitro-glycerine factory, Lima, Ohio, was blown up by an explosion of 800 pounds of dynamite, set on fire by tramps July 29th.

The Lebanon Manufacturing Company, Lebanon, Pa., has been awarded the contract for 20,000 tons of castings for the new sugar refinery of Claus Spreckles at Philadelphia.

The Franconia Iron Company, of New Hampshire, to which we referred in our issue of June 9th, has passed into new hands. A new railroad is to be built and the mines worked.

A revised list shows the loss by the burning of the Lead Works, at Salem, Mass., to have been $30,000, and the insurance $66,000. In our issue June 23d we referred to the fire at these works.

The Thomson-Houston International Company is sending to South America an incandescent lighting plant to be placed in a mining establishment in the heart of the Andes, 14,700 feet above the sea level.

It is stated that a syndicate is about to establish a steel plant and wire-mill at Pueblo, Colo. Steel forgings of all kinds, miners' tools, merchants' seeel, etc. A site for the plant will be donated by Pueblo people.

The Glendale, Mo., Zinc Works are moderately busy. They operate not only the original Glendale Zinc Works plant, but the old Carondelet Zinc Works as well, separated from the former by merely the width of a street.

The Western Steel Company has stopped operations in all parts of the Vulcan Steel Works, at Carondelet, Mo. It is stated that the owners of the works, the St. Louis Ore and Steel Company, will reopen them to business early in October.

The new coke-ovens of the Sloss Iron and Steel Compony at Coalburg, Ala., are nearly all completed. Of the sixty-three that are being constructed, forty are entirely finished and the remaining twenty-three will be completed in a few days. None of the new ovens have gone into blast yet.

The Colorado Coal and Iron Company, of Pueblo, Colo., paid off its employés at the steel-works last week. It was the biggest pay-roll in the history of the company for several years. Every department of these works is now running at full blast and the force is being constantly increased.

At the blast-furnace of the Ashland Iron and Steel Company, Ashland, Wis., quite an amount of work is now being done in remedying, making a new hearth and linings and several changes that are requiring considerable time to complete. Work will probably not commence again until the middle of August.

According to reports the National Association of Wrought Iron Pipe Manufacturers has collapsed. Early in last May the incompatibility of ideas among the members reached such fervor that the 25 firms comprising the association quietly withdrew studiously keeping their dissolution a profound secret until now.

The Parke & Lacy Machine Company has been incorporated by Messrs. B. T. Lacy, J. S. Engs, T. V. Walter, S. Gordon, and W. A. Campbell. The object is to deal in all kinds of machinery for a term of fifty years, with the head office located in Portland, Oregon. The capital stock is fixed at $200,000, shares $100 each.

It is stated that for some weeks claims against Graff, Bennett & Co. have been bought up for one third of their value. The sale of the rolling-mill at Millvale, Pa., will occur on the 9th inst. It is rumored that the mill will be bought by Mr. Rhodes, of the Pennsylvania Tube Works, he having a large claim against the company.

A strike began July 31st in every department of the nail works at Bellefonte, Pa., in consequence of a reduction of 57 cents a day in the wages of the firemen. The mills have been closed. It is stated that the Knights of Labor have given notice to the strikers to stand for the old scale of wages and that they will be sustained by the order.

Messrs. Stearns, Rogers & Co. have purchased the plant of the former Colorado Machinery Company, Pueblo, Colo., and will commence work upon a big order for machinery for the Philadelpbia Smelting Company as soon as the plant can be got in order. This fall the plant is to be enlarged and a new and extensive building erected.

The Nova Scotia Steel Company, with headquarters at New Glasgow, N. S., is about to change its name to the "Nova Scotia Steel and Forge Company (Limited)," and to increase the capital stock from $300,000 to $1,000,000, so as to enable the company to manufacture steel and iron in all its branches, and articles consisting of iron or steel, in whole or part.

The Tamarack-Osceola Copper Manufacturing Company, Dollar Bay, Mich., will erect two wire mills. There will be two buildings, 100x50 feet each, joined together at the ends, with an open court between. The capacity of the wire mills will be 10,000 pounds of fine wire per day of ten hours, or 20,000 pounds when working day and night.

The Greenville, Pa., Rolling Mill, owned by P. L. Kimberly & Co., and employing about 400 men, was leased by George Stage, of Greenville, when Mr. Kimberly's other mills were shut down. It was kept running until recently, when it was closed. Repairs are now in progress, and it is thought that arrangements will be made so that the mill may be started this month.

There is nothing in any detail of mining operations, with the exception of the operation of a percussion drill, that has not been worked out at Richmond. The intermittent calls for energy of pumps, hoists, milling and tramway service in a large mining plant, finds a parallel every hour in the experience of the Richmond Street Railway. The Sprague Electric Railway and Motor Company has now equipped or is equipping 22 street railways of various lengths.

In far transmission of energy in mining districts, the cost at the point of application of competing power is the factor that determines the use of power from a distance. In the experience of the Sprague Electric Motor Company at Richmond, Va., which Mr. Whitney, President of the New Consolidated Street Railway Company of Boston says "was one of the hardest contests for victory that was ever fought in the industrial field," that company solved the questions pertaining to the economical and practicable transmission of energy for 20 miles.

The Emmens Chemical and Explosive Company is completing its arrangements for the manufacture of its new high explosive, emmensite, for experimental purposes, at the labratory and range at Harrison, N. Y. They have placed in position an engine and boiler, together with steam kettles for mixing and distilling, and a revolving pulverizer of somewhat novel arrangement, the pulverizing being done by means of a ball in a revolving cylinder. By this means the powder is granulated to any desired size.

The Pittsburg Steel Casting Company has produced at its works at Pittsburg, Pa., a cast-steel shell, the first ever made in the United States, which indicates entire success. The shells are conical in shape, 6 inches in diameter at the largest end, and tapering to a point 2¾ inches, including the opening at which the cap is placed. It has an elongation of 21¼ inches, and weighs 95 pounds, requiring 5 pounds of powder for a charge, making the total weight 100 pounds. The Pittsburg Steel Casting Company has received an experimental order for 500 shells, which will be followed by one of 2000.

The Potters' Flint and Spar Pulverizing Company has been incorporated at Trenton, N. J., by Erastus Wiman, Lawrence S. Mott, William Burgess, and John A. Campbell. The principal part of the business will be located in Trenton, and a branch in New York City. The objects are to grind, pulverized and prepare flint, spar and other materials for the use of potters, manufacturers and others, the purchase of raw materials and the sale of the products, to sell and license and patent machine known as the Cyclone pulverizer for the preparation of potters' materials throughout the United States. The capital stock is $100,000, shares $100 each.

A number of prominent Southern capitalists and manufacturers met at Nashville, Tenn., on July 31st, to discuss the location there of an International Mineral and Metallic Exposition, towards which suitable federal and state aid might be secured in addition to private subscriptions, for the special display of minerals and metals, both in their raw and manufactured forms; together with the machinery employed in their production, and such other exhibits as would naturally be pertinent thereto. After discussion it was resolved to hold the exhibition in Nashville in 1890. A committee was appointed to organize the enterprsie, secure a charter, and put it on a practical basis.

The Sawyer-Man Electric Company, commercial agent of the Consolidated Electric Light Company, has issued a circular, wherein it appeals to the lamp consumers for the adoption of a uniform lamp socket, and state that such innovation would benefit them thereafter in reducing the cost of incandescent lamps by simplifying the mode of manufacture. The company offers liberal inducements to bring this about, and, at the same time, announces a reduction in the prices of its lamps. The company evidently means to capture the lamp trade of its many competitors and has increased its business to such an extent that it is compelled to make a large addition to its steam plant and to reorganize many of its departments.

The Land and Improvement Company, of Bessemer, Ala., has granted 100 acres of land to the Bessemer Iron and Steel Company, composed of Mr. H. F. de Bardeleben and a number of Southern capitalists. The company had proposed erecting three large coke fuel furnaces at Trussville. This plant will now be located at Bessemer. Fifty acres were also given the Little Bell Iron Company, which has already broken ground for the construction of a large charcoal furnace. The De Bardeleben Iron and Steel Company also propose building two large furnaces alongside its present plant of two furnaces. When these plans have all been carried out, Bessemer will have seven large coke fuel furnaces and one charcoal furnace.

Alfred C. Chapin, Mayor of the City of Brooklyn, N. Y., Thomas B. Rutan, Chairman of the Memorial Committee of the Grand Army of the Republic of Brooklyn, and John McCarty, President of the Board of Aldermen, invite architects and others to submit designs for a Soldiers and Sailors' Monument to be erected in Brooklyn. The design considered most meritorious, if accepted and retained, shall receive a prize of $1000. The design considered next most meritorious, if accepted and retained, shall receive a prize of $500. All designs not thus accepted and retained will be returned to those submitting them. The designs must be filed in the office of the Mayor of the city of Brooklyn on or before September 1, 1888.

The Westinghouse Brake Company has practically absorbed the American Brake Company of St. Louis. The American manufactures a steam driving wheel brake for engines, with reverse action to that of that of the Westinghouse, and railroads have already adopted it. The American Company also holds a patented improvement of the air brake to facilitate the exhaust of air and to hasten the departure of trains. Under the new arrangement the American Company will confine itself to the manufacture of steam brakes, the Westinghouse taking the improved air brake. The American is capitalized at $2,000,000, on which the Westinghouse Company guarantees 5 per cent. On the $60,000 bonds issued by the American Company to secure working capital the Westinghouse Company guarantees 6 per cent.

A company organized with the following officers, President, Clarence Richards; Vice-President, Carl Van Bronk; Treasurer, Edward Records; Expert, H. M. Ryan, all of Los Angeles, Cal., has purchased two thousand acres of ore land in Iron County, Utah, and is arranging plans for furnaces and a rolling mill near Iron Springs. The company will erect two furnaces of 80 tons each, also with puddling furnaces and rolling mill. The specialty of manufacture will be heavy iron pipe of all kinds and steel rails. Arrangements are now making for the purchase of machinery and other necessary supplies. Building will begin in from five to seven weeks. The works are expected to be in operation by next June, and when they are running to the intended full capacity, 1600 men will be employed.

The Submarine and Torpedo Explosives Company, Limited, has been organized in England with a capital of £30,000, shares £1 each, for the purpose of acquiring the rights in certain new inventions and appliances of a formidable and destructive character, for coast and harbor defense, viz.: (1) Ground mine case containing charge. (2) Land mines. (3) Electro-mechanical mines. (4) Floating mines. (5) Combined circuit, closer relay, and all the rights with regard to such inventions, both in the British Isles and throughout the world. It is not intended to employ the funds of the company in the erection of a factory or in the manufacture of these appliances. All orders for the apparatus will be submtted to the competition of established firms, the company supplying the gun cotton charges. The outlay at present contemplated would, it is stated, be limited to the cost of a warehouse or showroom, and of full size sets of ap-

paratus of each description of mine, estimated not to exceed £1000; this outlay will represent the total capital expenditure, the balance being available working capital. The present issue is of 25000 shares, of which 7500 are to be issued to the vendor on account of purchase money. The purchase money for the five inventions is fixed at £15,000, payable, one half in cash and one half in fully paid ordinary shares of the company, the Vendor paying all expenses in connection with the formation and promotion of the company. The following are the only contracts that have been entered into, viz.: Between J. P. Gibbons and C. J. Fox, between C. J. Fox, J. P. Gibbons and A. Wright, a Trustee on behalf of the company, and between A. Wright, on behalf of the company, and the New York Explosives Company, Limited, all dated July 10th, 1888.

CONTRACTING NOTES.

Machinery and supplies wanted. See page xiv.

Contracts open will be found on page xix. New contracts this week: No. 985, Water-Works; No. 986, Excavation, Masonry Work and Sand or Gravel Filling; No. 987, Erection of Stand Pipe; No. 988, Water-Works; No. 989, Nine Bridges, Iron, Wood, and Combination; No. 990, Steel or Iron Bridge, No. 991, Water-Works.

GENERAL MINING NEWS.

Shipments of iron ore from the mines of the districts mentioned below for the season up to and including July 25th, as reported by the Marquette *Mining Journal*, were as follows:

		Tons. 1888.	Tons. 1887.
Marquette,	Marquette District	257,424	368,559
St. Ignace,	" "	51,691	40,251
Escanaba,	" "	350,031	397,837
"	Menominee District	428,439	510,834
"	Gogebic District	98,464	
Ashland,	" "	389 531	455,746
Two Harbors,	Vermillion District	124.471	129,774
Total tons		1,699,051	1,903,101

WHITEBREAST FUEL COMPANY.—A prospectus has just been published, stating that an issue of $600,000 first mortgage bonds of this company has been made for the purpose of retiring the present bonded indebtedness of $200,000, and to provide funds ($400,000) for the purchase and development of additional coal lands. For the past four or five years, Mr. J. C. Osgood, the president of the company, as an individual, has gradually secured options upon valuable coal lands in Illinois. Mr. Osgood now turns these options over to the Whitebreast Fuel Company, which has decided to make the purchase, comprising about 20,000 acres of coal land in Bureau County, Illinois. The land has been carefully prospected with diamond drills and the company has already commenced to sink and equip the first shaft. The Chicago, Burlington & Quincy and the Chicago & Northwestern Railways pass directly through this property, and the Illinois Central and Chicago, Rock Island & Pacific railways can be reached by short spurs.

The prospectus just issued by the company shows that the business was organized in January, 1876. The company was re-organized under its present articles of incorporation, July 1st, 1887. The average annual net earnings for the past five years were $133,543.13, and for the year ending July 1st, 1888, $162,200.38; prior to 1883 the earnings were equally large in proportion to the capital employed. Since the listing of its stock the company has paid regular quarterly dividends of one and three quarters per cent, and will pay a similar dividend on the 10th of August.

It is stated that the earnings for the past year have been more than sufficient to pay the regular quarterly dividend and the entire interest and sinking fund charges for the proposed issue of $600,000 bonds, without depending on the increased earnings that can reasonably be expected from the newly acquired properties.

The property of the company consists of 5600 acres in Lucas, Marion and Wapello counties, Iowa, and 11,095 acres in Bureau County, Illinois; total, 16,695 acres. Of this, the coal rights to 5310 acres are owned in fee simple, 790 acres are held under perpetual lease, and the fee simple title to the remaining 10,595 acres will be secured with the proceeds of the new issue of bonds.

In addition the company owns the surface of 2576 acres overlaying the coal rights owned and leased, and has the following mines equipped and in operation: One shaft at Cleveland, one shaft at Phillips, Lucas County, and one slope at Flagler, Marion County, Ia. In course of equipment, one shaft at Ladd, Bureau County, Ill.

The average daily capacity of the mines in operation is 3000 tons, and on the completion of the new shaft at Ladd will be 4000 tons. In addition to its coal mines and lands, the company owns stock in auxiliary companies as follows: The Colorado Fuel Company, of Denver, Colo., $175,000; the Whitebreast Coal and Lime Company, of Lincoln, Neb., $23,000, from which it received in dividends for the year ending April 1st, 1888, $29,490, or nearly 15 per cent.

The company employs an average of 1500 men.

The company has a market for its Iowa coal throughout Central and Western Iowa, Nebraska, Northern Missouri and Kansas; and for its Illinois coal, Northern Illinois (including Chicago), Wisconsin, Minnesota and Eastern Iowa, and has favorable contracts for the entire fuel supply of the Chicago, Burlington & Quincy Railroad between Chariton, Ia., and Hastings, Neb.; the Union Pacific Railway from Council Bluffs, Ia., to North Platte, Neb.; the Humeston & Shenandoah Railroad and a portion of the Kansas City, St. Joseph & Council Bluffs Railroad.

The provisions of the trust deed in relation to sinking fund are particularly favorable to the holders of bonds.

The company is required to set aside each year a sufficient amount to purchase $30,000 of bonds, which will pay the entire issue at maturity. The trustees must advertise yearly for bids for the sale of $30,000 in bonds, but if bids are not received at less than 10 per cent above par, they are required to draw $30,000 in bonds by lot, for which they must pay 10 per cent above par. All bonds purchased for the sinking fund will be cancelled by the trustee and can not be reissued.

The statement of assets and liabilities July 1st, 1888, shows:

ASSETS.

Real estate	$1,250,171.04
Mines and equipment	364,885.26
Mine supplies	22,067.70
Uncollected accounts (good)	15,527.05
Cash	7,058.1;
Bills receivable	1,611.06
The Colorado Fuel Co stock	175,000.00
Whitebreast Coal and Lime Co. stock	23,100.00
Total	$1,859,420.22

LIABILITIES.

Capital stock issued	$1,300,000.00
Undivided profits	92,984.02
Sinking fund (for depreciation of plant and coal mined)	105,000.00
Bonds (old issue)	200,000.00
Advanced on subscriptions to new bonds	150,000.00
Current accounts and vouchers	11,436.20
Total	$1,859,420.22

ALABAMA.

MARY LEE COAL AND RAILWAY COMPANY.—This company has been incorporated at Birmingham, Ala., with a capital stock of $500,000, and the main office and principal place of business will be in that city. The business of the company will be mining coal, iron ore and sand, and the manufacture of iron. They propose to build one or more furnaces and a rolling mill, with such lines of railway as may be necessary to convey the raw materials to the plant.

CALHOUN COUNTY.

SOUTHERN SMELTING REDUCTION AND MINING COMPANY.—This company will erect smelting works at Anniston, for reduction of gold-bearing sulphurets, copper and other ores, work will begin at once.

ALASKA.

BEAR'S NEST.—There were recorded in the office of the recorder at Juneau, on July 10th, deeds to the Bear's Nest group of mines, with the following considerations: Bear's Nest, $1,000,000; Takou Chief, $499,985; Julia, $150,000; Alta, $150,000; Excelsior, $700,000. The purchase, to which we referred in our issue of June 16th, was made by a syndicate of English and American capitalists. A 120-stamp mill will be erected, and will be increased as developments advance.

CALIFORNIA.

The Maxwell Creek mines, which were taken to London some time ago by Wm. Letts Oliver, have, according to the San Francisco *News Letter*, been successfully placed in strong hands on that market. The Big Oak flat ditch will be run in connection with the mines.

FRESNO COUNTY.

JOSEPHINE MINING COMPANY, LIMITED.—The directors of this company, being disappointed at the small returns for June, as telegraphed by the superintendent, wired from London to Mr. Hamilton Smith, who had just left the mine, to write a full report and telegraph summary at once. His reply was as follows: "Operations five months to June 30th show value sulphurets as profit, say, $6000. June did not realize a profit. If there is an (no?) improvement next clean-up, advise suspension of crushing, but further sinking and drifting. The management has been satisfactory for economy. Battery ore now assays in gold $7 to $10." In our issue of December 24th, 1887, we referred to the incorporation of this company.

INYO COUNTY.

INYO DEVELOPMENT COMPANY.—This company has recently erected a 30-foot windmill for the purpose of pumping water from Owen's Lake into the evaporating vats. It is understood that the company will soon erect soda refining works at or near Keeler.

NAPA COUNTY.

ÆTNA MINING COMPANY.—The furnace was shut down more than two weeks ago, and the usual clean-up following such act has been finished. Some prospecting is being done in the mine, but parties interested, it is said, do not feel disposed to risk much capital looking after more ore.

NEVADA COUNTY.

BANNER MINING COMPANY.—This company has been organized by New York capitalists to work the Banner mine, in Nevada City Mining District. The mine was in operation from 1865 to 1869. The new company will begin work this fall: to pump out the old workings, sink the shaft, run new levels, and erect a modern forty-stamp mill.

COLORADO.

MAY-MAZEPPA CONSOLIDATED MINING AND MILLING COMPANY.—This company has been organized with a capital of $1,000,000, shares $10 each, with Charles E. Taylor, William H. Mullins and W. C. Wyncoop incorporators. The company will operate in Arapahoe and Gunnison counties, with main office in Denver and branch office at No. 14 Water street, New York City.

CLEAR CREEK COUNTY.

In equalizing the assessments of this county, the County Commissioners have assessed all patented mining claims at the rate of $20 per acre, and all claims, whether patented or not, that produced during the year 1887 over $1000, at the rate of two per cent on the gross output, which would be an assessment of one fiftieth of the gross percentage.

MAMMOTH.—This mine has been bought by R. T. Brown, Esq., of Erie, Pa. Wellington Downing, former superintendent of the property, is now arranging matters for the owner to have operations renewed upon this, one of the oldest mines in Brown Gulch. The ground between "B" and "C" levels and the west 300 feet of the lode between the "E" or tunnel level and "D" level has been leased. The balance of the property will be put in shape for leasing as soon as possible.

MARY FOSTER MINING COMPANY.—This company is pushing development upon its newly acquired property and finding great improvement in its mineral. A strike has just been made showing from seven to ten inches of very high-grade ore.

RED ELEPHANT TUNNEL AND MINING COMPANY.—This company has been organized by Walter A. Jayne, John Porter, Edwin Beaudry, John Bottorff, William O'Brien, Samuel Syster, and John Brennenstuhl, with a capital stock of $100,000, shares $10 each.

SILVER AGE MINING COMPANY.—The company is about to let a contract for 100 feet upon the tunnel proposed for the development of its group of mines. The properties have been explored sufficiently through the Freeman shaft to prove the value and warrant the tunnel, through which the mines may be worked much more cheaply and better. The tunnel will have to be driven about 300 feet to cut the lodes.

GILPIN COUNTY.

The mines of Gilpin County are all doing well. The Hidden Treasure and Bobtail groups are making large shipments steadily.

BONANZA & UNION TUNNEL MINING COMPANY.—About a year ago, owing to a lack of money, this company suspended operations, and nothing has been done in the mine since then. Mr. T. H. Becker, the general manager of the company, is now in New York endeavoring to raise $100,000, which, he states, will be the sum required to resume mining upon the enlarged scale that is proposed. Mr. Becker said to an ENGINEERING AND MINING JOURNAL representative: "We own a group of mines that have been worked for twenty-five years, and yet the supply of ore seems inexhaustable. We own the Bonanza and the Union Tunnels, each of which extends through veins of several feet thickness.

"In regard to our company we have succeeded in raising a portion of the amount required, and we shall probably be in shape for work early this fall. We find that capitalists are rather chary of entering mining enterprises just now."

GUNNISON COUNTY.

SYLVANITE.—Returns have been received on the car load of ore shipped to Pueblo, which netted here $2500, says the Crested Butte *Pilot*. Other shipments will be made at once. A force of nineteen men are employed at present.

LAKE COUNTY.

ANTIOCH.—The stamp mill at present is said to be making a saving of 84 per cent of the assay value of the ore. About 80 tons per day are now being crushed, the use of 60 mesh screens in the stamp batteries reducing the capacity from 110 tons to the former figure. The average gross value of Antioch ore is a little over five dollars per ton. The ore is essentially free-milling, and the loss on the plates consisting mainly in floured quick silver. Of the base metals, the ore contains little or no pyrite, but has a small amount of wolframite, which carries gold, and of course is lost. With the use of 60 mesh screens a large saving on the plates is effected, but it is doubtful if this is sufficient to compensate for the reduction in the capacity of the mill, and it is quite likely that 40 mesh screens will be used again. But little prospecting work is going on in the mine. The ore-body is now opened to a depth of 125 feet, and across the vein for 175 feet, the footwall, not yet having been reached. In the course of the vein development work has opened it for a distance of 4250 feet. At present ore is being broken from the 600-foot level. A new tunnel is to be driven into the hill 100 feet below the bottom of the shaft, for the purpose of opening another working level.

DINERO MINING AND MILLING COMPANY.—The stoppage of work threatens to become permanent unless the company can make an arrangement to raise money. The sinking of the shaft promised to open a good body of ore, but the money expended in building a mill, for which the company has no present use, has so exhausted its resources as to make further development impracticable unless the property can be bonded for an amount sufficient to open the mine properly. There is said to be a large body of low-grade ore in the workings, but not of sufficient value to pay for mining, hauling, and concentrating.

IRON SILVER MINING COMPANY.—In the Moyer mine the shaft is now down 45 feet below the second level, and going down in blue limestone. The shaft crossed the Moyer fault a short distance below the second level. The Leadville *Herald Democrat* says that recent developments show that the Moyer fault is taking a more northerly course. The general

direction of the fault has been north 54 degrees east. The ore body in the Moyer is further complicated by a branch fault, which joins the Moyer fault west of the shaft, and having a northeasterly direction. This branch fault has a throw of 70 feet at the place where it joins the Moyer, the throw decreasing toward the northeast.

No shipments are being made; only prospecting and development work is now going on in the mine.

In the old Iron mine the company is doing some prospecting work. Some very fair bodies of ore have been opened. The Rock and Stone mines in California Gulch are being worked by lessees, and but little is being done in them. The concentrating mill is running regularly, dressing from 200 to 250 tons of ore per day. The mill is running on low-grade ore from the old Iron mine dumps.

LEE BASIN MINING COMPANY.—The company will sink a new three-compartment shaft about 400 feet south of the Olive Branch, which will tap the same rich ore chute that has been cut in the latter workings. The new body of sulphides cut the Olive Branch from the 430-foot level of the incline continues to show up better with development. The grade of the ore is about 70 ounces.

ST. KEVIN MINING COMPANY.—A letter from the superintendent, dated July 27th, states that ten more tamps for the new mill are expected daily.

TWIN LAKES HYDRAULIC PLACER MINING COMPANY.—This company has a force of 60 men at work on its placer below Twin Lakes, and the gold production this summer is expected to be very large.

LA PLATA COUNTY.

The Animas City copper smelter is again being made ready for operation. Some additions have been made to the machinery, and its agents are in the field buying a supply of copper ore.

OURAY COUNTY.

Mr. John Friedlander, now of New York, but late from London, has closed the purchase of a one half interest in the Woodbine, Norfolk and Painter lodes, on Brown Mountain, at Ouray, and has a bond on the other half for $15,000. Work will be commenced on the properties at once.

A special correspondent sends us the following:

The Yankee Girl mine, Red Mountain, is in great straights with its pumps. The water is so acid that it corrodes the pipes, pumps, and everything of iron with which it comes in contact so quickly as to cause great inconvenience and expense. Some times pump columns do not last two months. A composition cylinder lining for the pumps has been adopted. There is talk of various kinds of lining for pipes, etc., lead lined pipes, copper lined, etc.; even of employing lead piping. The mine was shut down for several weeks owing to the flooding of the lower levels through an accident to pump columns due to corrosion. The miners and all except pump men, machinists and such, were laid off. They are working again, not quite full blast. They are certainly energetic. Here is a good opportunity for some inventor of a lined pipe. No experiments have been made to ascertain the character of the acid, or what will best withstand its effects.

The Mears (narrow gauge) Railroad, from Silverton, has reached Cnattanooga, three miles from Red Mountain, and is expected to reach Ironton, three miles below Red Mountain, before snow flies (September 1st). It will be an immense advantage in the way of shipping low-grade ores and of cheap coal. Its advent is anxiously awaited, as it is expected to solve the question of handling the large bodies of ore claimed to be opened up but too low to be shipped by present facilities. The railroad has, however, prevented the building of any kind of reduction works, and there is no likelihood that any thing of the kind will be built until it is definitely settled what effect the railroad will have on the region (There are many so-called mills in this section, built in days gone by, which stand as monuments of ignorance and folly. Some of these prove veritable curiosity shops to the knowing.)

The Mears Railroad can be little more than a summer road, as it runs through a region of heavy snows, over a high divide and under the lee of many a snow-slide route. It will, however, prove a link in the Denver & Rio Grande's "Round the Circle" tourists' route, *i. e.*, from Denver to Ouray, Ouray (at present by stage) to Silverton, and Silverton, by the San Juan branch, back to Denver—a trip comprising probably more grand scenery than any other in the United States.

A party of Bostonians have been examining the mining and coal areas of the region around Glenwood Springs, and it is stated that they seriously meditate restarting the smelter at Aspen or putting in a new plant somewhere in the Roaring Fork Valley.

PITKIN COUNTY.

One of the large incline hoists operated by Sprague electric motors, two of which were built by the Sprague Company for the Roaring Fork Electric Light and Power Company, of Aspen, Colorado, for use in the mines there, has been put into successful operation. This hoist is used for hauling empty cars into the Veteran tunnel. The loaded cars run out by gravity. The motor pulls the empty cars into the tunnel in trains of six each at the rate of 500 feet per minute, and with perfect ease. The distance is 1000 feet, the grade 3 per cent and the weight of a train 45,000 pounds. As soon as the incline can be timbered the other hoist will begin its service.

BONNYBEL.—Messrs. D. R. C. Brown, Elmer T. Butler and others claiming owership in this mine, at Aspen, have applied to the United States Circuit Court at Denver for permission to do further development work in the property. D. M. Hyman and others, respondents in the case, claim that the Bonnybel is a break-off from the Durant, and are resisting the application. This is one of the mines in the group on Aspen Mountain over which so much litigation has been had in the United States Circuit Court.

SAN JUAN COUNTY.

FREDRICA.—This mine was sold recently by the special commissioner, Mr. John Miles, who has appointed by Judge Hayt at the last term of court, to Mr. A. K. Prescott, one of the litigants, for $3500.

IDAHO.

CUSTER COUNTY.

RAMSHORN MINING AND SMELTING COMPANY.—The company has just shipped two cars of bullion to the Pennsylvania Lead Company, at Mansfield, Pa.

OWYHEE COUNTY.

MORNING STAR GOLD AND SILVER MINING COMPANY.—William F. Sommercamp, Jr., entered a judgment July 16th against this company, and the sheriff has levied on the following property: The Morning Star Gold and Silver Quartz lode, situated in Carson Mining District, the shaft house, engine, rope and all the hoisting machinery connected therewith. Notice is given that on the 20th day of August, at 10 o'clock A. M., in front of the Court House, of Owyhee County, this property will be sold at public auction to satisfy the judgment and all costs.

PROUSTITE MINING COMPANY.—Superintendent Howe telegraphs from the mine under date of July 28th: "Concentration an entire success. First run of mill saves 82 per cent." The concentration referred to is the Frue-vanner process, which was tried first merely as an experiment upon the low-grade ore. It has proved so successful, however, that the company will use it permanently. The concentrates from this low-grade ore are said to have run $1000 per ton, and the officers of the company are correspondingly sanguine. The 10-stamp mill at the mine is rapidly nearing competition.

SHOSHONE COUNTY.

FAY TEMPLETON MINING COMPANY.—This company has been organized at Delta with the following officers: Eugene Klein, President; W. C. Human, Vice-President; James Ward, Treasurer. The company will immediately proceded to develop the mine more fully. It is stated that it has been fully demonstrated that the ore will pay at least $30 per ton.

ILLINOIS.

MADISON COUNTY.

The M. C. Bullock Manufacturing Company, of Chicago, has been prospecting for coal, fire-clay, etc., at St. Jacobs, for the past month, and struck at a depth of 430 feet a three and a half foot vein of fine coal, a four and a half foot vein seven feet below this, and also an excellent vein of fire-clay. The town trustees have voted money to continue the boring several hundred feet deeper.

PIATT COUNTY.

The Diamond Prospecting Company of Chicago struck the third vein of coal at Monticello at a depth of 600 feet. It is stated that the third vein is thirty inches thick. The first one, twenty-four inches, was struck at a depth of 541 feet, then followed a two-foot vein of fire-clay, when vein number two, of three-foot coal, was struck. It is doubtful if a shaft will be sunk.

MAINE.

HANCOCK COUNTY.

The Douglass and one other of the old copper mines located at Bluehill, have recently been sold by auction to the United Copper Company, of New York, for $75,000 and the work of putting the Douglass property into working shape is now in progress. This mine has a shaft that is down 200 feet, which it is now proposed to sink 600 feet.

MICHIGAN.

COPPER MINES.

FRANKLIN MINING COMPANY.—Advices dated July 26th state that the only change to note in the crosscut at the 30th level is the appearance of heavier copper. A mass of about 550 or 600 pounds was taken out on that day, with some smaller pieces of barrel mineral. Another drill has been started on the lode to open out each side of the cross cut, preparatory to drifting north and south.

KEARSARGE MINING COMPANY.—Stoping has commenced, and ore was to be sent to the stamp mill the beginning of this month.

RIDGE MINING COMPANY.—The stamp mill has started up. The mill has lain idle nearly seven years and everything was badly out of order. At present no active mining is being done, the rock that is being hoisted is that left in the mine by the tributers the past few years, consequently its only cost is the handling and treating of it. The hoisting machinery and everything is ready for work, which will be resumed as soon as certain financial arrangements are concluded.

IRON MINES.

Mr. James Corrigan, of Cleveland, has brought suit against George E. Tarbell, of Milwaukee, to recover $30,000 damages for loss incurred by Corrigan on mining stocks purchased by him from Tarbell, and which, he alleges, he was induced to invest in by the latter through false representations as to the value of the properties which they represented. The shares sold were in the Iron King, Blue Jacket, Tontine, Anvil, First National and Valley mining companies. The defendant denies having guaranteed the stocks, or in any manner represented the properties to be more valuable than they really are.

FLORENCE.—It is reported that the entire production of ore at the Florence mines, amounting to over 100,000 tons, the last of the ore taken out the past season, was sold last week. As quick as the buildings and machinery damaged by the recent fire, referred to in our issue of July 21st, can be replaced, mining will be resumed in all the workings.

MINNESOTA.

PIONEER EXPLORATION AND MINING COMPANY.—This company has been organized with a capital of $1,000,000 by J. T. Gregory and J. S. Ellis, of Ashland; Wm. H. Shipp and J. A Humbird, of Hudson, Wis.; and Jas. H. James, of Duluth. The Pioneer is said to be one of the leading properties on the Vermillion range.

MONTANA.

DEER LODGE COUNTY.

BIMETALLIC MINING COMPANY.—Telegraphic dispatches report that a fire occurred on the 1st inst., which burned the shaft house, hoisting machinery and upper part of the shaft, together with a lot of wood, entailing a loss of several thousand dollars. One hundred men were in the lower levels, but came up to the 100-foot level, and followed it to the air shaft. All came out safely.

JEFFERSON COUNTY.

A. M. HOLTER.—A large body of low-grade ore is reported to have been struck in this mine at Elkhorn. It will necessitate the erection of a concentrator.

HELENA MINING AND REDUCTION COMPANY.—The company is building a tramway from the Alta mine to the Corbin concentrator. When completed the ore will be hauled from mine to concentrator in cars with dummy engines.

SILVER BOW COUNTY.

BLUE BIRD MINING COMPANY.—It is the intention of the company to continue sinking the main shaft to the 650 level; the work will commence September 1st. An improvement, in the way of complete sawmill, has been added to the mine to facilitate the cutting and framing of timbers. The third roasting furnace of the White & Howell type has been added to the mill. It is now in operation handling 30 tons per day and increasing the capacity of the mill to about 130 tons per day.

At the mine the work progresses satisfactorily, the levels from the 100 to the 500 being worked upon.

A new shaft has been started recently by this company on the "Eastern Extension" of the Blue Bird vien, from which ore will be extracted during the coming month.

LEXINGTON MINING COMPANY.—A large engine has been ordered lately, and is now in course of completion in Chicago. Not long since the Lexington sunk fifty feet additional, and the developments consequent at the 1200-foot level are such as to warrant the company in going to the expense of putting in the engine. The strike thus made, says the Butte *Miner*, extends from 1200 to the 650-foot level, 4 feet of the ore going 200 ounces in silver and 30 per cent copper, while the greater part of it, ranging from 18 to 20 feet, assays, across the face and throughout, on the average of 40 ounces silver and 3 to 4 per cent copper.

NEVADA.

NORTHWESTERN CONSOLIDATED MINING COMPANY.—This company has been organized at San Francisco to operate in this State. The capital stock is $10,000,000, shares $100 each. The following were elected directors: J. J. Corry, Virginia City; John N. Taylor, Oakland; and Frank A. Hassey, Mrs. M. J. Church and John Hutchinson, of San Francisco.

ELKO COUNTY.

COMMONWEALTH MINING COMPANY.—Bullion valued at $50,000 was shipped from this mine July 25th, being the result of a run of about eight days.

EUREKA COUNTY.

STAR MINING AND SMELTING COMPANY.—The real property of this company, consisting of several mining claims, springs of water, houses, water tunnel, smelting furnace, assay and business office, powder magazine of the company and the lots on which the buildings stand, was sold July 26th at Eureka, at sheriff's sale, to satisfy a judgment held by R. Sadler & Co. of that place. The entire lot was bid in by R. Sadler for $1010, who now holds the property, subject to the liens, mortgages and a subsequent judgment and levy by Remington, Johnson & Co. The company have six months for redemption. The liens amount to about $12,000 and are held principally by A. Jackson in trust for the original holders.

LANDER COUNTY.

A correspondent writes us that little is doing in Lander County. At Galena some men are leasing on the old White and Shiloh mines in a small way. At Austin the Manhattan mill is closed down, but small quantities of ore are being mined and shipped to Denver for sale.

PITTSBURG CONSOLIDATED MINING COMPANY, LD.—A correspondent writes us that the output of this company, situated in Lewis district, has been somewhat small of late because of scarcity of water for the mill. Measures are now being taken, however, to pipe to the mill water from the mines as well as from some springs in the cañon above the mill-site. When all this water has been secured there will be no difficulty in continuously running the four Huntington mills composing the company's crushing plant.

The mine is now in fine condition, having considerably more than a full year's supply of ore exposed an

ready to stope above the fifth level. One of the pay chutes developed in this level extends along it and the fourth level, 375 feet, averages 8 feet in thickness, and is continuous between the two levels, a distance of 162 feet. This block of ground must contain some 30,000 tons, which, to judge from past production according to mill averages, will yield nearly 1 ounce pure gold per ton of ore at a total expense not exceeding $5 per ton to cover all cost of exploitation, mining, transportation (by cable carrier), milling, and all incidental expenses.

The property has been raised to its present prosperous condition under the personal supervision of the company's consulting engineer, Mr. C. A. Moreing, of London, who is now about returning to England.

QUEBRADA COPPER AND SILVER MINES, LIMITED.—The copper mines at Battle Mountain have been sold to English capitalists, and the above company incorporated to work the mines, and preparations for their development are in progress.

NYE COUNTY.

BARCELONA MINING COMPANY.—The Barcelona mine at Spanish Belt is still improving. The large body of ore struck in the south level still holds out, assays showing that it increases in richness as work advances. Preparations are being made to place a Huntington mill, rock breaker and concentrators at the mine. The property is being opened in a systematic manner. The large body of ore which is being worked on the south level adds to the value of the mine.

STOREY COUNTY—COMSTOCK LODE.

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

BELCHER MINING COMPANY.—There is a large area of virgin ground in the south end of this mine which will be explored forthwith with a prospect of making new ore discoveries.

CONFIDENCE MINING COMPANY.—This company had shipped up to July 22d bullion valued at $72,626.23.

CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.—The California battery mill started July 25th, crushing ore. This will greatly increase the company's bullion production.

GOULD & CURRY MINING COMPANY.—The bullion production for July it is estimated will amount to $20,000.

OCCIDENTAL MINING COMPANY. — Shipments of about 125 tons of ore are made weekly to the Atlanta mill, pulp assays of which show a value of above $27 per ton. The July bullion yield of the mine will not fall far below $10,000, which could be increased to four times that amount if crushing power were attainable.

SAVAGE MINING COMPANY.—At the annual meeting of this company, held at San Francisco recently, the old managers were victorious in the election of officers, which was as follows: Directors, H. M. Levy, M Hoefich, A. K. P. Harmon, E B. Holmes and A. Borland, representing the opposition, which thus secured one director in the board. At a subsequent meeting H. M. Levy was elected President; E. B. Holmes, Secretary; R. P. Keating, Superintendent; and Nevada Bank, Treasurer. The superintendent's report of work done in the mine during the past year shows that developments were pushed on the 400, 500, 600, 700, 800, 850 and 950-foot levels. Most of the ore extracted during the year has been taken from the the 600-foot level.

On the several levels and stations opened, much labor has been expended in easing timbers, repairing drifts, etc., and also considerable expense has been incurred on repairs to the vertical shaft. During the year there were extracted and milled 20,528 tons of ore, which yielded in bullion $372,162.98. The hoisting-works, machinery, etc., are all in excellent working order.

The Secretary's report of receipts and disbursements for the year ending July 16th, 1888, is as follows:

DISBURSEMENTS.

Cash indebtedness July 13th, 1887	$94,661.48	Legal expense	4,717.02
Materials	24,299.98	Sutro Tunnel royalty	14,952.25
Combination shaft	2,677.78	Reduction of ore	91,392.00
Ores	14,747.70	Discount on silver	55,637.11
Timber and lumber	30,377.94	Mint charges on fine bars	3,944.04
Interest and exchange	4,932.77	Express freight on fine bars	591.65
Labor and salaries	138,315.12	R. P. Keating, Superintendent	18,587.57
Fuel	12,348 00		
Assaying	1,871.52	Total disbursements	$530,295.88
Various expenses	16,241.95		

RECEIPTS.

Bal. Supt's acc't July 13th, 1877	$309.09	Sutro Tunnel Company	4,476.13
Assessments	112 000.00	Va. & Truckee R.R. Co	4,788.98
Bullion	338,951.53		
Cash indebtedness	66,770.15	Total receipts	$530,295 88

The bullion account is incomplete, because bullion at the Carson mint and in transitu on June account is not included, for the reason that the full returns have not yet been received. This accounts for the discrepancy between the figures given in the reports of the Secretary and the Superintendent.

SEGREGATED BELCHER MINING COMPANY.—Operations in the Segregated Belcher are now conducted through the shaft of the Belcher mine in place of the Crown Point shaft as heretofore. This change will admit of far more vigorous exploration than was possible under the former arrangement. Ore shipments from the Segregated Belcher will be the next new feature in the Gold Hill group when the Carson River mill stamps can be operated next fall. The report submitted at the annual meeting gives the bullion yield during the fiscal year ended July 16th, 1888, at $338,895.53, total assessments levied, $112.000; receipts, $530 295.88; cash in treasury, $18,587.57. The following officers were re-elected: H. M. Levy, President, A. K. P. Harmon, Vice President, and E. B. Holmes, Secretary, with R. P. Keating, Superintendent.

UNION CONSOLIDATED MINING COMPANY. — The next new work of importance projected at the north end of the lode is the opening up of the Union Con. on the 1465 level through the Ophir shaft, for the purpose of exploring the downward continuation of the broad belt of metal bearing quartz first developed on the 500 level, and subsequently followed downward to the 700 and 1300 levels. On the latter level there is marked improvement in the grade, and the prospect is flattering for an important ore discovery on the 1465 level.

The opening of this level was recommended by Superintendent Lyman in his report submitted at the last annual meeting, extracts of which were published in ENGINEERING AND MINING JOURNAL of July 28th.

NEW MEXICO.

SOCORRO COUNTY.

GRAPHIC MINING AND SMELTING COMPANY.—The mines and smelter, it is reported, are about to close down owing to the low price of lead. In quality and grade of ore, says the Socorro *Chieftain*, the mines are in most excellent condition, and the smelter has just been thoroughly overhauled and put in first-class producing shape. A plan for re-organization is in progress which, if successful, will give the new company an excellent smelting plant and an abundant working capital. The suspension of operations is only temporary.

OHIO.

The new oil pipe line of the Standard Oil Company has just been completed from Lima, O., to South Chicago, a distance of 206 miles. The company began filling the pipes with oil July 29. It is said that it will take eight days to pump 70,000 gallons into the line, and no appearance of oil will be seen at the South Chicago end until that quantity has been safely placed in the underground tunnel. Once filled, no trouble will be experienced in keeping up the supply, and the six 35,000 gallon tanks at South Chicago will be kept full constantly. It is said that the company will only sell crude petroleum for fuel to the rolling-mill owners.

PENNSYLVANIA.

COAL.

In pursuance of a resolution adopted at a meeting on July 28th, the miners of the fourth pool on July 30th demanded an advance in wages of 25 cents per 100 bushels. The advance has been refused by the operators who have been heard from, and the miners have gone on a strike. They have been getting 2¾ cents per bushel, and propose now to stand firm for the 3 cent basis. It is stated that the operators do not care about starting their mines again until September 1st.

PHILADELPHIA & READING COAL AND IRON COMPANY.—The Otto Colliery at Tremont, which was flooded a year ago for the purpose of extinguishing a fire, is about to be put in operation. This is one of the most important collieries owned by the Philadelphia & Reading Coal and Iron Company. It has just been discovered that the fire originated in the slope, and was caused by the explosion of a lamp. An examination of the mine, only completed July 30th, has revealed the fact that the workings were not in the least damaged, and this will save the company thousands of dollars.

NATURAL GAS.

Reports state that a large flow of gas has been struck at Beamville, near Coal Valley, on the Monongahela River, at a depth of 1000 feet. At the same time the old Coal Valley well, long ago abandoned, suddenly spouted the same strong pressure of gas.

OIL.

Exports of refined, crude, and naphtha from the following ports, from January 1st to July 28th:

	1888. Gallons	1887. Gallons.
From Boston	1,704,378	2,753,500
Philadelphia	66,542,153	87,382.147
Baltimore	3,773 920	5,372,549
Perth Amboy	13 576,599	9,278,499
New York	197,291,758	208,745,803
Total exports	282,888,808	313,532,498

Oil was struck near Mount Morris, in Green County, on the 1st inst. This is new territory, and consequently the strike caused great excitement. The Nineveh well, in the same county, struck last week, is 12 miles from Mount Morris.

SOUTHWEST PENNSYLVANIA PIPE LINE COMPANY.—This company will lay a 3-inch line from Washington to the Johnston oil well at Nineveh, a distance of about 20 miles, at once.

TEXAS.

INTERNATIONAL SMELTING WORKS.—A company with a capital stock of $500,000 has been organized to operate the works at El Paso. A copper smelting plant will be added to the works, the machinery for which will soon be purchased.

CHEROKEE COUNTY.

CHEROKEE LAND AND IRON COMPANY.—This company, to the incorporation of which we referred in our issue of the 14th ult., is making arrangements to begin active operations. The company has authorized Mr. John Birkinbine to prepare plans for a 50-ton charcoal furnace. With the sole exception of the State furnace, three miles distant, this will be the only blast furnace in a radius of 500 miles from the site selected. The furnace will be operated on foundry iron. Work is to be commenced at once.

UVALDE COUNTY.

The recent discovery of a four-foot vein of cannel coal in this county has, it is stated, stimulated interest in coal mining in Western Texas to a great extent. When the geological survey of the State, which was provided for by the extra session of the Legislature, is made, it is candidly expected that mineral deposits of all kinds will be discovered in different portions of the State.

UTAH.

DICKERT & MYERS SULPHUR COMPANY.—At a recent meeting of this company, to the difficulties of which we referred in our issue of July 21st, the following resolutions were adopted: After carefully investigating the affairs of the Dickert & Myers Sulphur Company, we find that the discord has been caused by Mr. Dickert's incompetency as general manager, ignoring the advice of the directors, and his wilful disregard of the following contracts with Mr. Daniel Myers—that all differences should be settled by arbitration; that the adverse title claims of the Clevelanders should be compromised, and that there shall be no assessment.

We further find that Mr. Myers's course has been honest and honorable, and he has made much personal and financial sacrifice to protect the interests of the stockholders. In reference to this meeting the New York *Oil, Paint and Drug Reporter* says:

"As a result of this better understanding of the condition of the company's affairs and the causes that have produced it, the triangular feature of the disagreement has been removed, by the other minority stockholders uniting with Mr. Myers in an effort to place the management of the company in proper hands, which shall be competent to develop what all are agreed in declaring to be a property of great intrinsic value.

"Outside of the stockholders, it is not known just what course is to be pursued, but those who have looked forward to the utilization of the vast supply of sulphur which the American mines offer, will find encouragement to their hopes in the turn which the affairs of the company have taken. At present, high rates of inland transportation prevent the company's product from becoming a factor in the markets east of the Mississippi, but there are no obstacles to its success which may not be overcome by intelligent and enterprising management."

SUMMIT COUNTY.

COMSTOCK MINING COMPANY, LIMITED.—This company has been organized in London with a capital stock of £250,000, shares £1, 50,000 of which are reserved for subscription and issue in Belgium. The company is formed to acquire the following silver mines: The Comstock, Black Bear, Black Hawk and Intervention, each 200 feet in width by 1500 feet in length, covering the apex of the lode for about 3000 feet, and comprising the Uintah mining group, situated about 3½ miles from Park City, in the Uintah mining district.

MASSACHUSETTS MINING COMPANY.—This company, which is a reorganization of the old Empire Mining Company, was incorporated in August, 1887 (see ENGINEERING AND MINING JOURNAL, August 20, 1887), and has decided to give the stockholders of the old Empire Mining Company a chance to become interested in the new company. Of the 50,000 shares in the treasury of the company, 12,000 were sold to a Mr. Sampson and associates, it is stated, for $2.50 per share and 10,000 shares at $2.50 per share are now being offered to the old stockholders, who can subscribe only to the same amount of new stock as they held in the old Empire Company. The option will expire on the 12th inst.

At the mine the new compressor and drills have been started for a test and everything worked admirably. Active operations were to be commenced on the 1st. inst.

As these mines are fully developed, and have had a vast amount of money invested in them without finding any paying quantity of ore, it is more than probable the old stockholders have had enough of it, and will want no more. Any new stockholders will, no doubt, soon feel the same way, for there is nothing to encourage the hope, much less the belief, that the mine will ever pay a dollar.

WEST ONTARIO CONSOLIDATED MINING COMPANY.—The shaft is down about 360 feet, but sinking has been stopped temporarily on account of the flow of water. It is thought that when the Anchor tunnel gets through it will tend to drain the shaft. As soon as circumstances will permit sinking will be resumed, and then drifting to the vein from the 400-foot level will be in order.

WASHINGTON TERRITORY.

WHITMAN COUNTY.

The discovery of a rich quartz mine six miles from the mouth of Ruby Creek, and fifty miles from the town of Palouse, in the famous agricultural and bluegrass valley of the Palouse, has caused much excitement in that neighborhood. A small expedition set out for the scene of the discovery, and a large quantity of the quartz was brought to Palouse. The assay reports gave seventy-two to seventy-eight ounces of silver. Returning parties report that fully 500 men are now on the grounds. The section of the new strike lies in the old Salmon diggings, which had a population of 30,000 not many years ago. In those days the placer

mines of the neighborhood paid largely, but the district has been entirely deserted. A few Chinamen remained behind and worked over the dirt for a fourth time.

WEST VIRGINIA.

KANAWHA COUNTY.

COALDALE COAL COMPANY.—This company has been organized to operate coal, coke, iron, etc., at Handley. It owns 40,000 acres of gas, steam, splint, coking and cannel coal, and expect to do an extensive business in the near future.

WISCONSIN.

GOGEBIC DISTRICT.

BOURNE MINING COMPANY.—The property of this company was recently sold at sheriff's sale, and was bid in by one, F. A. Bates, acting as agent for his wife. The price paid was about $6000. About eighteen months ago the stock sold for some $7 per share.

WYOMING.

LARAMIE COUNTY.

MICHIGAN COPPER MINING COMPANY.—This company, in Muskrat Cañon, near Rawhide Buttes, has contracted to furnish the smelter at Fairbanks with fifty tons of ore daily. The company has also sold a large quantity of ore in bulk to the smelter. The smelter is to haul the ore from the mines, a distance of twenty-five miles.

FOREIGN MINING NEWS.

BRITISH COLUMBIA.

PRESENT AND FUTURE COAL OUTPUT OF BRITISH COLUMBIA.

A correspondent writes us as follows:

Owing to two serious explosions last year and the beginning of this year at Vancouver Coal Company's and R. Dunsmuir & Son's collieries, Vancouver Island, the stoppage and partial disorganization has most seriously affected the output and profits for some months. It is impossible to learn what the future "output" in these local centers of mining will amount to for the remainder of 1888. The Vancouver Coal Company held its annual meeting in London last month, and the explosion of last year increased the outstanding debt from $50,000 to $100,000. Considering the time this company has been developing, and has as yet declared no dividend, while the market value of the stock in London stands at £3 to £4 for the £10 share, it does not say much for the management, and contrasts unfavorably with the local competitors (R. Dunsmuir & Sons), who have realized enormously on their workings, and have paid large profits from the first, though they suffered an equal loss in an explosion five months ago.

For the last seven months cargo lots of coal have been selling in San Francisco at $12 per ton—which can be raised, shipped, and delivered at $4½ to $4¾ per ton—and the *average* for 1887 ruled at $7½ per ton, so that a large profit has been made by good and efficient handling.

Where, perhaps, the mistake has been made by the Vancouver Coal Company is in the conservative and grasping method of endeavoring to secure large tracts of coal land, and spending the profits and the capital in explorations speculatively in and around the islands. Whether that system has been judicious management for the present shareholders remains to be seen. There is an offer to bond this company's property. A change may soon be expected, and if under another directory and manager, the results may be more fortunate to the shareholders. For the sake of English investors, we hope it is to be a remunerative concern like its neighbors. It should be profitable. The following "output of coal" for the year 1887 is taken from the report of the Inspector of mines, showing comparative wages paid to white men and Chinese.

	Output ending Dec. 31, 1887. Tons.	No. of hands. Boys.	Whites.	Chinese.	Wages per day. Whites.	Chinese.
Vancouver Coal Co., Nanaimo.	138,712	10	388	220	$2 to $3½	$1 to $1¼
R. Dunsmuir & Son, Welton Colliery.	239,217	None	308	258	2 to 3¾	1 to 1¼
R. D. Chandler, of San Francisco. East Wellington Colliery.	35,431	1	83	47	2 to 3	1 to 1¼

There are 149 Chinese out of the 253 employed at Dunsmuir's collieries by the miners, who have more interest than the proprietors, and get more work out of the Chinese than white laborers, for like work. There are no Chinese employed in the mines at the above since the last explosion, at the beginning of this year. The result is greatly in favor of real estate and trade. Since there are 150 fewer Chinese laborers in Nanaimo, lodging in private houses or hotels is not always easy to obtain. Before the Chinese occupied fewer houses, spent less money and dealt chiefly with Chinese tradesmen, who in time, by thrift and perseverance, accumulate wealth and remitted their savings to China. There are but few Chinese as top laborers now employed at the Vancouver Coal Company's mines, and this causes great satisfaction.

The output for the next twelve months and for the year 1888 will be maintained as given above, and with the developments now soon to be in working order at Comox, there will not be any great increase of the output. There does not seem any immediate prospect of cheap coal or of overproduction. The house coal trade will soon begin to move for coming winter. All the numerous developments and explorations, amongst which some are very extensive in Washington Territory, and a recent discovery of semi-anthracite on the Skagit River with magnetic iron ore, will only tend to urge on discovery and enterprise on the coast which a few years may lead to great manufacturing pursuits.

While Seattle and Tacoma will double their output for 1888, British Columbia is not going to increase any more this year than last. The production on the Island for the last 4 years was:

Year.	Output. Tons.	Exported chiefly to San Francisco. Tons.
1884	394,070	306,478
1885	365,596	237,797
1886	326,636	249,205
1887	413,360	334,839

English and Scotch shippers will not consign coal specially, but only small lots to help to load ships outward bound for California direct; the distance between Australia and San Francisco is too far to seriously affect remunerative developments of Washington Territory or B. C. coal mining. There is consequently a safe and lasting investment in coal lands when bought at reasonable prices—not otherwise.

CANADA.

PROVINCE OF NEW BRUNSWICK.

MANUFACTURING MINING COMPANY.—Manganese mining is being prosecuted with considerable success by this company at St. Martins.

PROVINCE OF ONTARIO.

Capt. N. D. Moore, who first developed the Gogebic mines in Michigan, has located in Kingston and is busily engaged in locating, prospecting and purchasing iron and other mineral property in that section. A company of capitalists from Chicago and Milwaukee will work the mines with the probability, if they prove profitable, of establishing smelting works at Kingston.

Natural gas has been found at Port Colborne, Canada (the entrance of the Lake Erie end of the Welland Canal). The Dominion Government has been asked to make experiments to ascertain the extent of the find.

PROVINCE OF QUEBEC.

The asbestos mines of the Asbestos Packing Company, situated in the townships of Thetford and Coleraine, have been sold to Bell's Asbestos Company, Limited, recently formed in London with a capital of £200,000. The properties are valuable ones, producing excellent quality of asbestos. The output for the present year will probably reach from 1000 to 1200 tons of superior quality of No. 1 crude and 400 to 500 tons of waste crude. A large shipment of the most improved asbestos machinery has arrived from England, and is expected to be in full operation early in August. The works of the new company at Thetford are to be under the management of Mr. Thomas Sheridan, who has for so many years so successfully operated the properties of the Boston Asbestos Company.

HARVEY HILL.—The copper mines in Leeds are being more systematically worked, and are yielding a fair quantity of first-class ore, some of it assaying 70 per cent metallic copper with a good proportion of silver. English experts who examined the mines during the past month, say that they are well pleased with the appearance of the property. The property is to be worked on a large scale.

SCOTTISH ASBESTOS COMPANY.—The new crushing and cobbing machinery erected by this company is now in complete working order, and a test on an extensive scale is to be made. If successful, similar machinery will be put up at the Thetford mines. All the large dumps there will then be worked over, and it is thought that a very large quantity of asbestos, which at present does not pay to cob by hand, will be reclaimed.

ENGLAND.

Reports dated the 18th ult. state that for the first time for many years a general strike amongst Cornish miners is in progress. The underground men at Wheal Basset having refused the terms offered them, they are, together their wives, in the streets of Redruth. The miners' executive claim that the men are willing to work, but that their desire is that they shall not receive reduced wages.

INDIA.

PUNJAB & ORIENTAL OIL COMPANY.—The Secretary of State has confirmed and sanctioned the agreement already announced, made by the Government of India with Mr. J. D. Noble, representing the syndicate of Canadian capitalists, in the matter of the Rawal Pindi petroleum deposits. Under this agreement exclusive right is granted to Mr. Noble for three years to bore for oil in the Punjab. If successful in finding it he will be granted the option of selecting five square blocks of land at different points, containing ten thousand acres each. The surface of the area is not to be interfered with, save where wells have to be sunk. The government incur no expense, but receive 5 per cent. of all crude earth oil obtained, this serving as a sort of land revenue. The concession will be worked by a limited company already formed, bearing the name of the Punjab & Oriental Oil Company, with a capital of 2½ lakhs in Rs. 100 shares. One of the principal features of the agreement is that the original holders of stock cannot assign or sell their shares to outsiders without the consent of the government. This will insure the enterprise being kept in the hands of the practical men who have now started it.

MEXICO.

J. P. Witherow, the well-known engineer of Pittsburg, Pa., has about closed the contract for the erection of an immense steel and iron plant at Sabinos, Mex. The plant will consist of two blast-furnaces, a Bessemer rail and nail plan mill, and structural iron works. Sabinos is a small town in the heart of a mineral country, where coal and iron ore abound. It is about equally distant from the towns of Eagle Pass and El Paso. The entire structure will be made of iron, and will be shipped ready for building from Pittsburgh. The financial backers of the new project are English, American and Mexican capitalists. Eugene Kelly, of New York, is a large stockholder; Patricio Milmo, of the City of Mexico, is also largely interested.

A company has been organized at Pittsburg, Pa., with a capital stock of $1,000,000, for the development of tin mines, about 10 miles from Durango. Among those interested are George I. Whitney, Junius A. McCormick, Walter Kelley, George A. Thurston, George Williams, of St. Louis, and some others, most of the capital coming from Pittsburg.

Our special correspondent at the City of Mexico has recently visited professionally many of the new as well as the old mining fields of Mexico, and will keep our readers advised on such matters as are of value. The following notes will be read with interest:

CATORCE.—The near approach of the Mexican National Railroad to this fine camp has roused up the rather dormant mining spirit among its miners, and they are getting to work again in several old mines and in some new ones. The great drawback to work in this camp has been the scarcity of combustible, which was palm wood and roots, brought from many miles away. Coal will soon be used here, brought from the Sabinas mines on the railroad. In anticipation of the increasing output of this camp an ore buying company from Laredo, Texas, has established an agency here, which will do its part in the future prosperity of the camp. In fact a great deal of the activity and success which has lately been displayed in Mexico is due to the fact that the miners, nearly everywhere, have been able to promptly dispose of their ores at fair prices to foreign purchasers.

ZACATECAS.—The greatest activity exists in this important mining center. Mills and concentrators are all disposing of the ore in handsome shape. A new milling and concentrating plant is in course of erection on the west side of the railroad near the station. Several thousand miners are constantly at work, and the city is increasing in population and size. The Prodigio, San Francisco, Javier and Jaquecas mines are all improving in the quality and output of ore, and the first mine is expected to have a brilliant record within the next few months. The Asturiana and Bote mines are in bonanza, and the new gold vein, the Nuevo Bote, is attracting much attention for the richness of its ores. Many new mines are being denounced.

SABINAL.—In this new camp, situated in the northwestern part of the State of Chihuahua, to the west of the Mexican Central Railroad, the Plancha de Plata mine is favored with a wonderful bonanza from which some tons of ore have been extracted, which assay five or six thousand ounces to the ton. Mr. J. R. Reynolds, a colored miner, who at one time operated in New Mexico, is raising considerable quantities of pay ore out of his mine in this district, Chihuahua. In other parts of the State, outside of the camp mentioned above, I hear of several mines that are doing very well. The Nica Mining Company, a Mexican concern, has a concession of one hundred square miles in the Nica range, fifty miles from Santa Rosalia, and is developing it rapidly. From the Dios te Guie mines and the Descubridora property they are raising a carload per day of carbonate lead ores, bearing sixty ounces of silver per ton. The president of the company is now the mayor of Santa Rosalia, and is one of the most enterprising Mexicans on the frontier.

PACHUCA.—The Santa Gertrudis Mining Company continues to pay two dividends monthly from the output of low-grade ores. The bonds are worth $750, the par value being $100. The La Luz Pachuquilla mine is driving a cross-cut to strike a big ore-body which is supposed to be right ahead. The San Genaro mine has discovered this week an ore-body five feet wide and of good quality. The condition of the Cueva Santa mine is highly favorable. The assays from the ore-body recently discovered run $500, $100, and $50 per ton in silver and gold, and the mass of ore is said to be three feet thick. At the Progreso Hacienda, Mr. Haro, the superintendent, is trying a new method for the working raw of ores, that have hitherto been roasted, which is said to have given splendid results. I will give details of this later on. Most of the mills here are on the patio system, but several Americans are investing in mines here, and are putting in imstamp and pan mills which are finding also much favor among the Mexicans.

MEXICO.—A contract has been entered into by the Ministry of Public Works with some Mexican parties, for the working of mines at San Carlos, Central District, State of Tamaulipas. A contract has also been made by the same ministry with D. Juan Bustamante, for the working of mines within the boundaries of his extensive ranch property, El Salado, situated on the line of the Mexican National Railroad, and extending into the states of San Luis Potosi, Nueve Leon, Coahuila and Zacatecas.

As a new feature of commerce in this city I may mention that the Coahuila and Alamos Coal Company

has opened an office here, and offers to supply any quantity of its coal mined in the San Felipe district in the State of Coahuila. These mines are owned by C. P. Huntington & Co., otherwise the Mexican International Railroad. The only combustible used here both for industrial and domestic purposes has been wood, which is brought from a long distance and is very dear. Whether the Mexicans will take to coal, or, if so, how soon, is a question hard to answer. They must be doing so to some extent, as I have seen many cars loaded with the black diamonds on the road lately. The coal is soft and probably very smoky. If we should have the Pittsburg and Chicago smoke clouds here it would be another burden on the inhabitants of this already nuisance-ridden city.

CITY OF MEXICO, 24th July, 1888.

SOUTH AMERICA.

BRAZIL.

The last report of the Brazilian Minister of Agriculture contains the following with regard to mining industries in that empire:

Phosphate of Lime.—The concessionee of the privilege for working the deposits on the island of Fernando de Noronha shipped a cargo to New York and one to London. The quality was found unsatisfactory, but this is ascribed to want of a proper analysis of the the material at the place from which the load was taken. He expresses the opinion that there can be no question about the value of the deposits after the examinations and reports that have been made.

Mining.—From reports received from various provinces, it appears that but few of the concessions made have been worked. Aside from the old gold mines of the province of Minas Geraes, the most important mines now in operation are the coal mines of Arroio dos Ratos in Rio Grande do Sul. This, however, is struggling with embarrassments of all kinds. Special favors have recently been granted the company by the legislature of the province and with this assistance it is hoped that all difficulties may be overcome.

There is also an American company formed for the purpose of taking over the concessions granted for working mines on the Cayapo and Maranham rivers, and their tributaries in the province of Goyaz.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, August 3.

Statistics.

* **Production Anthracite Coal** for week ended July 28th and year from January 1st:

TONS OF 2240 LBS.	1888. Week	1888. Year	1887. Year.
P. & Read. RR. Co.,	147,019	3,200,042	3,926,722
Cent. R. R. of N. J.	131,047	2,888,690	2,769,379
L. v. RR. Co.	195,000	3,534,174	3,654,978
D., L. & W. RR. Co.	142,386	3,554,783	2,960 934
D. & H. Canal Co.	89,501	2,356,866	2,042,095
Penna. RR.	168,152	2,536,889	2,002,008
Penna. Coal Co.	45,093	892,267	800,470
Penna. Canal Co.	...	210,174	199,066
N. Y., L. E. & W.	...	521,976	448,455
Total	918,198	19,686,861	18,865,670
Increase		820,191	

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

* These figures have been corrected to July 1st by the official statistics of Mr. John H. Jones.

Production for corresponding period:

1883.....16,923,091 | 1885.....15,909,916
1884.....16,660,738 | 1886.....16,962,412

Production Bituminous Coal for week ended July 28th, and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

	1888. Week.	1888. Year.	1887. Year.
Phila. & Erie RR.	5,734	40,363	8,529
*Cumberland, Md.	73,644	1,082,519	1,771,476
Barclay, Pa.	**3,000	104,540	115,623
Broad Top, Pa.			
H. & Broad Top RR.	4,544	201,034	191,265
Clearfield Region, Pa.			
Snow Shoe	2,531	75,249	96,199
Karthaus (Keating)	5,167	89,207	111,009
Tyrone & Clearfield	57,237	1,949,467	1,840,361
Tipton	1,278	33,133	6.001
Alleghany Region, Pa.			
Gallitzin & Mountain	13,868	501,161	589,673
Pocahontas Flat Top Coal.			
Norf'k & West. RR.	28,238	910,372	655,952
Kanawha Region, W. Va.			
Ches. & Ohio RR.	33,175	1,029,764	858,355
Total	228,416	6,916,909	6,244,443

* Tons of 2240 lbs.
† Week ended July 21st. ** Estimated.

WESTERN SHIPMENTS.

Pittsburg Region, Pa.			
West Penn RR.	7,975	228,407	178,108
Southwest Penn. RR.	1,973	57,972	72 310
Pennsylvania RR.	4,444	170,262	125,588
Westmoreland Region, Pa.			
Pennsylvania RR.	32,538	993,993	852,677
Monongahela Region, Pa.			
Pennsylvania RR.	13.641	244,759	234,904
Total	60,571	1,695,395	1,462,677
Grand total	288,987	8,612,302	7,707,120

Production of Coke on line of Pennsylvania RR. for week ending July 28th, and year from January 1st, in tons of 2000 pounds: Week, 78,309 tons; year, 2,211,235 tons; to corresponding date in 1887, 1,829,466 tons.

Anthracite.

The coal trade is in a surprisingly good condition. It is true, of course, that shipments of coal sold on old orders have not yet all been made, but there is a far larger demand at the new circular rates than was expected in the trade; in fact, the public is now more concerned to *get* coal than to get it below circular rates. In all sizes above the pea the demand exceeds the shipping ability of most of the companies, and complaints of scarcity of cars are frequent.

At the meeting of the sales agents this week the quantity of coal the market will require in August was estimated at 3,500,000 tons, as against 3,000,000 in August last year. The actual shipments of anthracite in August, 1887, amounted to 3,198,725 tons. If cars can be obtained sufficient to move the coal it seems probable that the output this month will exceed that in August, 1887, by fully half a million tons. The car supply seems now to be the chief limit on production. As the shipments are now about 800,000 tons greater than in the first seven months of 1887, by the end of this month this increase will probably amount to 1,200,000 or 1,300,000, there is every probability that the present year will see the anthracite shipments reach 36,500,000 tons, as against 34,641,018 tons in 1887.

The most important matter discussed at the meeting of the sales agents, was the proposition to make another advance in prices on the 15th of August. Some of the more conservative members of the trade deprecate this second advance following so quickly on the first that went into effect on August 1st. Nevertheless, the present active condition of the market seems to make it possible, and therefore, perhaps, probable, that it will be ordered. That it would be unwise is admitted by many. This talked of and probable advance is 10 cents on broken, 15 cents on egg, and 25 cents on stove and chestnut.

The present prices compare with those of a year ago, just after the advance of 10 cents a ton, 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

If the proposed advance be made on the 15th the increase over last year's prices will be: On Broken, 45c. per ton; on egg, 60c.; on stove, 65c., and on chestnut, 90c. per ton.

The demand is most active for broken and egg coal. Pea coal is still a drug at $2.30@$2.75, owing chiefly to the low prices of bituminous coal, which have driven anthracite almost out of the Eastern manufacturing market.

Bituminous.

The soft coal trade is satisfactory, though not so active as the anthracite. We still hear of very low quotations. Pocahontas, that is as popular a steam coal as goes to Rhode Island, we hear quoted on the cars at Providence, $3.35. Here we continue to quote for standard soft coals nominally $2.60 f. o. b. Baltimore and Georgetown, and $3.25 New York, but for some varieties these figures can be deeply shaded. The outlook for the soft coal trade is excellent and it participates, though to a much less degree, in the prosperity of the anthracite trade.

Baltimore. Aug. 1.

Prices in cars on track or in dealers' yards to trade are as follows:

	Hard White Ash.	Sham-okin.	Lykens Valley.
Lump and steamer	$4.30	....	
Broken	4.30	...	$4.80
Egg	4.45	$4 65	4.90
Stove	4.70	4.95	5.25
Chestnut	4.50	4.65	4.90
Pea	3.00	3 00	3.50
Buckwheat	2.60	2.60	3 00

Afloat alongside, by cargo, 15 cents less than by cars.

Boston. Aug. 2.

[From our Special Correspondent.]

The market for anthracite coal continues good. The volume of trade is not large yet, though it is increasing, but the same healthy tone is noticeable, which was commented upon a week or two since. In as much as every one is fairly well satisfied in the coal business, it is indeed worth while to call very plain attention to this rare state of affairs. It may be a long time before it comes round again. The companies are well sold up, and seem to have no difficulty in holding prices up to the recent advance. The Western demand, of which we hear so much in the East, is plainly no myth. The great volume of trade from that quarter is making itself felt very noticeably

In the bituminous trade circles we are here in Boston in the dull period again. Every one is busily attending to the shipment of coal on contracts. The fear lest the market should break is growing, happily, less all the time for those who made "guaranteed" contracts to protect the buyer. The f.o.b. rates continue at $2.50@$2.60, with delivered rates fully as low as those figures will admit of. The pushing of comparatively new shippers for tonnage has not affected the market for bituminous coal to any marked extent.

There is a lively demand for vessels in this the fine shipping season, and rates hold up fairly well, though this is about the time for the lowest rates of the year. We quote vessels, 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 retailers are having a large trade, and of the best kind, for it is at this time that the Back Bay trade take on their winter stock before going away for the summer, or upon returning home. Prices are unchanged, and are likely to hold, if not to advance slightly, providing the wholesale market remains firm.

Bufialo. August 2.

[From our Special Correspondent.]

An advance of 15c. per net ton was made in prices by the anthracite coal men yesterday. The following are the rates: Grate and Egg, $5; Stove and Chestnut, $5.25; No. 4, $5.50, and Pea, 3.75, delivered within city limits. No change made in wholesale quotations. The rise was made by the Coal Exchange, it is said, because its members were not obtaining their proper margin of profit. The rumor floating around is that railroad rates from the mines are to be 50c. higher to Western points and 25c. higher to Buffalo on September 1st. Several Western dealers have been here during the past few days endeavoring to secure quick delivery for many large orders which they had given, but the coal had not come to hand. A local shipper says: "There is going to be a perfect panic for coal to ship West all the month of August on account of the threatened September advance in rail rates, and if the supply is not larger, this state of things will continue until October 1st.

Lake freights to Western ports, in consequence of small supply of coal and vessels not being plenty, have been for some days past quiet and steady and close only fairly active at unchanged quotations. The shipments from July 26th to August 1st, both days inclusive, were 48,930 net tons, namely: 21,550 to Chicago, 5800 to Milwaukee, 9700 to Duluth, 2100 to Toledo, 4550 to Superior, 800 to Bay City, 1640 to Saginaw, 390 to Kincardine, 1350 to Green Bay, 750 to Marquette and 500 to Lake Linden. Total shipments thus far this season, 1,159,830 net tons, including vessels from Tonawanda not reported at Custom House. The rates of freight were as follows: 75 to Chicago, Lake Linden, Marquette, Portage and Gladstone; 75@65c. to Ashland; 70c. to Milwaukee and Green Bay; 65c. to Duluth, Superior, and Washburne; 50c. to Detroit, Kincardine, St. Clair, Algonac, Port Huron, Bay City, Toledo and Saginaw.

Another break in the Erie Canal near Brighton occurred July 27th; repaired late next day.

Receipts of coal at this port for fourth week in July, 6638 net tons, and shipments, 871 net tons.

Statistical: Receipts of coal by lake at this port thus far this year, none. Shipments westward by lake for month of July, 361,830 net tons, as compared with 205,600 tons in 1887, and 210,010 tons in 1886; for season to August 1st, 1,159,830 tons this year, 836,570 tons in 1887, and 711,080 tons in 1886. The receipts of coal by canal for July, 26,871 net tons, as compared with 6468 tons in 1887; for the season to August 1st, this year, 47,692 tons, 18,782 tons in 1887, and 33,821 tons in 1886. The shipments by canal for July, 1735 net tons, as compared with 2112 tons in 1887; for the season to August 1st, this year, 4088 tons, 3709 tons in 1887, and 9045 tons in 1886. These figures show the very large increase of 323,260 tons this year over 1887 in the shipments by lake, and in receipts by canal of 28,910 net tons.

An item from *Railroad News* says that yesterday rates on coal from Chicago, Milwaukee and common points to Iowa points advanced 50c. per ton. Rates from Duluth and Washburn are correspondingly higher.

The Delaware, Lackawanna & Western Railroad Company's new propelier "Scranton" was launched a few days since and will by ready for business the beginning of September. This vessel and her sister boat the "Lackawanna" are fine specimens of naval architecture and cost about $190,000 each complete with machinery, outfit, etc.

Pittsburg. August 2.

[From our Special Correspondent.]

The season for activity in the coal trade is about over. The late run was a successful one. Most of the boats succeeded in returning home with empties. The miners are again talking about demanding three cents for mining in the fourth pool. As coal mined now would have to take the chances of remaining in the pools several months, the prospect of obtaining an advance is not very rosy. The Southern and Western markets are well supplied.

PRICE OF COAL PER 100 BUSHELS = 7600 LBS.

First pool	$4.75	Fourth pool	$3.25
Second pool	4.25	Railroad coal	5.00
Third pool	3.75		

Connellsville Coke.—The demand is improving. Some of the small operators who cannot afford to coke for $1 per ton, will remain closed until prices advance. When this will be done is uncertain. The rates and freights are as follows:

Blast Furnace, $1 per ton; to dealers, $1.10; foundries, $1.15.

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

"The low price of Connellsville coke is having some good effects," remarked one of the operators. "We are securing some new trade. Some of the furnaces in the anthracite region are now taking more orders than ever before, and they are so well satisfied that they will doubtless continue as the price of coke advances. Shipments are also being made to the more

remote sections where Connellsville coke was never used before. Should this new trade continue with us in the future, it will be a great benefit. The production of the region is now in excess of the demand."

FREIGHTS.

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

From Baltimore to:—Bangor, Me., 1.00; Bath, 1.10; Boston, 1.00; Bridgeport, Conn., .85@.90; Brooklyn, .85; Charleston, .70@.80; Fall River, .85@.90; Galveston, 3.00@3.25; Gardner, Me., 1.00@1.10; New Bedford, .85; Newburyport, 1.25; New Haven, .85; New London, .85; New York, .85; Portland, 1.00; Portsmouth, N. H., 1.00; Providence, .85; Quincy Point, 1.05; Richmond, Va., 70; Salem, Mass., 1.00; Savannah, 1.00@1.05; Somerset, 85@.90; Williamsburgh, N. Y., .85; Wilmington, 1.00.

From New York to:—Bath, Me., 85*; Beverly, .85*; Boston, .80*; Bridgeport, Conn., .60; 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@.90; Newburyport, 95*; New Haven, .60; Newport, .75; New London, .70@75; Norwalk, Conn., .55@.60; Portland, .80*; Portsmouth, N. H., .90*; Providence, .75; Salem, .80*.

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

MARKETS.

NEW YORK, Friday Evening, August 3.

Prices of Silver per ounce troy.

July	Sterling exchange	Lond'n Pence.	N. Y Cents	Aug	Sterling exchange	Lond'n Pence.	N. Y Cts.
28	4.87¼	42⅛	91⅞	1	4.87	42⅛	91¾
30	4.87¼	*	92⅛	2	4.87	42	91½
31	4.87	42⅛	92	3	4.87	42	91½

*42 3-16.

Foreign Bank Statements.—The governors of the Bank of England, at their weekly meeting, made no change in its rate for discount, and it remains at 2½ per cent. During the week the bank lost £260,000, and the proportion of its reserve to its liabilities was raised from 39·71 to 39·78 per cent, against a reduction from 40 to 38·18 to 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 950,000 francs gold and a gain of 1,825,000 francs silver.

Copper.—The tone of our market during the week just ended has been rather dull on the whole, with a very limited number of transactions. During the earlier portion of the week quotations were slightly lower, but later on a stronger feeling supervened, and we close to-day firm again, with Lake Spot quoted 16·85; August, 16·85; September, 16·75; October, 16·60; November, 16·60, and December, 16·50.

We are advised that a pool sale to the consumers on behalf of the syndicate has again been arranged for supplies over the next four months at 16½c., other conditions the same as in previous sale, but the total quantity thus contracted for can not be ascertained with any degree of certainty; it is not believed, however, to have exceeded the amount of the last sale.

There has been some disappointment at the small amount taken by the manufacturers of wire for electrical purposes, but it is counted as certain that this demand, which is growing at an enormous rate, must soon come in and cover its wants.

Outside brands have lately been in better demand, and quotations have improved to about 15·45 for good casting descriptions.

In London the transactions in "G. M. B." copper are becoming more and more extensive and important every day, and this would seem to have already superseded Chili bars as the favorite speculative brand. The London market has been stronger during the week, and quotations both for Chili bars and G. M. B. have recorded an advance, the former from £81 5s. (last week's closing spot price) to £81 15s. and the latter from £72 to £73 12s 6d. From Valparaiso advices have come to hand, reporting a better tone, with more orders being sent out and a greater disposition on the part of the smelters to meet the market. The working of old mines has been again resumed in every direction, and a larger production may be confidently expected.

Cable advices just received from Messrs. Henry R. Mertin & Co., of London, announce an increase in the statistics of visible supplies for the second half of July of 3000 tons.

The July product of the Boston & Montana Consolidated Copper and Silver Mining Company is reported to have been 1720 tons matte and ore, yielding 2,000,000 pounds of refined copper.

The following copper report from James Lewis & Son, under date Liverpool, 16th July, 1888, gives the English view of the copper market. Business in Chili bars is still confined to the covering of "bear" sales, for which purpose up to £81 5s. was paid for cash parcels early in the past fortnight. As, however, there are now but few prompts falling due, the syndicate agents having ceased to pay £79 10s. for three months' prompt on the 12th of April, the purchase of cash bars is left almost entirely to the syndicate and their value consequently fell to £78 on the 13th inst. To-day, however, they are rather better and business has been done at £79 for cash, the syndicate agents paying £78 for three months' prompt.

A considerable number of transactions have taken place during the fortnight in "good merchantable copper," which includes English Best Select Ingot and Tough Cake, Lake Superior, Orford and Baltimore ingots, Wallaroo and Burra cakes or ingots, Arizona pigs of 96 per cent, Cornish assay or over, Lota and Urmeneta ingots, Japanese Tiles and Chili Bars of 96 per cent or over. As a Sub-Committee of the London Metal Exchange has been appointed to frame a form of contract for "good merchantable copper" this speculative medium is now practically recognized and will to a considerable extent supplant the business hitherto carried on in Chili Bars. While benefiting foreign smelters of copper whose produce has hitherto been very slow and difficult of sale and will now be readily salable, this new departure will, we anticipate, prove very detrimental to the established English smelters, as it will considerably reduce the volume of their business and enable smelting to be carried on in this country with very much less capital than heretofore, thereby inducing increased competition.

Much is being said and written as to the probability of an early collapse of the French speculation in copper. In view of the disastrous results that would at present follow from this—not only to the operators themselves, but also to their guarantors—we do not think it is at all likely to take place when it is considered that the quantity of copper now in stock, contracted for and still undelivered must amount to fully 500,000 tons, at an average price of about £65 per ton, in addition to about 50,000 tons of Chili Bars in stock and to arrive, costing over £70 per ton, and that the abandonment of the speculation now would involve a loss on this of probably £35 and £40 per ton respectively. It must be borne in mind that each month the liabilities of the French operators decrease, as part of the copper contracted for or purchased by them is delivered to consumers and a profit realized upon it. No doubt the quantity of copper taken by consumers has proved very disappointing to those interested in the speculation, and their unsold stocks have increased to a much greater extent than they anticipated; but consumers must, after a while, come to their assistance and take good part, though we do not think they will take all of the copper arriving.

By the end of the year the copper to be carried will probably amount to over 100,000 tons, but as it is the mutual interest of the French speculators and also of producers that the value of this metal should not fall to a point that would leave a loss on its production, and entirely stop the payment of dividends by the different mining companies, the latter may be induced after a while to diminish their output to an extent sufficient to prevent further accumulation of stocks.

In furnace material several sales have been made to the Société des Metaux on private terms. Smelters, however, will buy little or nothing, most of them still holding large stocks and running but few of their furnaces. There are now 14,837 tons of Anaconda matte in stock here.

The directors of the Bratsberg Copper Company announce that they have concluded a sale of the entire production of their mines from 1st July, 1888, to 30th June, 1889, at a fixed price of 13s. per unit: the quantity not to exceed 2000 tons. The ore contains about 20 per cent of copper.

For best selected ingots not more than £75 per ton is now obtainable.

Three thousand and eighty-nine tons of Chili bars have been taken from here for France, making the total quantity so far transferred, 10,766 tons. Five hundred and forty-eight tons of Lake Superior ingots have also been shipped from here to France.

The New York Metal Exchange publishes the following foreign statistics of copper in Europe:

Stocks in gross tons	July 1.	Aug. 1.
Chili bars, Liverpool and Swansea	33,692	28,470
Fine copper, " "	11,957	13 800
Foreign copper at London	4,235	3,300
Chili bars in France	8 679	16,500
Other stuff in France	7,300	7,700
	65,843	69,710
Afloat from Chili	5,200	4,600
" " Australia	1,200	1,100
	72,243	75,410

Receipts and Deliveries.	June.	July.
Chili charters, for month	2,500	2,700
Total supplies, England and France	8,968	13,400
Of which from North America	2,486	2,000
Deliveries, England and France	6,212	9,800

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

To Liverpool—	Copper Matte.	Lbs.	
By S. S. Adriadic	Sacks 3,385	387,947	$14,900
By S. S. Adriatic	Bbls. 104	105 742	5,000
By S. S. The Queen	Sacks 7,014	804,847	40,500
To Havre—	Copper.		
By S. S. La Bretagne	Pigs 2,110	672,128	94,500

Tin.—The market has been somewhat irregular during the week, but the tendency has been as a rule toward higher quotations, and the disparity between the London prices and those ruling in this market has now almost, if not entirely, disappeared. Transactions have not been extensive, but rather more inquiry on the part of consumers has been observed than in the previous week, and our latest quotations show a fair advance from those last recorded. Our latest prices are: Spot, 20·25; August, 20·25; September, 20·25.

The London market has also ruled firmer, with a corresponding rise in prices, the latest quotation there being £89 10s. spot; £90, three months.

Messrs. Henry R. Mertin & Co.'s cable advices report a decrease in the visible supplies for last month of 2300 tons, which is, however, hardly as favorable a return as was generally expected.

Lead.—The speculators interested in an advance in prices have continued their efforts in this direction with some amount of success during the week, and it is said that they are putting quotations up under the impression that a considerable part of the lead recently sold has been sold on account of "bears." They therefore hope to compel the parties who have sold short to come in and cover such sales at the highest level of quotations now ruling. How far the speculators referred to may be right in their views remains yet to be proved, but our belief is that a very small portion of the large quantity of lead shortly to be delivered remains to be covered; and indeed we don't think that much was ever sold short, the prices recently ruling having offered no inducement to such operations. We would, therefore, not be greatly surprised to find that when the metal is actually tendered, the sanguine speculators above alluded to will find it to be an unprofitable game to continue their present operations, and that the market will experience a relapse. Our present quotations are: Spot, 4·25; August, 4·25; September, 4·25; October, 4·22½.

The London market has not undergone any material change, the last quotation being £13. In our editorial pages we refer fully to the recent efforts to organize a lead sydicate in Europe.

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

Business gradually revives with a moderate demand at unaltered quotations. The market is active, and the general tendency is in the ascendant. Probably 800 tons have been sold at from 3·85@3·97½. Anticipating still higher prices, holders are taking it easy, and do not force sales.

Messrs. Everett & Post, of Chicago, telegraphed today as follows: Our market has advanced slowly since our last report. It is now strong and higher, principally through speculation, although latterly the consumptive demand has been excellent. Sales foot up 950 tons at 3 85@4·05.

Spelter continues a steady market at 4·65.

Antimony weaker, at 9⅝ for Hallet's and 12c. for Cookson's.

Chemicals.—There is very little of interest to report in regard to the chemical market. The first of the month sees trade in about its usual quiet state at this season, and there is little outlook for improvement for the next thirty days.

Among the heavy chemicals, caustic soda ash, 48 per cent, is still lacking any animation; the stock on the spot being very light is held for 1·30@1·35, as to quantity. Futures are a trifle easier and goods may be bought for forward delivery for 1·22½ and on a very large order less might be accepted.

Carbonated soda ash, 48%, is not moving to any extent, prices asked being apparently above buyers' views on the subject. The quotations are somewhat lower than at our last writing, 1·22½ would now be accepted on a large order, ranging to 1·25 for smaller quantities. The amount on the spot is almost nothing, and holders demand 1·30@1·35 in a jobbing way for goods ex store.

High test is very dull and quotations are entirely nominal.

Caustic soda is, if anything, duller and weaker. For 60 per cent there is almost no demand, though holders are offering for 2·30@2·35; 70@74 per cent is also without animation, despite the fact that goods are now obtainable at 2·17½@2·20.

Bleaching powder continues very quiet, there being no demand outside the jobbing trade done in this immediate vicinity, out of town buyers continuing to draw their supplies from Boston, which market is still considerably below the New York in price. We continue to quote 1·87½@1·92 as the present market value.

The acid market continues in about the same position as at our last writing.

Acetic acid is selling in a small way for immediate wants of consumers with no alteration in price, which continues at 2¼@2½, as to quantity, etc.

Sulphuric acid, 66 degrees, is selling moderately at the old figures of 90@95c. per cwt. for large lots, $1@$1.10 for smaller quantities.

Tartaric acid is selling in a jobbing way to some extent, but there is nothing doing in large orders. Dealers quote us the following prices: Large lots, 43c. per lb.; smaller quantities, 44c. per lb.; 50-lb. lots in boxes, 45c. per lb., the above for crystals.

Oxalic acid is doing next to nothing, though the price is lower than at our last writing. Large lots are now obtainable at 6c. per lb., smaller quantities at 6½c.

The fertilizing chemical market continues quite active in comparison with other lines. Orders for fall delivery are now being placed quite extensively, and the outlook is very good. Ammoniates are quite scarce and in very good demand, though phosphates continue to be more or less quiet. In quotations there is no change since our last issue, and we continue

those of last week, as follows: Dried blood (city), low grade, 2·30@2 32½ per unit; Western high grade, 2 35@2·40 per unit for ground material; tankage, high grade, $24@$25 per ton; low grade, $22@23 per ton. Fish scrap, $24@$25 per ton f.o.b. factory. Sulphate of ammonia, $3.15@$3 20 per cwt. Steamed bones $20@$22 per ton. Charleston rock is $5 per ton for undried and $6 per ton for dried f.o.b. mines. Refuse bone-black is $17@$18 per ton. Dissolved bone-black is 90c. per unit for available phosphoric acid and acid phosphate, 75c. per unit for available phosphoric acid. High-grade sulphate of potash is quoted at 2·15@2·20c. on basis 90 per cent.

Kainit is in very fair demand and firm at $10 ex ship, $10.50 ex store. For forward delivery the quotation is $9@$9.50.

Muriate of potash is rather quiet, but the market is firm and the quotation of $1.80 given last week still holds.

Double manure salt is moving fairly and there is no change in quotations of 1·50@1·10.

Brimstone has been rather quiet during the week, with no changes in current quotations, which are $21 @$22 for best unmixed seconds on the spot, $19.50 for shipment, and $20 to arrive near by.

Nitrate of soda continues quite firm, with a fair amount of business doing, and an upward tendency; 2·05@2·10 buys on the spot, and 1·95@2c. to arrive and for shipment.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Aug. 3.

The general condition of the iron market has hardly changed since our last report. Business continues in a moderate way, but prices are, if anything, a little firmer than for some weeks past. The feeling is gaining ground that prices will not be lower than at present, and will in most cases be firmly held in the presence of any actual demand. Good brands of American pig-iron, while not scarce at present, are still not over produced to any such extent that a brisk demand would not immediately absorb practically all that could be had for early delivery. It is still reported that some Southern and Western irons are freely offered at low figures, although the choice brands are as a rule sold well ahead. We hear of sales of No. 2 X Southern iron sold delivered at a Sound port at $17, and No. 1 delivered in Brooklyn at $17.50. Western iron is also offered at very low figures, but in all of this there is nothing to seriously alarm Eastern furnace men, who are reducing cost of production by the introduction of greater skill and better business management.

Scotch irons are firmer abroad. Some brands are quoted here at figures below our quotations, but it is not believed that they could actually be bought at these low figures in any quantity.

We may quote Coltness, $19.75@$20; Clyde, $18@ $18.50; Summerlee, $19.50@$19.75; Dalmellington, $18.25@$18.50; Eglinton, $18. The cable prices are about 3d. higher than a week ago, and mail advices state that there is a better feeling in the Scotch market, owing to the improved demand for Middlesboro iron, which has lowered stocks and forced some of the lower grades of Scotch iron into consumption. There were arrivals of only about 700 tons of Scotch during the week.

Steel Rails.—The representatives of the rail mills met at Long Branch yesterday and renewed the arrangement of last year, with some modifications, however, in the quotas of the different works. Some which are not at work were cut down, and others that are well sold up or over sold were allowed a larger percentage. Prices are now quoted $29@$30 at Eastern mills, and there are rumors of even the lowest of these figures having been shaded. It is said that $30 has been accepted for Chicago delivery. We shall in our next issue have a fuller report of the proceedings of the meeting.

Bar iron has shown a little more activity and prices are firmer with a rather better demand. There is also more inquiry for structural iron, and more business apparently in the market. A 500-ton bridge order has recently been placed.

A sale of 1000 tons old tee rails at $21 on cars at Jersey City is reported. This will lead to a decided improvement in the old rail market, and it is well known that during the last four weeks tees have been freely offered at $20.50, without buyers.

The demand for other kinds of iron and steel continues light or at least very moderate, with few transactions worthy of special comment. Prices remain as quoted in our table of current prices on another page.

Philadelphia. Aug. 2.

[From our Special Correspondent.]

The actual business in iron and steel for the past six days shows, that more material has been sold and inquired for than in the preceding six days. As a general thing our foundry men and mill men are very backward to take hold. There is a good deal of shopping about to see where bargains can be had. Consumers here think that the slight accumulation of summer ought to be lowering prices, and are surprised to find that most brokers and makers are standing out for full card rates. It has been intimated that large purchases could be made of standard irons at certain figures, but when the matter is looked up, it is found that makers are not willing to do a large business at any such prices. They say that if they must sell iron so close to cost, they will sell it as wanted, and will not sell it for forward delivery. There is more interest felt in good forge iron than in foundry, but up to to-day it is impossible to report a single important transaction, although it is known that there are men in the market who would buy large lots if they could have prices shaded. Brokers who have been trying to work up a little business in foreign material have not yet brought buyers and sellers to terms. There seems to be an idea abroad that America is soon to take a heavy purchase. Foreign iron quotations have not changed for several weeks. The manufacturers of steel blooms are doing a heavier business now than they have done since July 1st. This is also true of the manufacturers of muck bars. Prices have moved up nominally 50 cents, but

IMPORTS AND EXPORTS OF METALS AT NEW YORK JULY 25 TO AUGUST 1, AND FROM JAN. 1.

IMPORTS.

Spelter.	Week. Tons.	Year. Tons.
American Metal Co., Lt.		247
Friedensville Zinc Co.		23
Hendricks & Bros.		28
Lewisohn Bros.		33
Naylor & Co.		131
Osgood, F.		83
Perkins, C. L.		725
Pope's Sons & Co.		28
Total		1,298
Corres. date 1887	3	2,218
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.	34	2 263
Pig Lead.	**Tons.**	**Tons.**
Caswell, E. A.		46
N. Corwith & Co.		111
Hendricks Bros.		100
Total		257
Corres. date 1887	250	853
Tin.	**Tons.**	**Tons.**
Abbott & Co., Jere.		3,448
American Metal Co.	147	182
Birdwell & French		89
Crooke S. & R. Co.		131
Davol & Sons		8
Dickerson, Van Dusen		10
Fuoch, Edye & Co.		10
Hendricks Bros.	6	112
Knauth, W. & K.		21
Lewisohn Bros.		15
Muller, Schall & Co.	252	3,584
Naylor & Co.	190	1,014
Phelps, Dodge & Co.	112	503
Pope's Sons & Co	67	124
Schwarer Bros.		7
Thomsen & Co., A. A.		6
Thomson & Co., D.		181
Total	774	9,435
Corres. date 1887	270	6,769
Tin Plates.	**Boxes.**	**Boxes.**
American Metal Co.		301
Bridge & Beach Mfg. Co.		339
Bruce & Cook	2,842	65,365
Byrne James	846	17,296
Central Stamping Co.	417	20,198
Coddington & Co., T. B.	8,011	98,734
Corbierre, Fellows & S.	330	1,749
Cort & Co., N. L.	5,562	68,384
Cons. Fruit Jar Co.		849
Crooks & Co, Robert.	2,432	39,102
De Mill & Co., H. R.	965	13 433
Dickerson, Van Dusen	6,093	158,450
Dolly, T. G. F.		112
Iron Clad Mfg. Co		119
Lalance & Grosjean	504	1,464
Lombard, Ayres & Co.	2,590	12,568
Merchant & Co	273	11,514
Mersick & Co., C. S.	300	4,342
Morewood & Co., G.	2,250	26,089
Naylor & Co.		8,899
Newall Bros		158
Phelps, Dodge & Co.	12,925	398,884
Potts, W. A., Son & Co.		573
Pratt Mfg Co.	6.257	98,332
Saunders Bros.	330	330
Shepard & Co., Sidney	536	71,699
Stroud & Co		686
Taylor, N. & G.		295
Thomsen & Co., A A.	4,312	80,655
Warren & Co	600	1,665
Wheeler & Co.	695	2,847
Whittemore & Co., H.	225	39,046
Wolff & Reesing	1,064	20,352
Wright & Sons, Peter		165
A. M. Underhill		21
Total	60.359	1,268.005
Corres. date 1887	17.746	1,163,622
Pig-Iron.	**Tons.**	**Tons.**
Abbott & Co, Jere		600
Austin, B. & Co		100
Baldwin Bros. & Co.		100
Bartlett & Co., N. S.	200	3,400
Crocker Bros.	600	7,000
Crooks & Co., R.		700
Dana & Co.		400
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	111	4,569
Pierson & Co.		15
Page, Newell & Co.		13
Sanderson & Sons.		2
Stetson & Co., G. W.		10,557
Tonsila, M. R.		120
Waibaum, W. H.		200
Williamson & Co., Jas.	500	2,800
Total	1,411	33,538
Corres. date 1887	2,955	93,302

Copper.	Week. Pounds.	Year. Pounds.
Lewisohn Bros. from Liverpool	50,000	161,824
Steel Sheets, Billets, Forgings, etc.	**Tons.**	**Tons.**
Abbott & Co, Jere.	13	1,768
Arkell, Jas		17
Belcher, H. U.		11
Bowker, C. F.	15	231
Bruce & Cook		7
Carey & Moen		24
Carter, G. T.		273
Cohn, M		129
Cooney, D. J.		20
Crooks, R. & Co.	23	682
Crousbey, H.		236
Dana & Co.	202	253
Downing & Co., R. F.		246
Henderson Bros.		31
Holt, H. N.		6
Hondolette & D.		106
Hugill, Chas.	20	131
Lalance & G. Mfg. Co.	16	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.	259	5,654
Newton & Shipman		45
Ogden & Wallace	39	241
Phelps, Dodge & Co.		3
Phœnix Steel Co.		20
Pierson & Co	21	671
Pilditch, F. S.	10	198
Power, C. W		47
Prosser, Thomas	260	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.	52	778
Waibaum, W. H.		2,479
Waischid, C. A		
Wallace, W. H & Co.		41
Webb J. B		1
Wheeler & Co., E. S.	12	12
Whiting, E. W.		11
Whitney & Co.		27
Wilson, J. G		10
Whittemore & Co		6
Wetherill & Co		2
Wolff, R H	12	162
Wright's Sons & Co.		10
Total	954	19,249
Corres. date 1887	2,813	51.833
Bar-Iron.	**Tons.**	**Tons**
Abbott & Co., Jere	28	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.		25
Ogden & Wallace		4
Page, Newell & Co.		122
Philip, C. M		20
Wallace & Co., W. H.		16
Wilson, J. G		7
Totals	28	2,796
Corres. date 1887	285	7.819
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	10	535
Cohn, M		60
Dana & Co.		1,818
Downing & Co., R. F.		192
Galpin, S. A.	12	2,122
Heyn, A		1,689
Hugill, Chas.		33
Jacobus, E. Y.		12
Lazard Freres	48	695
Leng, J. S.		17
Lilienberg, N	100	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
Waischid C. A.		15
Washburn Mfg. Co.		35
Whittemore & Co.		1,705
Wolff & Co., R. H.	394	1,861
Total	564	35,260
Corres. date 1887	1,476	75.130

Old Rails.	Week. Tons.	Year. Tons.
Baldwin Bros.		100
Bowening & Archibald.		100
Brown Bros. & Co.		668
Crossman & Bro., W. H		1,005
D., L. & W. R. R.		409
Frankfort, M.		100
Geisenheimer & Co.		100
Henderson Bros		537
Neumark & Gross		1,912
Stetson & Co., Geo. W.		230
Waltam & Co.		300
Winter & Smillie		80
Total		5.541
Corres. date 1887	1,611	107.710
Sheet Iron.	**Tons.**	**Tons.**
Coddington & Co.	68	1,305
Newton & S		4
Wagner, W. F		40
Whitney & Co.		5
Total	68	1,354
Corres. date 1887.	50	1,198
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	144	13,695
Charcoal Iron.	**Tons.**	**Tons.**
Abbott & Co., Jere.		3
Bacon & Co	102	102
Downing & Co.		25
Luuberg, G.		16
Mersick & Co.		70
Milne & Co.		15
Muller, Schall & Co.	9	11
Naylor & Co.	50	9
Page, Newell & Co.		307
Sanderson & Son		1
Total	161	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.	1,980	64,149
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	1.153	21,370
Corres. date 1887	1,360	28,418

EXPORTS.

Copper.	Week. Pounds.	Year. Pounds
Abbott & Co	1,405,956	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	1,405,956	25,933,787
Corres. date 1887.		7,722,109
Copper Matte.		
Abbott & Co		601,145
Amer. Metal Co.,	224,742	2,915,600
Ledoux & Co.		469,720
Lewisohn Bros.		1,126,822
Nichols & Co.		516,783
Wilm's, Terhune	1,197,787	34,876,048
Total	1,422.229	40,506,118
Corres date 1887.		20,659,213
Old Copper.		
Burgass & Co	23,400	51,221
Total	23,400	51,221

CURRENT PRICES.

CHEMICALS.

Acid—Acetic.....2¾@2¼
Muriatic, 18°, per 100 lbs 1 20
Muriatic, 20°, per 100 lbs..... 1 35@1 50
Nitric, 36°, per 100 lbs ..... 4.50@5.00
Nitric, 42°, per 100 lbs..... 6.00
Oxalic.....6½@7
Sulphuric, 60°, per 100 lbs..... 90
Sulphuric, 66°, per 100 lbs 1.10
Alkali—36 p. c..... 1.10@1.15
48 p. c .....1.22½@1 25
Refined, 58°..... 1.15
Alum—Lump, per lb..... 1¾
Ground, per lb..... 2¼
Lump per ton, Liverpool £5
Sulphate of Alumina, ₱ ton....£3 15
Aqua Ammonia—18°, ₱ lb..... 4
20°, ₱ lb..... 5
22°, ₱ lb..... 6¾
26°, ₱ lb..... 9¾
Ammonia—Sul., per 100 lbs. 3.00@3 50
Carb., per lb..... 7¾
Muriate, per lb..... 7
Arsenic—White, powdered, ₱ lb.3¼@3½
White, glass..... .
Red. per lb 6½
White, at Plymouth, per ton..... £11 10
Asbestos—Am., p. ton.....$20@$100
Italian, p. ton, c. i. f. L'pool ...£18 0 0
Asphaltum—P. ton 13.00
Prime Cuban, ₱ lb ..... 5@6c.
Hard, ₱ ton..... $28.00
Trinidad, refined, ₱ ton..... $30.00
Barytes—Sulph., Am. prime white16.00
Sulph., foreign, floated, p. ton....19.00
Sulph., off color, p. ton 12.50
Carb., lump, f.o.b. L'pool, ton £6 0 0
No. 1, casks, Runcorn " "£4 10 10
No 2, bags, Runcorn " " 3 15 0
Bleach—Over 35 p.c., ₱ lb.1.82½@1.95
Borax—Per lb 7¾
Refined at Liverpool, per ton..... £31
Brimstone—*See Sulphur.*
Bromine—Per lb..... 36
Cement—Rosendale, per bbl..... 1.00
Portland, American, per bbl..... 2 00
Portland, foreign, per bbl..... 2 25
Chalk—Per ton..... 3.00
Precipitated, per lb..... 4
China Clay—English, per ton....18.50
Southern, per ton..... 13.50
Chrome Yellow—Per lb..... 8
Cobalt—Oxide, per lb..... 270
Copper—Sulph. English Wks., ton £23
Precip., Eng. Wks, unit...fluctuating
Copperas—Common, per 100 lbs.$ 65
Best, per 100 lbs..... 1.00
Liverpool, per ton, in casks, £1 16 1.20
Cream of Tartar—Am. 99%....32@32¾
Powdered, 99 p c..... 33½
Emery—Grain, per lb 4
Flour, per lb 2½
Feldspar—Ground, per ton.....14.00
Fuller's Earth—Lump, per bbl. 95
Powdered, per lb..... 2
Gypsum—Calcined, per bbl..... 1.25
Iodine—Resublimed..... 3.60
Kainit—Per ton..... 11.50
Kaolin—*See China Clay.*
Lead—Red, per lb..... 6
White, American, in oil, per lb.... 6½
White, English, per lb 7½
Acetate, or sugar of.....13@13½
Lime Acetate—Amer. Brown.1.50@1.55
" Gray.2.37½@2.40
Litharge—Powdered, per lb ..... 6@6¼
English flake, per lb..... 9
Magnesite—Greek, per ton..... 10.00
Manganese—lump, c.i.f. L'pool.£3 15
Per unit, up or down..... 1s. 6d.
Ground £5 10
Mercuric-Chloride—(*Corrosive Sublimate*) per lb 55
Mineral Wool—Per lb..... 2
Mica—In sheets according to size, 1st quality, ₱ lb..... 25@$6 00
Phosphate Rock—S. Carolina, per ton, o. b. Charleston..... 5.00
Ground, ex vessel New York .9.50@ 9.60
Canadian Apatite, lump, f. o. b. at shipping port, per unit 24
Phosphorus—Per lb..... 65
Plumbago—Ceylon, per lb..... 4@5
American, per lb..... 5@7
London, per cwt..... £0 15 0
Potassium—Cyanide, per lb ...39@41
Bromide, per lb..... 37
Chlorate, per lb..... 15¼@15½
Carb. per lb..... 5
Caustic, per lb..... 7½
Iodide..... 2.70@2.75
Muriate, per 100 lbs..... 1.77½@1.80
Nitrate, refined, per lb..... 6
Bichromate, per lb..... 10½
Sulphate, per 100 lbs..... 1.10
Yellow Prussiate, per lb..... 19
Red Prussiate, per lb..... 42
Pumice Stone—Select lumps, lb. 3@5
Original cks., per lb..... 1¾
Powdered, pure, per lb..... 2
Pyrites—Non-cupreous, p. unit, S. 14
Quartz—Ground, per ton.....18.00
Rotten Stone—Powdered, per lb. 8½
Lump, per lb..... 5
Eng., powdered, per ton..... £4
Lump, per ton..... £5
Salt—Liverpool, ground per bbl. 70
Turk's Island per bbl..... 25
Salt Cake—Per 100 lbs..... 50
Saltpeter—Crude, per lb..... 4½
Refined, per lb..... 6
Soda Ash—Carb., 48 % 100 lb...1.30 @1.35
Caustic, 48 %..... 1.30 @1.35
High test..... 1.12½@1.15
Soda Caustic, 60%.....2.40@2.50
" " 70%..... 2.25
" " 74-5%..... 2.20
Sal, English, per 100 lbs..... 1.15
Sal, American, per 100 lbs..... 1.15
Nitrate, per 100 lbs..... 2.05
Strontium—Nitrate per lb..... 10½
Sulphur—Roll, per lb..... 1¾
Flour, per lb 2
Crude Brimstone, 2s., ₱ ton ... 22 00
Crude Brimstone, thirds, per ton 21.25
Talc—Ground French, per lb.. ... 1¼
Domestic, per lb 6
Domestic, per ton..... 15 00
c. i. f. Liverpool, per ton..... £4 5 0
Tannin—Pure, per lb. ..... .
Vermillion—American, per lb... 50
English, per lb. 65
Vitriol—(Blue), Ordinary, per lb.. 5½
Extra, per lb 6
Zinc Oxide—Am., Dry, per lb.... 4½
Antwerp, Red Seal, per lb..... 6@6½
Paris, Red Seal, per lb..... 6½@7
* Spot.

BUILDING MATERIAL.

Bricks—Pale, per 1,000 ..... 2.50@2.75
Jerseys, per 1,000 ..... 5.00@5.25
Haverstraw, per 1,000..... 5.25@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
Cœsium—(Metallic) .....
Cerium—(Metallic) per oz..... 160.00
Chromium—(Metallic), per lb...200 00
Cobalt—(Metallic), per lb 6.00
Didymium—(Metallic), per oz..160 00
Erbium—(Metallic), per oz..... 140.00
Gallium—(Metallic), per oz 3250.00
Glucinum—(Metallic) 4.50
Indium—(Metallic), per oz.....158.00
Iridium—(Metallic), per lb..... 700.00
Lanthanum—(Metallic), per oz.175.00
Lithium—(Metallic), per oz.....160.00
Magnesium—Per lb..... 4.00
Manganese—Metallic, per lb... 1.10
Molybdenum—(Metallic), per oz. 6.00
Nickel—(Metallic), per lb..... .65
Niobium—(Metallic), per oz.....128.00
Osmium—(Metallic), per lb 640.00
Palladium—(Metallic), per lb...512.00
Platinum—(Metallic), per lb. ..128.00
Potassium—Metallic, per oz... 2.00
Rhodium—(Metallic), per lb....512.00
Ruthenium—(Metallic), per oz.112.00
Rubidium—(Metallic), per oz....200.00
Selenium—(Metallic), per oz... 3.00
Sodium—(Metallic) per lb. 4.50
Strontium—(Metallic), per oz..128.00
Tantallum—(Metallic) per oz....144.00
Telurium—(Metallic) per oz.... 9 00
Thallium—(Metallic) per oz..... 3.00
Titanium—(Metallic) per oz....32.00
Thorium—(Metallic) per oz.....272.00
Tungsten—(Metallic) per oz..... 1.25
Vanadium—(Metallic), per oz...320.00
Yttrium—(Metallic), per oz 144.00
Zirconium—(Metallic), per oz...240.00

METALS.

Aluminum—
Bronze (10 %), ₱ lb.. ..... 46c.
Copper—
Lake Ingot, Spot, ₱ lb..... 16·80@16.90c.
Electrolytic, ₱ lb ..... 16·25c.
Casting Brands, ₱ lb. ... 15¾@15·50c.
Chili Bars, London, ₱ ton..... £81 15s.
Sheet Copper (according to size), ₱ lb..... 25 @38c.
Lead—
Domestic, Common, Spot.. 4.25@4·30c.
Foreign ..... 4 60@4 70c.
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..... £89 10s.
Pig tin, spot in N. Y., ₱ lb.. 20·50c.
Zinc—
Domestic spelter, ₱ lb..... 4·60@4·65c.
Foreign spelter, ₱ lb... ... 5·40@5·50c.
Silesian, ton..... £17
Sheet, American, ₱ lb ..... 6@6¼c
Antimony—Hallet's, per lb.. 9¾@9¾c.
Cookson's, per lb..... 12
Star Antimony..... £38
Quicksilver—Per lb.....61@63c.
London, ₱ flask.....£7@£7¼

IRON AND STEEL.
New York Prices.

American Pig-Iron.—At tidewater.
No. 1 X..... ...$17.50@$18.50
No. 2 X..... ...$17.00@ 17 50
Forge..... ...$16.00@..... ....
Scotch Pig—Coltness... $19.75@$20.25
Clyde ..... 18.50@ 19.00
Dalmellington..... 18 50@ 19.00
Summerlee..... 19 50@ 20.00
Shotts..... 19 50@ 20.00
By Cable to-day to the Metal Exchange:
Scotch Warrants..... 39s. 7d.
Coltness, at Glasgow ..... 47s 9d.
Langloan, at Glasgow ..... 44s. 9d.
Summerlee, at Glasgow..... 47s. 9d.
Gartsherrie, at Glasgow ..... 44s. 9d.
Glengarnock, at Aidrossan..... 43s. 6d.
Dalmellington, at Ardrossan.....40s. 9d
Eglinton at Ardrossan ..... 39s. 6d.
Bessemer Pig—
Foreign, nominally..... $19 00
Domestic ..... 17.50@18
Spiegeleisen—
German, 20 per cent..... $26
English, 20 " " .....$26.50@ 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, " 46.00@ 46.50
Steel Rails—
Heavy sections, at mill....$29.00@$30.00
Light " " ..... 30.50@ 34.50
Structural Iron and Steel—
Bridge Plate, at mill.. .....1·9 @2c.
Angles, at mill ..... 2·00@2·05c.
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..... ..... 4½c.
Bessemer machinery..... ..... 2·2@2·5c
" spring. . ..... 2·7@2·9c.
Cast-Iron Pipe—
According to size..... $25 00@$32.00
Wrought Iron Pipe—nominally—
Butt-Welded, Plain and Tarred, 57½% disc; Galv., 50% disc.
Lap-Welded, Plain and Tarred, 67½% disc; Galv., 55% disc.
Boiler Tubes—Per cent disc..... 62½%
Rail Fastenings—
Spikes..... .....2 @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..... ..... @ 19.50
Old Rails—Tees ..... 20.00@
—Doubles ..... 21.00@
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 25@$14.00
Cold Short ..... 13.00@ 13.50
Mottled..... 12.25@ 12.50
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..... .... 16.00@.....
Gray Forge No. 3..... ..... 14.50@14.75
" No. 4..... ..... 14.25@.....
White .... 13.50@14.00
Mottled..... ..... 13.50@14.00
Silvery .... 16.50@18.00
Bessemer..... ..... 17.25@17.50
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@.....
Steel Bloom Ends..... ..... @17 50
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..... 19.5 @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. base.

STOCK MARKET QUOTATIONS

Baltimore, Md.

COMPANY.	Bid.	Asked.
Atlantic Coal....	1.35	1.50
Balt. & N. C.....	.37@.38	.40
Big Vein Coal..	.....	.....
Conrad Hill . . .	.07	.15
Diamond Tunnel	.....	.....
George's Crk. C.	100@100½	103¼
Lake Chrome..	.05	.10
N. State, Baito..	.....	.30
Ore Knob	.....	.....
Silver Valley....	.85@.88	1.00@1.10

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

Birmingham, Ala.

COMPANY.	Bid.	Asked.
Ala. Conn. C..	....	25
Bir. Min. & Mfg.	...	190 @192½
Bir. Fur. & Mg.	....	18½@ 22½
Broken Arrow C. & M.. ...	...	14⅞@ 15⅞
Decat. L. Imp. & Fur..	12½@14¾	14¼@ 15½
DecaturMin. L.	....	26
Enterprise Mfg Co	35	50
Jagger-Towbley C & C. Co.	....	11
Mag-Ellen C. & Mg	50	...
No Bus. Crk., C. & Mg.....	5	12½
Pioneer M. & Mfg	....	.....
Sloss I. & S. ..	12	13¾@ 14¼
* Sloss I. & S..	77	78½
Sheffield C. & I.	65 @67¼	69 @ 72
Tenn. C. & I. Co.	27	....
*Williamson Iron Co...	99	....
Woodstock S&I	49½@50¼	54½@ 55

* Bonds.

Highest and lowest prices bid and asked during the week ending July 28th.

Pittsburg, Pa.

COMPANY.	H.	L.	Closing.
Allegegheny Gas..	35.00	35.00	35 00
Bridgewater Gas..	72.50	68.00	72.50
Charlotte Mg. Co..	.....	.....	.....
Chartiers Val. Gas.	55.00	53.50	53.50
Columbia Oil Co..	4.00	3.50	3.88
Consignee Mg. Co.	.....	.....	.....
Forest Oil Co.....	.....	.....	.....
Gogebic Iron Syn..	.10	.10	.10
Iron City Mining..	.....	.....	.....
Kittanning Gas...	.....	.....	.....
La Noria Mining ..	2.50	1.88	2.50
Lustre Mining....	.....	.....	.....
M'f'turers' Gas....	25.00	24.50	25.00
Nat. G. Co. of W. Va.	.....	.....	.....
N. Y. & C. Gas Coal	32.00	29.00	29.00
N. Y. & Westmoreland G., C. & C..	.....	.....	.....
Ohio Valley Gas ..	.....	.....	.....
Pennsylvania Gas.	22.00	19.50	19.50
People's Nat. Gas.	.....	.....	.....
Philadelphia Gas..	43.75	43.25	43.75
Pine Run Gas	.....	.....	.....
Pittsburg Gas.....	60.00	60.00	60.00
Royal Gas.....	.....	.....	.....
Silverton Mining..	2.00	1.50	2.00
South Side Gas...	.....	.....	.....
Tuna Oil Co.....	55.00	55.00	55.00
Washington Oil...	46 50	46.50	46.50
W'th'se Air-Brake	121.00	118.00	120.00
West'house Brake	63.00	60.00	63.00
Westmoreland & Cambria Gas..	46 00	45.00	46.00
Wheeling Nat. Gas.	27.50	26.50	27 00
Yankee Girl Min..	6.00	2.00	6.00

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

Foreign Quotations.

COMPANY.	*London.* Highest.	July 20. Lowest.
Alturas Gold, Idaho...	14s. 6d.	13s. 6d.
Arizona Copper, Ariz..	15s. 6d.	15s.
Bird's eye Creek, Cal....	6s. 6d.	5s. 6d.
Carlisle, N. Mex	18s.	16s.
Centennial Cal . . .	7s. 6d.	5s.
Colorado United, Colo..	5s.	3s.
Columbian, S A.....	42s. 6d.	37s. 6d.
Denver Gold, Colo....	1s.	6d.
Dickens Custer, Idaho.	7s.	6s.
Eberhardt, Nev	.....	.....
El Callao, Venezuela....	£2¾	£2¼
Empire, Mont	18s.	17s.
Flagstaff, Utah.....	3s. 6d.	2s. 6d.
Garfield, Nev.....	10s. 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	£9¼
Montana Lt., Mont	£1¾	£1⅝
New California, Colo...	5s. 6d.	3s.
New Emma, S., Utah...	5s. 6d.	4s. 6d.
New Hoover Hill, N. C.	2s.	1s.
New La Plata, Colo....	1s. 9d.	1s 3d.
Pittsburg Cons., Nev...	27s. 6d.	22s. 6d.
Plumas Eureka, Cal....	£1	£15-16
Quebrada, Venezuela...	£4¾	£4¼
Richmond Con., Nev...	£4	£3¾
Ruby & Dunderberg, Nev	3s.	2s.
Russell Gold, N. C.....	4s.	3s.
Sierra Buttes, Cal.....	£⅝	£½
Stanly, N. C.....	7s. 6d.	2s. 6d.
Tolima, Colombia, S.A.	£2½	£1¼
Union Gold, Colo.....	2s.	1s.
U. S. Placer, Colo.....	£27-40	£⅝
Viola Lt., Idaho	18s. 9d.	15s.
	*Paris.**	July 12.
El Callao.....	54.00	54.00
Golden River	405	405
Lexington.....	78	78
" parts.....	4	4
Rio Tinto.....	478.75	478.75
" obligations...501.25		501.25
" " 2d.498.75		498.75
Tharsis	125	125

* Francs.

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total levied.	Date and amount of last.			Dividends. Total paid.	Date and amount of last.		
1	Adams, S. L.	Colo.	$1,500,000	150,000	$10	*				$555,000	Jan.	1887	.15
2	Alice, S. C.	Mont	10,000,000	400,000	25	*				750,000	Sept	1888	.06¼
3	Alturas, G	Idah.	1,500,000	300,000	5					95,000	Sept	1886	50
4	Amy & Silversmith, S.	Mon.		341,419						247,530	Aug.	1887	.12½
5	Atlantic, C.	Mich	1,000,000	40,000	25	$280,000	Apl.	1875	$1.00	480,000	Aug.	1888	1.50
6	Argenta, S	Nev..	10,000,000	100,000	100	325,000	July	1885	.10	40,000	Feb.	1880	20
7	Aurora, I.	Mich	2,000,000	100,000	20					155,000	Oct.	1887	1.87½
8	Bassick, G. S.	Colo.	10,000,000	100,000	100	*				400,000	Mar.	1884	1.00
9	Belle Isle, S.	Nev..	10,000,000	100,000	100	145,000	Feb	1887	20	300,000	Dec.	1879	.25
10	Belcher, G. S.	Nev..	10,400,000	104,000	100	2,718,000	July	1888	.50	15,397,200	Apl	1876	1.00
11	Bellevue Idaho, S. L.	Idah.	1,250,000	125,000	10	57,500	Nov.	1887	25	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				30,350,000	July	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	2,008,800	July	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 0	July	1883	.50	170,000	July	1887	.05
44	Empire Lt., G.	Mont	500,000	100,000	5					70,500	Oct.	1887	.37½
45	Eureka Con., G. S. L.	Nev..	5,000,000	50,000	100	500,000	July	1886	1.00	4,918,500	July	1888	.25
46	Evening Star, S. L.	Colo.	500,000	30,000	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	1,766,000	July	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	*				197,970	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	400,000	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. I.	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.	10,000,000	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..	10,000,000	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	*				2,010,965	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	485,000	Apl.	1888	.30	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	*				38,500	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					151,000	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	*				4,312,587	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.	1886	.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	6,324,000	Sept	1887	.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					1,492,557	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.	5,000,000	500,000	10					225,000	Nov.	1883	.25
131	Silver King, S.	Ariz.	10,000,000	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.	1883	.25
135	Socorro, C	N. M.	250,000	2,500	100					4,000	Mch	1882	.00¾
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, C.	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	25	520,000	Apl.	1885	3.00	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.	Par Value.	Assessments. Total levied.	Date & am't of last,		
1	Agassiz Cons., S. L.	Colo.	$2,500,000	50,000	$50	*			
2	Allouez, C.	Mich	2,000,000	80,000	25	$657,000	Jun	1888	1.00
3	Alpha Con., G. S.	Nev..	3,000,000	30,000	100	536,250	Jan.	1888	87½
4	Alta, S.	Nev..	10,080,000	100,800	100	2,191,200	May	1888	.50
5	Amador, G.	Cal..	400,000	200,000	2	*			
6	American Flag, S.	Colo.	1,250,000	125,000	10	300,000	Jun	1877	.50
7	Anglo-Montana, Lt.	Mon.	600,000	120,000	5				
8	Appalachian, Lt., G.	N. C.	1,500,000	300,000	5				
9	Aspen Mg. & S., S. L.	Colo.	2,000,000	200,000	10				
10	Barcelona, G.	Nev..	5,000,000	200,000	25	*			
11	Bechtel Con., G.	Cal..	10,000,000	100,000	100	173,500	Jan.	1883	.10
12	Belmont, S.	Nev..	5,000,000	50,000	100	735,000	Apl.	1886	.10
13	Best & Belcher, G. S.	Nev..	10,080,000	100,800	100	2,029,390	Jun.	1888	.25
14	Big Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*			
15	Bi-Metallic, S.	Mon.	5,000,000	200,000	25	*			
16	Black Oak, G.	Cal..	3,000,000	300,000	10				
17	Boston Con., G.	Cal..	10,000,000	100,000	100	170,000	Nov	1883	.25
18	Bremen, S.	N. M.	5,000,000	500,000	10	*			
19	Brunswick, G.	Cal..	2,000 000	400,000	5	*			
20	Bullion, G. S.	Nev..	10,000,000	100,000	100	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	.1 5
33	Con. Imperial, G. S.	Nev..	5,000,000	50,000	100	1,175,000	Sept	1887	.2 5
34	Con. Pacific, G.	Cal..	6,000 000	60,000	100	177,000	Sept	1887	.1 0
35	Cons. Silver, S	Mo...	2,500,000	250,000	10				
36	**Cop. Queen Cons, C.	Ariz.	1,400 000	140,000	10				
37	Courtlandt	Colo.	500,000	50,000	10				
38	Crescent, S. L.	Colo.	3,000,000	300,000	10	*			
39	Crocker, S.	Ariz.	10,000,000	100,000	100	105,000	Feb.	1888	.20
40	Crowell, G.	N. C.	500,000	500,000	1				
41	Dahlonega, G.	Ga...	250,000	250,000	1	*			
42	Dandy, S.	Colo.	5,000,000	500,000	10				
43	Dardanelles, G.	Cal..	1,000,000	100,000	10				
44	Decatur, S.	Colo.	1,500,000	300,000	5	*			
45	Denver City, S. L	Colo.	5,000,000	500,000	10	*			
46	Denver Gold, G.	Colo.	300,000	60,000	5				
47	Durango, G.	Colo.	500,000	500,000	1	*			
48	Eastern Dev. Co., Lt.	N. S.	1,500,000	150 000	10	990,000	Mar.	1886	1.00
49	El Cristo, G. S.	U.S.C	1,000,000	500,000	2				
50	El Dorado, G	Cal.	1,000,000	250,000	4	*			
51	El Talento, G.	U.S.C	1,000,000	500,000	2				
52	Empire, S.	Utah	10,000,000	100,000	100				
53	Eureka Tunnel, S. L.	Nev..	10,000,000	100,000	100	*			
54	Exchequer	Nev.	10,000,000	100,000	100	770,000	Feb.	1888	.20
55	Found Treasure, G. S.	Nev..	10,000,000	100,000	100	18,000	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	Grand Duke	Colo.	800,000	80,000	10				
64	Great Remance, G.	U.S.C	1,000,000	500,000	2	*			
65	Gregory-Bobtail, G.	Colo.	550,000	550,000	1	*			
66	Gregory Con., G.	Mon.	3,000,000	300,000	10				
67	Harlem M.& M.Co, G.	Cal..	1 000,000	200,000	5				
68	Head Cent. & Tr. S. G.	Ariz.	10,000,000	100,000	100				
69	Hector, G.	Cal..	1,500,000	300,000	5				
70	Highland, C	Mich	500,000	25,000	25				
71	Hollywood	Cal..	200,000	100,000	2				
72	Hortense, S.	Colo.	2,000,000	200,000	10				
73	Huron, C	Mich	1,000,000	40,000	25	280,000	May	1887	3.00
74	Iron Gold & Silver, S	N. M.	2,000,000	200,000	10	*			
75	Ironton, I.	Wis.	1,000,000	40,000	25				
76	Iroquois, C	Mich	1,250,000	50,000	25				
77	J. D. Reymert	Ariz.	10,000,000	100,000	100	*			
78	Julia Cons., G. S.	Nev..	11,000,000	110,000	100	1,650,000	Apl.	1887	.10
79	Kearsarge, C.	Mich	1 250,000	50,000	25	190,000	Oct.	1887	1.00
80	Laclede	N. M.	2,000,000	200,000	10	*			
81	Lacrosse, G.	Colo.	1 000,000	100,000	10	*			
82	Lee Basin, S. L.	Colo.	5,000,000	500,000	10	*			
83	Lochiel, S.	N. M.	2,000,000	200,000	10	*			
84	Lucerne, S.	Colo	5,000,000	500,000	10	*			
85	Mammoth Bar., G.	Cal..	10,000,000	100,000	100	50,000	Dec.	1881	
86	May Belle, G.	Cal..	10,000,000	100,000	100	84,000	Mar.	1884	.15
87	Mayflower Gravel	Cal..	1,000,000	100,000	10	325,000	Apl.	1888	.2
88	Medora, G	Dak.	250,000	250,000	1				
89	Mexican, G. S	Nev..	10,000,000	100,000	100	2,700,760	Jan.	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	50,000	25	*			
104	Overman, G. S.	Nev.	11,520,000	115,200	100	3,737,180	Aug.	1887	.25
105	Park, S.	Utah	2,000,000	200,000	100				
106	Peer, S.	Ariz.	10,000,000	100,000	10	125,000	Nov.	1886	.10
107	Peerless, S.	Ariz.	10,000,000	100,000	100	345,000	Apl.	1888	.25
108	Phœnix	Ariz.	500,000	500,000	100	*			
109	Phœnix, G. S.	Ark.	5,000,000	200,000	1	*			
110	Phœnix Lead, S. L.	Colo.	100,000	100,000	25	*			
111	Pilgrim, G.	Cal..	600,000	300,000	1				
112	Potosi, S.	Nev..	11,200,000	112,000	2	1,349,600	July	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.	1883	.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	295,0.0	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	[illegible]
145	Union Con., G. S.	Nev..	10,000,000	100,000	100	2,185,000	Nov.	1887	.50
146	Utah, S.	Nev..	10,000,000	100,000	100	95,000	May	1888	.25
147	Washington, C.	Mich	1,000,000	40,000	25				
148	West Granite Mt., S.	Mon.	5,000,000	500,000	10	*			
149	Zelaya, G. S.	C. A.	600,000	300,000	2	*			

G. Gold. S. Silver. L. Lead. C. Copper. * Non-assessable. † This company, as the Western, up to Dec. 10th, 1881, paid $1,400,000. ‡ Non-assessable for three years. § The Deadwood previously paid $275,000 in eleven dividends, and the Terra $75,000. Previous to the consolidation in Aug., 1884, the California had paid $31,320,000 in dividends, and the Con. Virginia, $4[illegible]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.	July 28.		July 30.		July 31.		Aug. 1.		Aug. 2.		Aug. 3.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Adams, Colo.													
Alice, Mont													
Argenta, Nev.													
Bassick, Colo.													
Belcher, Nev													
Bulwer, Cal													
Caledonia, Dak									2.60	2.55			200
Central, Mich													
Chollar, Nev.													
Chrysolite, Colo.													
Colorado Cent'l, Colo.													
Cons. Cal. & Va., Nev.	7.85		10.00	9.50	9.63		9.75		9.75	9.50	9.38	9 00	1,270
Crown Point, Nev													
Deadwood, Dak.					1.90								100
Dunkin, Colo.									.85				5
Eureka Cons., Nev													
Father de Smet, Dak					.47								100
Freeland, Colo.													
Gould & Curry, Nev.													
Grand Prize, Nev.													
Green Mountain, Cal.													
Hale & Norcross, Nev			6.00										80
Holyoke, Idaho													
Homestake, Dak.					11.50	11.00	11.00	10.50					120
Horn Silver, Ut.													
Iron Hill, Dak.													
Iron Silver, Colo.					3.50								200
Leadville C., Colo.	.22								.20				1,500
Little Chief, Colo.							.23		.23				700
Little Pittsburg, Colo													
Martin White, Nev.													
Mono, Cal													
Moulton, Mont													
Mount Diablo, Nev.													
Navajo, Nev.													
North Belle Isle, Nev.			3 40										100
Ontario, Ut.			32.00	31.00	32.25		33.00		33.00		33.25		715
Ophir, Nev.											5.75		150
Plutus, Colo.	1.10		1.10		1.05		1.10	1.05	1.05		1.05		1,400
Plymouth, Cal.			8.25	7.75			8 13		8.13				800
Quicksilver Pref., Cal			39 50				40.25		40.00				600
" Com., Cal					10 88								100
Robinson Cons., Colo.			85								1.00	90	500
Savage, Nev.			3.85								2.85		150
Sierra Nevada, Nev.									2.75				100
Silver King, Ariz.					2 25	2.10	2.25	2.00	2.05		2.25		900
Silver Mg. of L. V.									.51	.49			3,000
Small Hopes, Colo.													60
Standard, Cal.					1.10								
Yellow Jacket, Nev.			4.00		4 00								600

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	July 28.		July 30.		July 31.		Aug. 1.		Aug. 2.		Aug. 3		SALES
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alta, Nev.													
Amador, Cal.	2.20		2.20		2.20		2.35		2.20		2.20		1,800
Am'can Flag, Colo.													
Astoria, Cal.	.24		.24		.24		.24		.25		.27	.24	900
Barcelona, Nev.													
Bechtel Con., Cal.													
Best & Belcher, Nev.													
Brunswick, Cal.													
Bullion, Nev.													
Carupano, Venez.													
Cashier, Colo					.10	.06	.12	.11	.12				3,600
Castle Creek, Id.													
Cleveland, Dak.													
Commonw'th, Nev.					5.00								100
Confidence, Nev.													
Con. Imperial, Nev													
Con. Pacific													
Denver City, Colo.					.18		.20				.20		900
Eastern Oregon											.08	.02	14,000
El Cristo, U. S. Col.	1.05	1.00	1.05	1.00	1.10	1.05	1.10	1.05	1.20	1.05	1.10		3,450
Exchequer, Nev.													
Found Treas'e, Nev.													
Hector, Cal.													
Hollywood, Cal.	.40	.39	.40	.39	.40		.40	.39	.40	.39	.40		6,300
Huron, Mich.													
Julia, Nev.													
Kings'n & Pemb'ke					2.88								100
Kossuth, Nev.													
Lacrosse, Colo													
Lee Basin, Colo					.70								900
Mexican, Nev.													
Middle Bar, Cal.	.44		.44		.44		.44						2,500
Moniter, Colo.	.10		.11		.12	.11	.12	.11					2,300
Ori'nt'l&Mil'r, Nev.													
Phoenix Lead, Colo.													
Phoenix of Ark.	.25												200
Potosi, Nev.							2 00						100
Proustite, Idaho	1.00		1.00		1.00		1 00		1.00		1.00		2,500
Rappahann'k, Va.	.11		.11		.11		.11		.11		.11		3,800
San Sebastian, S'nS													
Santiago, U. S. Col.					3.25								100
Scorpion, Nev.													
*Security, Colo.													
Shoshone, Idaho	.13		.14		.14	.12	.13		.13		.13	.12	7,000
Silver Cliff, Colo													
Silver Cord, Colo.							.40		.37	.35			1,900
Silver Queen, Ariz.													
Sutro Tunnel, Nev.	.07	.06	.10	.08	.10	.08	.09		.07		.09	.08	24,550
Sutter Creek, Cal.	1.10		1.10		1.10		1.10		1.10		1.15	1.10	2,000
Taylor Plumas, Cal.													
Tornado, Nev.													
Union Cons., Nev									3.35	3.30			700
Utah Nev.													

†Dealt in at the New York Stock Ex. Unlisted Securities Dividend shares sold, 13,650. Non-dividend shares sold, 70,300. Total New York, 83,950.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	July 27.		July 28.		July 30.		July 31.		Aug. 1.		Aug. 2.		SALES.
Atlantic, Mich.	17.50	17.00			*17¼	16.00			17.00	16.75	17.00	16.75	615
Bodie, Cal.													
Bonanza Developm't	1.75	1.50	1.81	1.40	1.88	1.75	1.81	1.75	1.75		1.75	1.50	20,635
Boston & Mont., Mont													
Breece, Colo.			.28				.28		.30				900
Calumet & Hecla	*257		*261	260	*270	262	*274	270	*275	273			523
Catalpa, Colo.	.20												500
Central, Mich.									20.00				50
Chrysolite, Colo													
Con. Cal & Va., Nev.													
Dunkin, Colo.	*.80		*.85	.83	*.85	.80	*.90	87½	*.89	.85	.90		2,216
Enterprise													
Eureka, Nev.													
Franklin, Mich.	*18¼	17.75	*19¾	18.25	*20¾	19.25	*22¼	21.50	23.00	18.25	22.50	20.00	13,633
Hale & Norcross, Nev.													
Honorine, Utah													
Little Chief, Colo.													
Little Pittsburg, Colo.													
Martin White, Nev.													
Mono, Cal.													
Napa, Cal.			1 88		1.88		1.88						300
Osceola, Mich.	*21¾	21.25	*21½	21.00	*21½	21.00	*22	21 25	*24	21.75	21.75	21.50	1,242
Pewabic, Mich.	3 00	2.50			3 00		3.00		3.00		3.00		1,230
Quincy, Mich	*73	74.00	73 00		*74½	73.00	*75	73.50	*74		74.00	73.00	742
Ridge, Mich.													
Sierra Nev., Nev.													
Silver King., Ariz.													
Standard, Cal.													
Tamarack, Mich.	*155		165	160	*165	164	*165		*164½				459

NAME OF COMPANY.	July 27.		July 28.		July 30.		July 31.		Aug. 1.		Aug. 2.		SALES.
Allouez, Mich.	†3.25	3.00	†3.25	2.88	2.75		2.88		†2.75		†2.75	2 63	1,200
Arnold, Mich.							.35						200
Aztec, Mich.							.10		.10				800
Bos. & Mont., Mont.	51.50	49.00	52.00	50.00	50.50	50.00	51.00	49.50	50.00	49.13	49.50	48.75	3,311
Brunswick, Cal.					.18								100
Crescent, Colo.													
Cusi, N. Mex.	.09												300
El Cristo, U.S. Col													
Everett			.25				27½		27½		.28		1,500
Hanover, Mich.													
Humboldt, Mich.	.16												100
Hungarian, Mich.	.20		.20		.20		.20		.20				800
Huron, Mich	4.25				5.50	4.50	6 38	6.00	6.50	6.25	6.25		4,785
Kearsarge, Mich.	7.25		7.50	7 00	7.25		7 25		7.13		7.00		895
Mesnard, Mich.													
National, Mich.	3.00		2.50		3.00		3.50	3.00	3.75	3 50	3.50		1,200
Native									.10				300
Oriental & M., Nev.													
Rappahannock, Va.	.10		.10		.10		.11				.11	.10	2,000
Royal, Mich.													
Security, Colo	.05						.05						1,500
Shoshone Idaho	.14		13		.14		.13		.14		.13		1,300
Simpson, Utah													
South Side, Mich.									.15	12½	.25		1,400
Sullivan.	.35		.35		.35		.35		.35		.35		1,300
Sutro Tunnel, Nev.													
Taylor Plumas, Cal													
Washington			.30								.25		400
Winthrop, Mich.	.20		.25										200

*Ex dividend. †Ex rights. Boston: Dividend shares sold, 43,015. Non-dividend shares sold, 23,721. Total Boston, 66,736.

COAL STOCKS.

NAME OF COMPANY.	Par val. of sh'rs.	July 28.		July 30.		July 31.		Aug. 1.		Aug. 2.		Aug. 3.		Sales.
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Barclay Coal		†16		†16		†16		†16		†16				
Buck Mt. Coal		*4		*4		*1		*4		*4				
Ches. & O. RR	100													
Chic. & Ind. Coal RR.	100	39												100
Do. pref.	100													
Col. & Hocking Coal	100			23	22¾	22½	22⅜	22⅝	22⅜					560
Col., C. & I	100					36⅜		37	36½	36¼		36¼	36	1,510
Conuellsville Gas Coal														
Consol. Coal	100									20				100
Del. & H. C.	100	114⅞	114½	114¾	114	115	114¾	115	114⅝	115⅛	114½	114⅝		3,786
D., L. & W. RR.	50	134½	134¼	135	134½	135⅞	134¾	135⅝	135¼	135½	134½	135½	134¾	54,526
Hocking Valley	100			24¾	24	25½	24⅞	26⅞	25½	26⅞	25¾	25½		6,765
Hunt. & Broad Top														
Do. pref										39½				269
Lehigh C. & N.	50	49¼	49	49		49½								732
Lehigh Valley RR.	50	53¼	53	53¼	53	53½		53½		53¼				846
L. & W. C. & I. Co						18½	18	19	18¼					361
Mahoning Coal RR.	100													
Marshall Con. Coal	100			12				12		14½	14			542
Maryland Coal	100													
Montauk Coal	50													
Morris & Essex	100													
New Central Coal	100													
N. J. C. RR.	50	83⅝	83⅜	83¼		84	83½	83½	83¼	83⅝	83⅜			3,425
N. Y. & S. Coal	100													
N. Y., Susq. & Western	100			9	8⅞	9⅝	9¼			9		9⅛	8⅞	1,980
Do. pref	100			31¾		32	31¾	32⅛	31⅞	31⅞	31½			1,500
N. Y. & Perry C. & I.	100													
Norfolk & Western RR.	100	19		19	18½	19	18¾	19⅛	19	19¼	18¾	19	18½	1,405
Do. pref	50	51⅛	51	50⅞	50⅝	51⅝	51	51¼	50½	51	50⅝	50¾	50½	8,426
Penn. Coal	50													
Penn. Gas Coal										†49¼				
Penn. RR.	50	54	53⅞	53⅞		54½	54	54⅛	53⅞	54¼	53⅞			2,285
Ph. & R. RR.**	50	64⅝	64	64⅝	63¼	65	64⅛	64⅛	64¼	64⅝	64	64⅝	63⅞	172,489
Tennessee C. & I. Co	100	28¼	28⅛			28¼	27¾	28¾	28¼			28¾	28½	1,844
Westmoreland Coal	100	67		†68		†68		†68		†68				37
Whitebreast Fuel Co.														
Wyoming Valley Coal						†48	*46¼	†48	*46	†48	*46			

*Bid †Asked.
**Of the sales of this stock, 50,884 were in Philadelphia, and 121,605 in New York. Total sales, 263,478.

San Francisco Mining Stock Quotations.

COMPANY.	CLOSING QUOTATIONS. July 27.	July 28.	July 30.	July 31.	Aug. 1.	Aug. 2.
Alpha						
Alta	1.55		1.50	1.50	1.45	1.40
Belcher						
Belle Isle		.55	.55	.55		
Best & Bel.	4.10	4.00	3.85	3.85	3.50	3.55
Bodie	2.00	2.00	1.80	1.80	1.75	1.75
Bulwer	.85				.70	.70
Chollar	2.90	2.80	2 75	2.75	2.55	2.50
C'm'weal'h			4.50	4.50	4 50	4.60
Con. C. & V	9.62½	9.62½	9.50	9.50	9.12½	9.12½
Con. Pac.						
Crown Pt.	4.30	4.10	3.90	3.90	3.50	3.60
Eureka C.						
Gould & C.	3.35	3.30	3.15	3.15	3.00	3.00
Grd. Prize.	2.45	2.30	2.20	2.20	2.20	
Hale & N.	5.62½		5 62½	5.62½	5.37½	5.50
Mexican	3.65	3.55	3.35	3.35	3.05	3.15
Mono	1.25		1.35	1.35		1.20
Mt. Diablo						
Navajo	1.90		1.85	1.85		1.60
Nev. Queen	6.37½	5.75	5.37½	5.37½	5.37½	5.25
N. Belle I.	3.40		3.35	3.35	3.15	3.00
Ophir	6.50	6.37½	6.00	6.00	5.37½	5.50
Potosi		2.60	2.75	2.75	2 20	2.15
Savage	3.20	3.25	3.05	3.05	2.80	2.85
Scorpion						
Sierra Nev	3.35	3.20	3.35	3.35	2.70	2.75
Sutro Tun.						
Tip Top						
Union Con.	3.50	3.40	3.25	3.25	3.05	3.00
Utah	1.40	1.35	1.30	1.30	1.15	1.15
Yellow Jkt.	4.30	4.20	3.95	3.95	3.70	3.80

the selling prices are no better. A good many bar mills are now running full time. The iron is not stocked up but is shipped somewhere. Business must certainly be better than the brokers and mill men admit. The idea among mill men is that there has been a great deal of business held back, and that when it comes, the dollar will be theirs. They are taking enough business to keep their foundries ahead. Several New York nail makers have been canvassing the market very actively trying to work off inferior makes of nails, but the difference between them and the best makes is too small. The skelp iron manufacturers have gathered in business amounting to nearly 36 tons, and they say that for prompt delivery prices are a trifle better. Card rates unchanged. The manufacturers of sheet iron are moving along pretty well for galvanized, for other kinds are dull. The plate and tank iron makers say that their promised heavy business is coming in in a piecemeal sort of way. Prices remain unchanged. The manufacturers of structural iron and steel and bridge plate have not been able to do any more than work up small orders, but these are enough in amount to keep mills running. The steel rail makers will agree upon a policy to-day at their Long Branch meeting, which they predicted a few days ago. There are buyers in the market anxiously awaiting their determination, but they do not believe that the conditions to-day will enable them to chase large buyers into the market. The proposed Senate reduction of three dollars will do no harm. Pennsylvania mills have sold 15 tons up to to-day. Brokers say that to-day's meeting will result in the bringing in of a great deal of business. Importers of old rails expect to close contracts for three or four thousand tons of tees and double heads. The position generally is weak. Buyers feel that they are losing nothing by delay. Quotations will be found in our weekly register of prices.

Pittsburg. Aug. 2.

[From our Special Correspondent.]

The improved tone noted in our last report continues. Holders feel very much encouraged with the latest developments, as well as the improved condition of affairs generally. Inquiries are far more numerous with several buyers, at prices that were current a short time ago; sellers, however, have altogether a different view on the subject, not being disposed to accept those prices. Stocks of gray mill iron are reported very scarce here and in the Shenango and Mahoning valleys. A number of large consumers have made up their minds that the present time is as good as any to buy. Makers are not disposed to talk about yielding anything for the sake of business, their ideas being altogether in the other direction. There is evidently a growing indication towards a speculative movement in raw iron. Note the following: Mill iron is wanted for speculation. Parties in Pittsburg during the week were offering to pay cash for 3000 to 5000 tons, and allow the same to remain at furnace subject to their call later on. Prices fifty cents per ton higher. So far furnaces have refused to sell on those conditions.

Bessemer pig is held firmly at quotations. Muck bar is more fancied and higher. Steel scrap, crop ends, slabs and billets find ready purchase. In fact, the iron market has a healthy appearance all round. In regard to mill iron, certain furnaces refuse to sell any more iron at present, while others are disposed to fill the orders on their books before entering up any more, making due allowances for all contingencies. The position is steadier than it has been for some time past, and the trade are doubtless warranted in their more confident views in regard to the future. It will be perceived that the changes made are in sellers' favor.

Coal and Coke Smelted Lake Ore.

1000 Tons Special Bessemer	21 75 4 mo.
1000 Tons White Bessemer	15.00 4 mo.
1000 Tons No. 1 Mill	14.75 cash.
1000 Tons Bessemer	17.50 cash.
750 Tons Bessemer	14 30 cash.
1000 Tons Gray Forge	14.50 4 mo.
500 Tons Special Bessemer	21.50 cash.
500 Tons Bessemer	17.25 cash.
200 Tons Gray Forge	14.50 cash.
150 Tons Special Bessemer	22.00 4 mo.
500 Tons Gray Forge	14.50 cash.

Coke, Native Ore.

100 Tons Gray Forge	14.25 cash
100 Tons Gray Forge	14.40 cash
75 Tons Gray Forge	14.50 cash
100 Tons No. 1 Foundry	16.75 cash
50 Tons No. 2 Foundry	16 00 4 mo
50 Tons Silvery	16.00 cash

Muck Bar.

750 Tons Spot	26 75 cash.
500 Tons August	27.00 cash.
350 Tons Spot	26.50 cash.
300 Tons Spot	26.50 cash.

Steel Slabs and Billets.

1000 Tons Billets delivered	28.75 cash.
1000 Tons Billets delivered	28.75 cash.
500 Tons Nail Slabs delivered	28.50 cash.
500 Tons Billets delivered	28.75 cash.

Crop and Bloom Ends.

300 Tons Bloom Ends	17 50 cash.
250 Tons Crops from Blooms	18.00 cash.

Steel Scrap.

800 Tons Steel Scrap	Gross 17.00 cash.
200 Tons Steel Scrap	Gross 17.00 cash.

Scrap Material.

200 Tons No. 1 R.R. Wrought Scrap	Net 18.50 cash.
225 Tons Iron Axles	Net 25 00 cash
100 Tons Cut Tank Scrap	Net 17.50 cash.
100 Tons Cast Borings	Gross 12.00 cash.
100 Tons No. 1 Wrought Scrap	Net 19.00 cash.

Old Rails.

500 Tons American T's	22.00 cash.

Louisville. July 31.

[Special report by Messrs. HALL BROTHERS & Co.]

The market continues to be active, and numerous orders for both large and small quantities are being placed. The outlook for the near future is brighter than it has been for some months past and prices continue steady. It is thought that this position will be maintained. The disposition among many of the buyers is to place contracts for as far ahead delivery as they can, but the furnaces, on the other hand, do not care to contract at the farthest for shipments beyond the next four or five months.

Quotations for cash f.o.b. cars at Louisville will be found in our weekly register of prices.

FINANCIAL.

NEW YORK, Friday Evening, Aug. 4.

Midsummer dullness rules in the mining market, and there is absolutely nothing of interest to report.

A small business is reported in the Colorado stocks, the most active of which was Plutus, which sold at $1.05 to $1.10. Small Hopes sold at $1.10. Robinson Consolidated advanced from 85 to 90c. Little Chief was quiet at 23. Leadville, at from 20 to 22c.; 200 shares of Iron Silver sold at $3.50, Dunkin at $1.85. Silver Cord declined from 40 to 35c. Silver Cliff was active at from .12 to 14c. Monitor at from 10 to 12c. Lee Basin at 70c. Denver City at from 18 to 20c. Cashier advanced from 6 to 10c.

Phœnix of Arkansas came out at 25c.

Kingston & Pembroke is selling at $2.88.

For the first time in many weeks no sales in Barcelona are reported.

The Tuscaroras were almost entirely neglected. The only sale made was 100 shares of Belle Isle at $3.40 and of Commonwealth at $5.

Sutro Tunnel continues to be the most active stock on the list; the transactions amounted to 21,950 shares, at prices ranging from 06 to 10c. Consolidated California shows the usual amount of business at $9.80 to $10. Union Consolidated was quiet, at from $3.30 to $3.35. Potosi shows one sale at $2.90. Yellow Jacket was firm, at $4. Hale & Norcross, at $6. Sierra Nevada, at $2.75. Ophir at $5.75. Savage declined from $3.85 to $2.75.

Quicksilver Preferred has gone up to $40.25 and Common to $10.88.

Plymouth Consolidated has ranged from $7.75 to $8.25.

The only business done in the Bodie stocks was one sale of 200 shares at $2.75.

Amador is firm at $2.20, and only shows one sale at $2.25. Middle Bar is quoted at 44c. Astoria at from 24@25c., and Hollywood at 39@40c.

Ontario continues to advance, and this week reached $33.25.

Proustite held its own all week at $1. Shoshone went from 14 to 12c.

Silver King has advanced, and sold this week at from $2 to $2 25.

Caledonia was dealt into the extent of 200 shares, at from $2.55 to $2.60. Father de Smet shows a sale at 47c.; Deadwood-Terra one at $1.90, and Homestake at from $11 to $11.50.

Silver Mining of Lake Valley sold at from 49@51c.

Considerable activity was displayed in El Cristo, which advanced from $1@$1.20, with sales of 3450 shares.

Rappahannock remained all week at 11c.

Meetings.

Calumet & Hecla Mining Company, of Michigan, No. 12 Ashburton Place, Boston, Mass., August 15th, at ten o'clock A.M.

Hancock Chemical Company, Woodside, Houghton County, Michigan, August 10th, at two o'clock P.M.

Pittsburg Forge and Iron Company, Tenth street near Penn avenue, Pittsburg, Pa., August 21st, at eleven o'clock A.M.

Assessments.

COMPANY.	No.	When levied.	D'l'nq't in office.	Day of sale.	Am'nt per share.
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
Dickert & Myers, Ut.	1	June 13	July 21	Aug. 15	2.50
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
Iron Hill, Dak.	13	June 27	July 30	Aug. 18	.04
Keyes, Nev	2	July 19	Aug. 23	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
Mikado, Mich.		June 13	July 13		.15
Morning Star	2	July 26	Aug. 27	Sept. 11	.01
Potosi, Nev.	30	July 13	Aug. 16	Sept. 5	.50
Rattler Gilroy, Dak.	12	June 17	July 30	Aug. 18	.01
Ruby Bell, Dak.	7	June 9	July 19	Aug. 9	.01
Sampson, Utah		July 5	Aug. 7	Sept 7	1.00
San Luis Cons., Cal.	18	July 12	Aug. 9	Aug. 23	†
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.

Assessment No. 6, levied April 18th on the stock of the Bryant, Czar, General Miller, Jamestown, Jeannette, and Maryland mining companies, of Alaska, is now delinquent, and will be sold August 11th in San Francisco

Dividends.

Bridgewater Gas Company, of Pennsylvania, dividend No. 29, one per cent, payable July 31st.

Colorado Coal and Iron Company, of Colorado, coupons due August 1st, payable on presentation at No. 15 Broad street, New York City.

Mammoth Mining Company, of Utah, dividend No. 5, of $10,000, payable August 15th, at No. 251 South Main street, Salt Lake City, Utah.

Sloss Iron and Steel Company, of Alabama, coupons on first mortgage bonds, now payable at the Central Trust Company, New York City.

Whitebreast Fuel Company, quarterly dividend of one and three quarters per cent, payable August 10th, at No. 18 Broadway, New York City.

Pipe Line Certificates.

Messrs. Watson & Gibson report as follows for the week:

Oil has shown an improvement in prices since last week. One of the reasons for this is the demand for refined, which was advanced ⅛ on Wednesday. The market is narrow as yet, but we think it will broaden and sell at higher prices before any marked decline occurs. The Consular reports would seem to indicate that there is still an abundance of crude oil in the Russian fields, but the great difficulty of making it a formidable competitor with the American product is difficulty in cost of laying it down at paying competitive points, for the reports further say "that a pipe line of crude from the Caspian to the Black Sea is, and always will be, a subject for the trade to discuss," but they do not believe that it will ever get any further than talk.

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
July 28	80¾c.	80¾c.	79¾c.	80½c.	870,000
30	80	81⅛	80	80½	602,000
31	80⅜	81	79⅞	80⅞	450,000
Aug. 1	81	82½	80⅜	82	997,000
2	82¼	83½	81⅞	83¼	1,102,000
3	83¼	84	83	83¾	702,000
Total sales in barrels					4,723,000

NEW YORK STOCK EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
July 28	80½c.	80½c.	79½c.	80½c.	332,000
30	80⅜	81⅛	80	80⅜	307,000
31	80½	81¼	79¾	80⅜	319,000
Aug. 1	81	82⅜	80⅜	82¼	491,000
2	82⅛	83⅜	81⅞	83⅛	527,000
3	83	84	83	83⅜	444.000
Total sales in barrels					2,420,000

Boston Mining Stocks. Aug. 2.

[From our Special Correspondent.]

We have had an active and rising market the past week in copper stocks, which has gladdened the hearts of the commission brokers, and given the patient holders of the past year a good chance to realize handsome profits on their investments. Franklin has been the prominent feature on account of the recent strike in the mine, which, if the reports prove true, will no doubt place the company among the richest mines in the vicinity. The latest news is in the same strain as that of last week, and the officials are confident that the new find will be fully up to expectations. The stock closed last week at $17¼, and rapidly advanced under large sales to $23 yesterday, which at present seems to be top price. A reaction, naturally expected, took place to-day, and the price dropped off to $20⅝ @$20½, at which buying orders were met and the stock closed firm at $20½ bid.

Calumet & Hecla has had a big rise also this week, with very little stock offering in the market. Opening at $257 it advanced to $275 (100 shares sold at the highest price), with later sales at $274, closing $270 bid.

Next in point of activity was the dealings in Boston and Montana copper. Opening at $49, dividend on, it sold up to $52, advanced to $51 ex dividend $2 per share, reacting to $48¾ on the decline to-day, and closed $48¼ bid, ¾ asked.

Quincy was also in good demand, and advanced with the others from $68½ ex dividend, to $74½, and closed $72½ bid, $73 asked.

Osceola has been very steady, with sales at $21 to $22, closing $21 bid, $21½ asked.

Atlantic has ruled rather quiet, at $16@$17¼. There is not much disposition to speculate in this stock, although we consider it one of the cheapest stocks on the list, and expect to see it sell much higher.

Tamarack participated in the general rise, and advanced from $155 to $165, and closed strong at $164 bid.

Huron came to the front and advanced from $4¼ to $6⅜, with sales of over 3000 shares, and closed at $6½@⅝.

Kearsarge advanced from $7¼ to $7½, and reacted to $7, closing $6¾ bid.

National sold at $2½ to $3¾. Pewabic at $2½@ $3. Allouez sold at $3¼, assessment $1 paid, and reacted to $2⅝, which was bid at close. There is quite an active demand for the low priced copper stocks, and it is quite probable that they may be prominent in the dealings if the market continues to hold.

Bonanza Development developed quite an active amount of business and advanced from $1½ to $1⅝, but reacted to $1½ on attempts to realize.

Silver stocks are quiet, with the exception of Dunkin, which is in good demand at 85@90c. The reports from the mine are of a satisfactory nature and we expect to see it sell much higher before next dividend day.

Catalpa sold at 20c. There is a demand for Breece