

THE ENGINEERING AND MINING JOURNAL



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

VOL. LXI. JANUARY II. No. 2.

RICHARD P. ROTHWELL, C. E. M. E., Editor.
 ROSSITER W. RAYMOND, Ph. D., M. E., Special Contributor.
 SOPHIA BRAEUNLICH, Business Manager.
 THE SCIENTIFIC PUBLISHING CO., Publishers.

Subscriptions are PAYABLE IN ADVANCE. For the United States, Mexico and Canada, \$5 per annum; all other countries in the Postal Union, \$7. The address slip on the paper will show date of expiration of subscription. When change of address is desired both old and new address should be sent. NOTICE OF DISCONTINUANCE.—The JOURNAL is not discontinued at expiration of subscription but is sent until an explicit order is received by us, and all arrears are paid as required by law. The courts hold a subscriber responsible until the paper is paid for in full and ordered discontinued. PAPERS RETURNED ARE NOT NOTICE OF DISCONTINUANCE.

Main Office: NEW YORK, 253 Broadway (P. O. Box 1833).
 (Cable Address, "ROTHWELL," New York. Use McNeill's or A B C 4th Edition Code.)

Branch Offices: Chicago, Ill., Monadnock Building, Room 737.
 Denver, Colo., Boston Building, Room 208.
 London, Eng., E. Walker, Man. g., 20 Bucklersbury, Room 366.

CONTENTS.

Lead Production in 1895.....	Page. 33
Iron Making in Canada.....	33
Gold and Silver Production.....	33
The Transvaal Crisis.....	33
The Calcic Carbide-Acetylene Bubble.....	34
Books Received.....	34
The Acetylene Mystery, George F. Seward, Robert L. Owen, A. M., Acetylene	35
* Alfred Ely Beach.....	36
Iron Blast Furnace at Hamilton, Ont.....	35
The Cripple Creek Mining District in Colorado.....	37
The Leadville District in Colorado.....	37
Cost of Copper Production.....	38
Zinc Mining in Missouri..... H. K. Landis	39
* The Question of Extra-Lateral Rights..... A. H. Wethey	40
High Silicon Iron in the Blast Furnace..... John S. Kennedy	42
Recent Decisions Affecting the Mining Industry.....	42
Patents Relating to Mining and Metallurgy.....	42
Personal, Obituary, Societies and Technical Schools, Industrial Notes..	43
Notes: South African Apathy, 35—Pig-Iron Production, 42—Swedish and Luxembourg Iron Ore, 42.	

* Illustrated.

MINING NEWS:	Germany..... 47	Other Metals. 51	Colo. Springs . 51
Arizona..... 44	Mexico..... 47		New York.. 54
California..... 44		CHEMICALS AND MINERALS.	Pittsburg..... 54
Colorado..... 44	LATEST MINING NEWS..... 47	New York.... 51	St. Louis..... 54
Idaho..... 45	MARKETS:		San Francisco.. 54
Michigan..... 45	COAL:	MINING STOCKS:	Baltimore..... 54
Minnesota..... 45	New York.... 47	London..... 52	Miscellaneous.. 54
Missouri..... 45	Buffalo..... 48	New York.... 52	Denver..... 55
Montana..... 45	Chicago..... 48	Boston..... 52	Philadelphia... 55
Nevada..... 46	St. Louis..... 48	Cleveland.... 52	Salt Lake City 55
New Jersey... 46	Shanghai.... 48	Denver..... 52	Aspen..... 55
New Mexico... 46		Colo. Springs. 52	Helena..... 55
New York..... 46	IRON:	San Francisco. 52	Duluth..... 55
Ohio..... 46	New York.... 48	London..... 51	London..... 55
Oregon..... 46	Buffalo..... 49	Paris..... 53	Paris..... 55
Pennsylvania.. 46	Chicago..... 49	Meetings..... 53	Mexico..... 55
South Dakota.. 47	Cleveland.... 49	Dividends... 53	Valparaiso... 55
Utah..... 47	Philadelphia.. 49	Assessments.. 53	Shanghai.... 55
Virginia..... 47	Pittsburg... 49		MINING CO'S... 56
Wyoming..... 47		STOCK QUOTATIONS.	
FOREIGN MINING NEWS:	METALS:	Houston..... 54	ADVT. RATES. 18
France..... 47	Gold & Silver 50	Ind. and Coal.. 54	ADVT. INDEX. 17

Lead Production In 1895. The lead production of the United States was fully given on page 3 of the *Engineering and Mining Journal* last week, but on page 15 a clerical error was made by which it appeared that our production of lead from domestic ores had increased during the year. The error was due to the inclusion of some lead that was of foreign origin.

Iron Making in Canada. We print in another column an article on Iron Blast Furnace at Hamilton, Ont., which may, perhaps, remind some of our readers of what we wrote on this subject in 1875 (October 23d), when our Canadian cousins proposed to make iron direct from the ore at \$3.50 a ton with the aid of crude petroleum and a patent furnace. This was at Marmora, near Toronto, and the inevitable result was then predicted in the *Engineering and Mining Journal*, but we are glad to say that the new departure at Hamilton has a far better prospect of success, being conducted in a practical manner.

Gold and Silver Production. Last week we gave the production of gold in the United States from domestic ore in 1895 as 2,170,827 fine ounces, or \$44,870,998, and of silver 41,238,764 fine ounces, valued at 65.3 cents per ounce, or \$26,928,712.

It must be remembered that while this is the production of the United States from our own mines, a very large amount of foreign gold and silver has been refined here; in fact, the gold so refined amounted to no less than 202,715 fine ounces, or \$4,190,119, and the silver to 29,323,446 fine ounces, valued at \$19,148,210 (65.3 cents per ounce).

The total production in the United States of refined gold and silver from domestic and foreign origin was therefore:

	Gold, oz.	Silver, oz.
Domestic.....	2,170,827	41,238,764
Foreign.....	202,715	29,323,446
Total.....	2,373,542	70,562,210

Some of the newspapers have since published an estimate credited to the Director of the Mint, giving the domestic production of gold as \$53,026,344, which figures are, however, stated to be excessive and that the production will not exceed \$48,000,000 and "may be scaled below \$47,000,000." We think our figures of about \$45,000,000 will be found correct. They are from all the refiners, but the December output of each has been in part estimated by the refiners themselves.

The production of silver in 1895, as reported by us in the *Engineering and Mining Journal* of January 4th and given above, was 41,238,765 fine ounces, while the newspaper reports credit the mint with an estimate of 51,000,000 ounces. This figure will certainly be found far too high.

It will be noted what an enormous amount of foreign silver we have refined here, and it is very easy to fall into error and credit as our own a portion of this foreign silver.

Mexico has increased her production enormously both in gold and silver, and Canada is also turning out greatly increased quantity of the precious metals, and nearly all of this is refined in the United States. We have no doubt that when the carefully compiled final statistics of the Mint are published they will agree with those we have published.

The Transvaal Crisis. Although occurring so far from home this is a matter of far greater interest to our readers than foreign disturbances usually are. First, because the foreign population, through which the trouble has come, is largely composed of miners or of those dependent on the mining industry, and second, very many of the most important posts in the Transvaal and Rhodesia are held by Americans, as consulting engineers, managers, superintendents, metallurgists and skilled mechanics and miners. Now that we have full information by mail from London and South Africa concerning the events preceding the raid of Dr. Jameson and his followers, and the agitation that had been carried on by turbulent spirits, working on the ignorant, discontented and least responsible of the foreign population, we are glad to note that the best elements of the community and notably the Americans, who represent intelligence, education and experience, took no part in the revolutionary movement.

As was well and fairly put by Mr. R. G. Brown, consulting engineer to one of the most important syndicates in South Africa, in addressing a mass meeting of some 1,500 miners, and at which Mr. John Hays Hammond was present warning the men against having anything to do with the party of overthrow saying, "I do not love this country's government—not at all—within three days of my arrival here, I was arrested and fined thirty-seven shillings for laughing at a policeman. This government has not strictly followed the true lines of Republicanism. It has constituted itself what I shall term a select monarchy, and in many directions it requires remodelling and reorganization; but there is one thing to consider. It is a new country and a new government. It never had my sympathy, but your instincts of common fairness will direct you

to allow it is a new country, and the ways of new countries are not infallible."

Mr. Brown then pointed out to the men that by joining such a movement they laid themselves open to being made tools of monopolists, and reducing the Rand district to the condition of Kimberly where individual enterprise was crushed out and wages regulated by the one man power of the De Beers syndicate.

The "Manifest Destiny" of the Transvaal, as of every rich mining country, is to be governed in sympathy with the interests and wishes of the mining population, and the miners of the Transvaal will get their "rights" though the unfortunate and unwarranted invasion of the Republic by Dr. Jameson may have retarded their recognition by the powers that be. The effect of the disturbance must be to lessen the gold output and frighten away the native labor, but this result will be but temporary.

The Calcic Carbide-Acetylene Bubble.

The interest excited by our contributions to the calcic carbide-acetylene question is evidently widespread and intense, as, indeed, the importance of the subject justifies. We have received a large amount of information during the past few weeks and a number of visits from persons apparently interested on one side or the other.

The sole object of the *Engineering and Mining Journal* in the matter is to protect the public against deception and the loss of capital in schemes floated on faith in unfounded estimates of costs and profits in the manufacture of calcic carbide. We are weighing this vast amount of material furnished us, and are already in a position to elucidate some of the mysteries surrounding the acetylene bubble.

Among the communications received which call for a few words is a second letter from Mr. Seward, who appears again more desirous of finding loopholes through which to escape reply, than as anxious to have the whole truth made known. He emphatically denies that he was a promoter or a stockholder of the Electro Gas Company, but he does not deny that he was a backer of the Willson Company, of which the Electro Gas Company is an offshoot, and to which it conveyed its "patents and rights." Moreover, we are informed by reputable persons that Mr. Seward stated in their presence that he was, or is, interested in the Electro Gas Company. It matters little whether the interest is held in his own name or in that of a nephew or a niece, or a cousin, a friend, or an aunt.

Mr. Seward cannot understand why we have not called on him for information—but we have emphatically asked him to reply to the very important questions asked in these columns and by personal communications, but all in vain; indeed we have been unable to get any satisfactory reply to our questions, and they still remain unanswered. We repeat them, and invite anyone who can, to answer them.

We are credibly informed that the Willson Aluminum Company has produced many tons of calcic carbide, in fact that when its plant at Spray, N. C., is in good running order it produces at the rate of about 1,500 pounds per 24 hours. We desire, therefore, to correct our figures in accordance with this information.

It is not easy to get figures of cost that will bear analysis. While we have nowhere seen an official disclaimer of the Willson figures of cost, \$5 to \$7 a ton, which are still allowed to do duty in beguiling the innocents while they are being shorn. It is certain the responsible people in the Electro Gas Company utterly repudiate these figures, and not only have placed them above \$20 a ton, but they have correspondingly advanced the limit at which a profit may be expected on the use of acetylene. A short time ago this limit was placed, we believe, at \$30 to \$40 a ton for calcic carbide, then it was put up to \$50, and now they say the business would afford a profit even if carbide were \$100 a ton—in fact, the limit appears to be as elastic as the gas itself.

We have received from a Mr. Robt. L. Owen a letter, printed in another column, in which he cites a number of estimates, mostly by non-professionals or by professionals who merely quote the inventor's estimates of the cost of making calcic carbide from which acetylene is derived. If these estimates are generally believed, as they appear to be by Mr. Owen, and are allowed to be circulated without contradiction or correction by the Electro Gas Co., it is easy to see how this financial bubble inflates.

The majority of the estimates are evidently based on some of the interested and absurd statements of Willson (the patentee) or some of his people, and even these are misquoted, for Willson's most notable estimate was \$5 to \$7 a ton, not \$21. Again, Doctor Wyatt's estimate, published in the *Engineering and Mining Journal*, December 15th, 1894, was not based upon his own measurements, but taking the then Willson estimate of \$15 a ton he added a few evident omissions which brought it up to \$30.

Mr. Wood is quoted as giving \$16.10 to \$19.70 as the cost of carbide, while his figures are over \$60.

Professor Lewes is credited with an estimate of \$20 a ton as the cost of carbide, but in the *Scientific American Supplement*, August 3d, 1895, he gives the cost in Germany as \$42.50 a ton, and in England, \$47.50, and our

correspondent, "Acetylene," states that the Swiss Company places its cost at \$70 a ton.

We do not know how many more errors there are in this list, but these examples are sufficient to show its value. We have been furnished the items of another of the estimates in Mr. Owens' list, namely, that of R. W. Hunt & Co., of Chicago. They are as follows:

COST OF MAKING ONE TON OF CARBIDE.	
Labor to make 228 lbs.	\$1.31
Labor to make 1 ton	\$11.48
Material for 228 lbs.	.62
Material for 1 ton	5.44
Power for 228 lbs.	.38
Power for 1 ton	3.33
Carbon for 228 lbs.	.33
Carbon for 1 ton	2.89
Total cost per net ton	\$23.14
Interest and depreciation (20% on cost of plant per ton)	.27
	\$23.41

The idea of basing an estimate for the cost of the commercial manufacture of an article on the production of 228 pounds. The total annual capacity of the works is taken by Mr. Hunt at 225 tons or 1,500 pounds a day for 300 days in the year. The entire labor cost given here would not suffice to pay the salary of a superintendent alone; there are no general expenses allowed for, and yet these two items on a production of $\frac{1}{4}$ of a ton per day might very well add \$15 or \$20 a ton to these estimates. The estimate of 27 cents a ton "20 per cent. on cost of plant for interest and depreciation" on a yearly output of 225 tons would make the entire cost of plant and investment just \$300!—scarcely enough to pay for the mules necessary at such works. It is only fair to R. W. Hunt & Co. to say that we have not seen their report from which this estimate of \$23.41 is taken. It is possible that like the \$15 estimate credited to Dr. F. Wyatt it was one of Willson's numerous irresponsible statements used as a basis on which to build other evidently necessary items, or it may even be that the experienced engineers, R. W. Hunt & Co., merely cited this item, as we do, to show how absurd is an estimate which allows nothing for superintendence, nothing for general expenses, nothing for repairs, and which counts the capital invested at three hundred dollars (\$300).

We are informed that the Electro Gas Company had a contract with the Willson Company to take its output at \$40 a ton for a limited tonnage, not the \$5 to \$7 which it still allows to be cited, uncontradicted, for the delectation of its stockholders.

We are told further that the new Niagara Falls calcic carbide works are going to sell to themselves (to all intents and purposes it is to themselves) at less than \$25, and will have the magnificent capacity of five tons a day (on which any one can see that the general expenses, management, repairs, depreciation, interest, etc., could alone easily exceed \$25 a ton). It might just as well sell at \$5 a ton, and thus realize Willson's estimate of cost.

We have not space at present to go into the interesting question of the value of the "rights" controlled by the Electro Gas Company. We are referred by Mr. Owen to the patentees themselves and their correspondents and agents for opinions on the validity of their patents. Anyone can appreciate what a businesslike foundation this would give for the investment of capital; but even this reference, like those to Wyatt, Wood & Lewes, has failed us, for Mr. Dickerson, counsel to the Electro Gas Company, emphatically and wisely declines to express any opinion on the validity of these or any other patents, and prudently says that the only proof of the validity of a patent is the decision of the highest court. It goes without saying, of course, that he thinks he has a strong case.

There are many other interesting things to say when space permits. Thus far we have found no reason to modify the warning we have given to proposing investors in acetylene securities. The Philadelphia Acetylene Company's stock is still quoted at "15 bid, 18 asked," or "17 bid, 20 asked" on at least \$25 paid in in cash, or possibly for full paid \$50 bonus stock.

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 on another page of the Journal.

- Annual Report of the Inspector of Mines of Gogebic County, Michigan.* Clarence M. Boss, Inspector. Pages, 17.
- A Glossary of Terms Used in Mining Geology.* By F. Danvers Power. Adelaide, Western Australia; Published by the Australasian Institute of Mining Engineers. Pages, 63.
- Transactions of the American Institute of Electrical Engineers, Volume II.* New York; Published by the Institute. Pages, 938; with portraits and illustrations.
- Theory and Practice of Surveying.* By J. B. Johnson, New York; John Wiley & Sons. Pages, 754; with map and illustrations. Price, \$4.
- Transactions of the Canadian Society of Civil Engineers, Part I., Volume IX., January to June, 1895.* Montreal, Can.; Lovell & Sons. Pages, 364; illustrated.
- Pubblicazioni del Corpo Reale della Miniere; Revista del Servizio Minerario nel 1894.* Rome, Italy; Imperial Printing Office. Pages, 295.

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. Letters should be addressed to the MANAGING EDITOR. We do not hold ourselves responsible for the opinions expressed by correspondents.

The Acetylene Mystery.

Sir: In your issue of the 14th you used the name of the Willson Aluminum Company as "selling rights to manufacture calcium carbide." In your issue of the 28th you use my name "as one of the chief promoters of the Electro-Gas Company."

I was not a promoter of the Electro Gas Company, am not and never have been a stockholder in that Company, and am not responsible for anything that it has done or left undone.

I fail to understand why you should not have inquired of the Willson Aluminum Company and of me before making unwarranted use of our names. And I beg to say that if you are as careless in other directions as you have been as respects the Willson Company and myself you will soon forfeit the right to the attention of the public in any matter.

Yours truly,

GEORGE F. SEWARD, President,
Fidelity and Casualty Company of New York.

NEW YORK, Dec. 31, 1895.

Sir: Seeing that you have opened your columns to the discussion of acetylene and the cost of carbide, I have the honor to submit an abstract of reports obtained on this subject, to many of which there has been no allusion in the public press.

I know that many believe that the cost of carbide will be very large, but I am not willing to believe that any one would wish to misrepresent a matter of such large public importance, if the cheapness of acetylene be true.

With a journal of your dignity and character, I am persuaded that it is only necessary to give facts, and for this reason, and without discussion, I submit the following abstract, which I have made after giving to this subject as thorough an investigation as I have been able to attain.

Yours respectfully,

ROBERT L. OWEN, A. M.
President First Nat. Bank, Muscogee, I. T.

[It is needless to publish a list of estimates—without explanatory reports—and especially when nearly all those we have seen are incorrectly stated. We direct the attention of our correspondent to "Acetylene's" letter in this issue.—ED. E. & M. J.]

Sir: In my communication in your issue of the 28th of December, I endeavored to make it plain that to produce calcic carbide at even \$30 per ton (not from \$5 to \$20!) it would be necessary for the producer to accomplish one of two things, viz.: (1) Discover a means of producing power at the rate of \$2 per horse-power per year, or (2) discover a method of utilizing the theoretical efficiency of the heat of the electric arc. I reiterate that, unless the American calcic carbide party has succeeded in one direction or the other, then their claims that they could produce the product named at "\$5 to \$7 per ton" were preposterous, and that their claims to produce at \$20 are almost equally so.

The fact is that the solution of either of these problems would be of so much more importance than the production of calcic carbide at either price named, that the latter question would at once fade into insignificance.

It must be borne in mind that this case has to be tried on circumstantial evidence. These people have their own work in their own hands, and make trials and statements which they may think fair. They claim or show nothing fundamentally new, however. Hence as they are thus on the same plane as other calcic carbide makers, it is certainly fair to compare their estimates with those of others in the same business.

The aluminum works at Neuhausen (the largest in the world, I think) now state, after careful consideration, that the cost of their carbide is 3½ cents per pound, produced by the heat of the electric arc, their electricity being produced by water power, rated at a cost of \$5 per horse-power per year; not \$5 for power per ton of calcic carbide, and this company has all the facilities that capital can employ.

To find the power expended per ton of calcic carbide, we have to figure back from the actual through the theoretical heat power of the arc and the horse-power necessary to generate this heat. There is a wide difference between the showing of the theoretical figures and the practical ones. This is the wood-pile in which the American party has hidden their coon.

The Electric Gas people, it is understood, will now soon be ready to go to work on the line of the Niagara Falls Power Co., and are, I am reliably and recently informed, to pay about \$18 per year per horse-power. This is over 3½ times the cost of the same power at the Neuhausen works, and while all other elements can be practically made equal, they still claim that they are going to produce calcic carbide at one-third its cost at Neuhausen!

There are some evidences coming out that, like Boone's coon, they are preparing to "come down." Some of the followers, and may be the principals of the party, are now on the defensive, while if they were sure they are right they ought to be on the aggressive tack. Disclaimers are beginning to come out, and apologies are being quietly circulated for the twaddle of the gentlemen who appeared before the Franklin Institute with the "\$5 to \$7 per ton" promises. The banking house of Lawson Weidenfeld & Co., which on December 18th advised the purchase of acetylene securities so enthusiastically, announcing the success of acetylene (we presume commercially, for everyone knew it was a success as a light maker), and that calcic carbide could be produced for \$20 per ton; and it could possibly be produced by the direct heat of combustion at from "\$7 to \$10" (a perfectly preposterous statement as all heat students are fully aware) appear to hedge in their following week's circular of advice to the financial world.

As things get nearer the truth, the promoters go banging round with all sorts of wild prognostications, all befogging the real question, viz.: the cost of calcic carbide. They are trotting out the "validity" of their

patents, and the poor buyers of acetylene securities who have been thinking that if the "validity" of the patents is sound they will control the production of calcic carbide and acetylene, are still hugging this ray of hope. They have yet to learn that while a patent may be entirely "valid," it may be absolutely worthless to give them the exclusive protection they so fondly hope for. Buyers of these stocks who have acted in the line indicated, had better move quickly! No doubt the sellers will repurchase!

In Germany, in three cities, does the production of calcic carbide and acetylene go on to-day without a thought of the Willson-Dickerson-Suckert "valid" patents. All three of these producers are having more trouble to find buyers than to produce the stuff. The Neuhausen figures before given are a fair guide as to cost.

When the present party in this country does get to producing calcic carbide and acetylene commercially, at any cost, and makes a market, if the profit is tempting, other capital will go into opposition operations pell-mell without regard to the "valid" patents above referred to. These "valid" patents only cover a means to arrive at an end. They do not cover all means. There are other "valid" patents already in existence here at home, just waiting an opportunity for use, giving other means at arriving at the end, just as sound no doubt for their purpose as the patents of the people above referred to.

It is not difficult to get able lawyers to pass upon, the "validity," of their patents, but they have not produced yet, and we do not think they will produce, many opinions of able and disinterested lawyers to the effect that their patents give them the exclusive right to produce their vaunted product.

And now I will attempt to make plain to the uninitiated some of the queer facts relating to power as it applies to the calcic carbide question especially. At Spray, N. C., calcic carbide is being produced by the means and in the simple manner described in my last letter, a water wheel, an old mill race, the electric machinery, and a primitive furnace, into which the ground lime and coke are fed, and the electric heat is applied. The help and the administration is of little cost. The furnace is run and calcic carbide is produced in the simplest and apparently the most inexpensive manner imaginable, for the benefit of all visitors; and from the facts as there shown without concealment, producing calcic carbide for an hour, several hours or a day, these visitors are led to make up statements of cost, based on what they see, in this manner: One ton has been produced for a given sum, therefore a hundred tons can be produced at same relative cost in the same time, with perfect facilities, and with such facilities, even cheaper than at a present rate of cost of a single ton. Now it will be found that none of these \$20 cost estimates take in all the items which enter into the cost of the general run of commercially produced products, the sum total of which makes up an astonishing figure to be taken into account in a commercial business. Next, if we could multiply the Spray concern's apparently inexpensive power arrangements by a thousand in practice, as we will figuratively have to do in doing a commercial business, it will at once be seen that our cost of power begins to increase from a mere bagatelle at a frightful pace and gets greater all the time, practically, as we better our facilities. The power of Niagara Falls was "free" until we came to use it, and then the cost of our facilities—the higher priced the greater the increase in cost—turns our "free" power into one which is neither free nor as cheap as expected. They have "free" water power at Neuhausen, but when they came to use it, the cost was found to be upon the very lowest figuring possible, \$5 per horse-power per year.

Next I pass to the utilization of the theoretical heat of the electric arc. If this could be captured, we would have cheap carbide. It will be readily seen that running as they do at Spray, with practically "free" water power, the waste of the heat of the arc cuts no apparent figure—in power. We might get only 10% of its efficiency and still might grind out our product at low figures. We could not trifle thus with power which is not "free." It will be found that if the Spray people utilize as much as one-fifth the heat of the arc, they will be doing well. Now, when we come to do real business, this loss of power must be figured back to first cost, and that cost will have to be multiplied by the loss. This at least is my belief, and it is founded upon facts built up by what seems to have been the experience of the Neuhausen people, who are doing a genuine commercial business, though small, in calcic carbide, and which concern is not running stock deals among ignorant people from one end of their country to the other.

It will now be more readily seen why I stated last week that the work of the Spray party should be looked into closely by unprejudiced, disinterested experts of established character in the three fields of (1) Chemistry, (2) Mechanical Engineering, and (3) Electrical Engineering with special reference to a knowledge of the to date unfathomable peculiarities of the electric arc.

I must call attention to the fact that these people have taken in the most of their money, in this "craze," right here in New York. Their "plant" is at Spray, N. C., which is a long way from "the seat of war." I would like to know why these people have not set up a furnace here at home where conditions would certainly have been more favorable for actual, good faith work, than where they are?

I may have the pleasure of going further into this scheme at a later date. It is quite deep. It is in the hands of master schemers, but they have over-reached themselves this time.

The day has passed when high-sounding names are a guarantee of safety for the "outsider," as witness the distinguished men who have been at the helm of the hundreds of millions of dollars in railroad property now in the hands of receivers, into which schemes the "dear public" has been led by following "names," like sheep following a leader. Led like lambs to a (financial) slaughter.

|| ACETYLENE.

South African Apathy.—The Cape district is bursting with granite. Yet the granite blocks for the electric tramways in Cape Town are being imported from Belgium and are said to cost \$5 per ton less than if Colonial granite were used. The *Scientific African* truly says that this is a case for local capital and energy. It would seem that nothing but gold and diamonds are worth notice.

ALFRED ELY BEACH.

Alfred Ely Beach was born in 1826 in Springfield, Mass. His death occurred on January 1st, 1896, from pneumonia. His father, Moses Y. Beach, was one of the prominent figures in the life of old New York. He was the founder and for many years the proprietor of the New York *Sun*, and the earliest literary and publishing experience of the late Mr. Beach was under his father's training in the *Sun* office.

In 1846 Mr. Beach, in partnership with Mr. O. D. Munn, one of his former schoolmates, purchased the *Scientific American*, then a very small affair and only started in the previous year. The development and importance of the *Scientific American*, brought about by the energy and ability of the late Mr. Beach, and the aid of his partners, is well known to our readers.

Mr. Beach had a natural talent for invention, and not only did he turn his attention to aiding others to secure letters patent, but he occupied a distinguished place in the field of invention. He invented, about 1853, the first typewriter, which was intended for the use of the blind, and which was awarded a gold medal at the Crystal Palace Exposition. His machine, a most elegant and expensive piece of mechanism, is still in existence. His inventions touch upon cable traction of cars and other railway inventions dating back some thirty years. Pneumatic tubes for delivery of mail matter; also the well-known Beach hydraulic shield for tunneling in earth and under river beds, were inventions dating back over 20 years. The first successful use of the shield was in the construction of the experimental tunnel under Broadway, between Warren and Murray streets, in 1869, while one of the latest noteworthy examples of its use was the construction, in 1889, of a large

of hearth; 3 firebrick hot-blast stoves, 19 ft. diameter and 60 ft. high; wrought iron hoisting tower; one pair cross compound condensing blowing engines, 1,200 H. P. each; 12 boilers, 60 in. diameter, 24 ft. long, with five 12-in. flues; draft stack for boilers, 75 in. diameter clear and 125 ft. high, made of steel plate lined with firebrick; cast house, 50 × 160 ft.; engine house, 47 × 65 ft.; boiler house, 50 × 80 ft. and stock house 70 × 230 ft. The plant was furnished by the Philadelphia Engineering Works (Limited), the boilers being from the factory of the Bramwell Company of Dayton, O. The cost of the works is given as \$300,000. The buildings are all massive brick structures, with stone foundations, and a spur line connects the yard with the Grand Trunk Railway. The works are situated on the south side of Hamilton Bay, about two miles east of the city limits, on a projecting neck of land known as Huckleberry Point. The company have 92 acres here, 75 of which were given them by the corporation of the city, together with the privilege of filling in the shallow portion of the bay adjoining the site with slag, and of acquiring the land thus made, which it is expected will have an extent of about 75 acres additional. The company has an authorized capital of \$1,000,000, the officers being John H. Tilden, president; John Milne, vice-president; directors, A. T. Wood, W. Southam, G. Hope, D. Newton, R. R. Morgan, C. Brize and A. E. Jarvis. Nearly all the company's stock is held in Hamilton. Substantial assistance has been given the company by the city in the form of the land above mentioned and a bonus of \$40,000, payable on condition of the furnace being blown in before December 31, 1895. A further grant of \$60,000 is to be made for the erection of steel works, if built within a specified time.

Smelting will begin in earnest during January, and it is expected that in a short time the output will be at the rate of 150 tons a day. Considerable supplies of coke and ore have been laid in, the latter being



THE LATE ALFRED ELY BEACH.

railway tunnel between the United States and Canada under the St. Clair River at Port Huron, Mich. Mr. Beach was twenty years in advance of his time, and his inventions have acquired their fruition two or more decades after he originated them.

We are indebted to the courtesy of the publishers of the *Scientific American*, for the excellent likeness of Mr. Beach we are enabled to reproduce.

IRON BLAST FURNACE AT HAMILTON, ONT.

The last attempt at the smelting of iron ore in Ontario appears to have been made at Marmora in 1875, referred to in the *Engineering and Mining Journal*, October 23d of that year, when some unsuccessful experiments were made with petroleum as fuel, but since the year 1856, or for more than the lifetime of a generation, the iron-smelting industry has been extinct in this province. It is difficult to adduce sufficient reason for this state of things. For the production of charcoal iron especially, it would seem that no part of America possesses better facilities. Plenty of iron ore and abundant supplies of hard wood and limestone, together with a sufficiency of cheap labor, afford conditions not easily excelled elsewhere. Lack of enterprise and capital have no doubt been the chief causes of the backwardness, and the decreasing market for charcoal iron has had the effect of deterring capitalists from engaging in the manufacture. The absence of mineral fuel has been another obstacle.

The Hamilton Iron and Steel Company have erected a blast furnace at that city, having an estimated capacity of 200 tons of iron per day. The plant is of the most modern kind and first class in every respect. It includes a blast furnace 16 ft. in bosh and 75 ft. high from floor

magnetite from near Malone and Coe Hill in Hastings County, and hematite from the former place.

A considerable share of the cost of the works been contributed by the city of Hamilton, and it enjoys the protection which the Canadian tariff imposes upon all imported pig iron of a duty of \$4 per ton of 2,000 lbs., and in addition a bonus paid by the Dominion Government of \$2 per ton on all pig iron smelted in Canada from Canadian ore, also the bonus payable by the Ontario Government of the equivalent of \$1 per ton of pig iron, the product of ore raised and smelted in Ontario. The chances of the company's making a success of the business with an advantage of \$6 or \$7 per (short) ton of pig iron ought, therefore, to be good. Hamilton is a manufacturing city, and will of itself be able to absorb no small part of the product, while the fact of the furnace being built on a harbor of Lake Ontario ensures it competitive freight rates and cheap transportation, both by water and rail. The freight charges on the ore—the nearest mines are about 150 miles distant—and on the coke, which must be brought from Pennsylvania, will be a considerable item, and another impediment will be encountered in the working of the tariff itself. Manufacturers who use imported pig iron get a drawback on goods made therefrom and exported out of the country, equal to 99% of the duty paid on the iron employed in their manufacture, but on goods made from Canadian pig, they get no such drawback. The effect is that the maker of machinery and iron goods for the export trade finds it more profitable to use foreign pig iron and get the drawback than to buy home-smelted iron at the same figure and get no drawback. This must necessarily contract the market for native iron, and the provision is one which seems to call for readjustment, amounting, as it does, to practical discrimination in favor of imported pig iron.

THE CRIPPLE CREEK MINING DISTRICT IN COLORADO.

BY OUR SPECIAL CORRESPONDENT.

Gold Hill.—The Grace Greenwood made its initial shipment to the smelter within the past six weeks. The claim is being worked by lessees. A recent offer of \$150,000 was refused for the property. The Gold Ring has been making regular shipments since last May. The west end of the claim, 300 x 500 ft., was recently sold for \$35,000. The Geneva has shipped 4,500 tons of \$20 ore during the past six months, of a value of \$90,000. The development has been 1,250 ft. The deepest shaft is 280 ft. The property has been equipped with two steam hoists and an assay office. The Anchors is entitled to the premiership of the hill; the output for the past six months being fully \$385,000; development, 3,700 ft. The output for December alone was close to \$100,000. The mine gives employ to 165 men and the number is being constantly increased. The New Moon is an 1895 shipper, and has produced \$15,700 from two shafts, the developments amounting to 1,300 ft. The Midget is rightfully named, having put but \$8,500 to her record, with over 1,000 ft. of work.

The Keystone, owned by Messrs. Smith & Weunsch, shipped about \$9,000 from its phonolite dike, and is equipped with steam hoist. The Anaconda takes the premium for development during the year, 9,200 ft. being placed to its record. At one time three machines were at work breaking 32 ft. of ground every day, not to mention hand labor. Considerable surface improvements were made during the year. Time fails to mention the Colorado Boss, the City View, the Chance, the Alliance, Lone Star, etc. The amount of development on the hill has been 21,800 ft., yielding about \$650,000. The number of steam hoists erected on the hill during the year has been 22, costing on an average with shaft hoisting house \$1,000 each, equal to \$22,000 for surface improvements.

Globe Hill.—The record here has been one of unqualified failure, due to several causes. The amount of development has not been great. The Plymouth Rock has 1,600 ft., the Deerborn 1,100 ft., the Summit probably 800 ft. The surface lessees on the Deerborn have done well, but the deeper workings throughout the hill have been a signal failure. Nature's teachings have been ignored. Let any one examine the float found on the west and south slopes and it bears not a particle of resemblance to the ore mined from the hill; and as trenching is being carried on in depth the float gets less whereas the reverse is usually the case.

Near the surface the ore is a purple fluorite, which easily loses its color when exposed to the atmosphere. In depth baryta (heavy spar) and lime are found and fluorite does not predominate. The writer now believes that the float found on the west and south slopes of this hill had not its origin in the present producing area of Cripple Creek. Weathering of rocks can change only in a slight degree in such a dry climate, where there is no lime or iron pyrites, the entire chemical constituents of the rocks as would be done on this hill. The float is largely quartz, without a particle of lime or fluorite, and seems to be almost impervious to atmospheric agencies.

The float found on the north and east slopes of the hill is entirely different from that on the south and west, and development in those sections will meet its own reward. A strong company has secured all the properties on the apex of the hill, and will deserve success. Over \$25,000 of float was found on the apex; it was here that "the landscape was plowed and the scenery was milled." Miners who have been accustomed to blanket formations immediately conclude that the surface deposit contained all the mineral; other miners who have been accustomed to fissures argue that there is another deposit, or oreshoot, below, and that as the mineral at the surface came from beneath, the biggest and richest deposit in the camp will yet be found. Such may be the case. This part of the hill has been subjected to more chemical action than any known section of the camp. At the depth of 265 ft., decomposed matter composed largely of talc and mud—not unlike an ancient river bed—save that there were no pebbles or gravel—the course of the current being palpably plain, 14 ft. wide, yet it carried no value, assaying from \$2 to \$5 per ton. The coming year should restore this hill to the greatness of 1892, as the present shaft, 400 ft. deep, will be sunk still deeper, or else it will condemn it. The output of this hill has been \$80,000. The development, 5,200 ft. in all.

Bull Hill.—This hill was in 1894 the banner hill of the camp for production, and this year it is a close second, and more prospects have developed into mines than at any previous year. Gold Hill has done remarkably well; this year Bull Hill has done much better. The list of new steady shippers are Lucky Guss, Rubie, Lafayette, Lost Dollar, John A. Logan, Favorite, Sacramento, North End of Blue Bird, Comet, Christuas Vindicator, Specimen, etc., etc. On Gold Hill 22 new steam hoists have been erected, on this hill 27 steam hoists and others ordered that I am personally acquainted with, and there are doubtless others unknown to me, as, unless one is on the hills all the time, it is impossible to "keep track" on the improvements. While so many new mines have sprung into existence, the old mines have not been idle, but have kept on development work and increased reserves. The Buena Vista has not only increased her tonnage two-fold, but the grade of ore has improved 100%. Victor still maintains its regular output. The Pharmacist has discovered a rich vein to the north. The output of this hill has been \$2,150,000, with a development of 32,700 feet.

Raven Hill.—Nearly all the work on this hill has been developed, and the reserves have been larger in a proportionate area than any hill in camp. The Doctor Mine from a tiny babe blossomed forth in all the strength of manhood, until now it is second to but few, if any, of the mines of the camp. Four drifts are being extended and all in mineral, over one car per day being shipped from development alone. The surface improvements cost \$15,000. The Katherine has also been equipped with a \$10,000 steam hoist and surface improvements, necessitating the closing of the mine for three months. The improvements on the Elkton, including a six-ton steam pump, cost \$3,500. The Moose has headed the list of development on this hill, having 4,350 ft. to its credit. The surface improvements consist of the erection of a large compressor plant, additional boiler, steam hoist, etc., the intention being to sink the shaft below the 650 ft. level, its present depth, by machine drills, and to thoroughly prospect the ground from east to west. The Jennie Sample, North Star, Morning Star, are prospects of more than ordinary merit. The surface improve-

ments on this hill have cost \$36,500, the development amounted to 24,700 ft. and the output \$1,200,000.

Battle Mountain.—This mountain, on which the Portland, Independence, Strong and other properties are situated, is entitled to the premiership for output, having to its credit \$2,350,000, with 21,300 ft. of development and \$140,000 worth of surface improvements. The Independence, on the south, and the Anne Lee, on the top of the hill, are both troubled with water. On the Anne Lee there are three pumps forcing water to the surface from below the 900-ft. level. The Independence and Independence No. 2 are being opened up at a lively rate by machine drills, and the Independence will soon be in such a condition that 250 tons of ore per day can be mined for a limited number of months, and the ore is not low grade.

THE LEADVILLE DISTRICT IN COLORADO.

BY OUR SPECIAL CORRESPONDENT.

The development work in this camp during the past two years has proven that the continuation of the Leadville ore chute westward is under the very streets of Leadville, while the other is the demonstration of the permanence of the ore deposits of the camp. Over \$200,000,000 in values have been taken out, and as yet neither the beginning nor the end of the great ore chutes have been found. There is an immense area that has been but barely scratched, and the success of the few shafts in the city proper but demonstrate the fact of the marvelous wealth that still lies hidden.

The blow given to the silver industry by the great fall in the price of this metal was made lighter, however, from the fact that in this camp is found such a variety of ores. The hills are rich in gold, lead, copper and iron, as well as in the white metal, and it is the combination of these metals that has enabled many of the mines to continue work, and while no one metal might yield profitably, all of them combined have done so.

The fact, too, that Leadville has three smelters in full blast and that the iron ore of this camp is especially valuable for fluxing purposes has made a demand for this class of mineral both in Leadville, Denver and Pueblo, has assisted in giving employment to many men, and has materially added to the tonnage of the camp.

One of the most important factors in the work of the year, and which will be distinctly heard from during 1896, is the development of the big Leadville ore chutes to the westward. While the big producers of the camp show by their continued production that years of development fail to exhaust them, the area beneath the city alone, developed by a few scattering shafts, all of which demonstrate the continuation of the ore body, is but another evidence of the stability of this district.

The greatest down-town developments are those being made by the Bon Air, Gray Eagle, Pocahontas Consolidation and the Gazele. These companies headed by D. H. Moffat and Eben Smith have a large amount of capital and have done a great deal toward opening up this new territory. The consolidation consists of 140 acres and the shafts being developed are the Penrose, Gray Eagle, Starr, Pocahontas and Bon Air. A very heavy tonnage and an immense amount of development work has constituted the work of the past year, while a great deal of important development is mapped out for the new year.

The great proof too of the existence of ore in the lower plane is demonstrated by the Wolcott workings, the ore there lying in the Cambrian quartz, but after crossing the Elk fault it is necessary, according to the opinion of the well-known mining engineer, Max Boehmer, to reach a depth of 700 to 900 ft. to find the same body.

Then, too, in the city working should not be overlooked the Bohn shaft, while the Coronado, the Chip Turbot and others in that section are just getting into ore bodies that give great promise for 1896.

On Fryer Hill the consolidation being operated by the Union Leasing and Mining Company has opened up great bodies of ore in all its shafts and the developments prove these bodies to be of unknown extent. Outside of this section of Fryer Hill there has been but little accomplished during the past year. It is the belief, however, that the drilling now going on in the Pittsburg, Chrysolite, Lee and others will disclose valuable ore bodies in the lower horizons.

On Carbonate Hill the principal work has been done on the north and west sides. The great Maid of Erin ore chute continues to hold out and the work done has proven of the greatest importance, as it has resulted in the opening up of the third contact, which is now known to extend eastward through the Greenback, the R. A. M. and the Mahala. The recent strike in the last named property is, in the opinion of experts, very important, and is looked upon as the opening up of the easterly continuation of the old Carbonate chute.

But to turn to Breece Hill and the gold belt section. The great Ibex company's properties have of course been developed on an enormous scale, have opened up extensive ore bodies and have taken out a heavy tonnage of ore. At this writing the returns of this company have not yet been made. However, the actual gold production, outside of the "Johnnies," will not be as heavy as early excitement led many to believe, but despite this a good showing has been made. There have been gold discoveries made in different parts of the camp, but the sections of most importance are Breece and Printer Boy hills and Iowa Gulch.

In addition to the celebrated Ibex properties there have come to the front the Big Four and Resurrection properties, with some other probable shippers in sight for the near future. Among the other promising operators on this territory are the Golden Eagle, Hulda, Black Prince, Eliza, Big Six, Modoc, Agwalt, Triumph, Cleveland and Alps mining companies. Then there are numerous lessees at work who believe that they have every encouragement to go ahead. On Printer Boy Hill the Lillian has held its own and some big new bodies have been disclosed.

In Iowa gulch the history of the Rex is still fresh in the minds of the readers of the *Engineering and Mining Journal*. The shaft is full of water, the machinery is out and so the matter stands. It may be started up again this year. There have been no notable discoveries during the year in this section of the gold belt but there has been an immense amount of new work started and a great deal of prospecting carried on. Taken as a whole the past year has been a very important one in the history of development work in the camp and most of the properties are in a condition to enjoy a year of unexampled activity and prosperity.

COST OF COPPER PRODUCTION.

In connection with the analysis we have recently made in our editorial columns of the operations at the Anaconda mine and works we have, received the following questions from Mr. S. J. Ritchie, of Akron, Ohio, to which we have endeavored, with the information at our disposal, to give accurate and intelligible replies.

The questions put are very pertinent and we trust that the information given will be found interesting and instructive to copper producers and to those who may contemplate entering on that branch of mining and metal production. We have not considered it necessary to go into such detail with regard to the cost of producing copper at Anaconda, as in the other cases, having so recently dealt with this matter in an analytical review in our issue of December 14th, 1895.

Question 1. What is the capital stock of the Rio Tinto, the Tharsis and the Mason & Barry companies, respectively, and what is the bonded indebtedness of each of them?

Answer. The capital of the Rio Tinto Company, in shares, amounts to £3,250,000; all issued and fully paid. In addition to this the company has outstanding 4% bonds to the amount of £3,600,000; in all about \$34,250,000.

The amount of shares of the Tharsis, Sulphur & Copper Company, issued and fully paid, represents £1,250,000. Four per cent. bonds outstanding, £26,500, out of an authorized issue of £400,000; making a total of £1,276,500, or about \$6,382,500.

The capital account of Mason & Barry has had a good shaking up by reconstruction, the capital having been at one time £2,100,000, but now reduced to £840,000 by writing off and return of capital in place of dividends, equal to about \$4,200,000.

Q. 2. What is the par and present market value of the shares of each of these three companies?

Ans. The par value of Rio Tinto shares is £10. The latest quotation that we have gives the market value at £15 10s. per share. The par value of Tharsis shares is £2, with a market value of £5 per share. The par value of Mason & Barry is £4, with a market value of £2 15s. per share.

Q. 3. What is the market value of the bonds of each of these companies?

Ans. The bonds of the Rio Tinto Company are quoted a little above par; those of the Tharsis Company, if not already redeemed, would undoubtedly realize par if offered for sale. We cannot find from Mason & Barry accounts that they have any bonds outstanding.

Q. 4. Where is the head office, and where are the stocks and bonds of these several companies principally owned?

Ans. The Rio Tinto and Mason & Barry companies have their head offices in London, and the Tharsis head office is located in Glasgow.

The shares and bonds of Rio Tinto, and the shares of Mason & Barry are held chiefly by English and French investors; and the Tharsis principally by Scotch and French investors, but the speculation at most times in the shares of all these concerns affects very materially the proportionate amounts held in the respective countries.

Q. 5. What percentage of copper do the ores of each of these companies contain?

Ans. The amount of copper contained in the ores of the Rio Tinto for the past four years has been 2.649, 2.819, 2.993 and 3.027% respectively.

The percentage of copper in the ores of Tharsis and Mason & Barry is about the same; sometimes occasionally lower and again at others slightly higher.

Q. 6. What amount of copper do each of these companies put upon the market annually?

Ans. The amount of copper put upon the market by the Rio Tinto Company for the year 1894 was 20,425 tons, of 2,240 lbs. each, refined copper, and 10,636 tons in pyrites, sold to consumers, viz., a total of 31,061 tons. The amount actually produced was 20,606 tons, and the amount in pyrites sold, 12,083 tons; a total of 32,689 tons.

The copper production of the Tharsis Company is given in the "Mineral Industry" for 1894 at 11,177 metric tons, and that of Mason Barry at 4,267 metric tons.

Q. 7. What is the character of these Spanish ores, and how are they treated for the production of copper?

Ans. The character of these Spanish and Portuguese ores (for although the Mason & Barry property is on the same mineral belt as the other two, it is situated in Portugal), is chalcopryrite and pyrites of iron (bi-sulphide) giving a percentage of sulphur usually running between 47 to 48%, and therefore of considerable value for sulphuric acid manufacture in that portion of the product exported. The percentage of copper has already been stated, and the value of sulphur contained in pyrites in this country is about 10c. per unit.

Taking the Rio Tinto as illustrative of the group of mines, during the year 1894 there were extracted for export 498,540 tons (of 2,240 lbs.), for local treatment 888,555 tons, making a total of 1,387,095 tons. This large tonnage treated locally was mostly calcined in piles and leached out with water, the copper extracted being precipitated on scrap and pig iron and shipped in form of copper precipitate (cement copper), equal to about 75% to 80% metallic copper, afterward to be reduced to refined metal.

Q. 8. In their physical character and treatment in the production of copper, how do they compare with the Sudbury nickel and copper ores?

Ans. The main difference in physical character between these Peninsular ores and the Sudbury ores is that the latter are nickeliferous pyrrhotite, with chalcopryrite disseminated throughout, and occasional occurrence of millerite, the latter showing a more or less high percentage of nickel, according to purity of mineral. The Spanish and Portuguese ores, as stated above under No. 7, are simply iron pyrites and chalcopryrite.

The treatment is entirely different, as at Sudbury the ores are simply roasted in heaps to reduce the sulphur down to a sufficient point to admit of concentration in matte, and then they are very cheaply smelted to a copper nickel matte in Herreshoff blast furnaces. There are other smaller blast furnaces in the district, but not so efficient, and it may be safely stated that 50% of the ore hitherto treated at Sudbury has been handled in this manner by the Canadian Copper Company.

In making a comparison between the two ores, so far as the production of copper is concerned it is in favor of the Sudbury ores, as their treat-

ment, heap roasting and smelting together do not cost more than \$2 per ton, the resulting matte (about 24% copper) besides having the advantage of the accompanying nickel.

Q. 9. How would the amount of copper contained in any one or in all these Spanish mines compare with the amount of nickel and copper combined contained in the Sudbury deposits belonging to the Canadian Copper Company and the Anglo-American Iron Company, as shown by the report upon these properties made by Commander Folger and Lieutenant Buckingham to Secretary Tracy, of the United States Navy, under date of October 14th, 1890?

Ans. The amount of copper contained in the Rio Tinto, Tharsis and Mason & Barry, is about 2½ to 3% according to the last published figures, while from the report of Commander Folger and Lieutenant Buckingham to Secretary Tracy, of the United States Navy, on the subject of Sudbury, we learn that "the average amount of copper and nickel combined is about 8%, five of copper and three of nickel" in the Copper Cliff mine.

At the Evans mine "the grade of the ore is not quite so high as at Copper Cliff, and averages about 7%" (copper and nickel combined).

At the Stobie mine "the percentage of nickel and copper at this mine is smaller than at either of the others, hardly averaging above 5% but several pockets very rich in nickel have been worked. This ore is remarkable for its fluxing qualities, and forms a valuable mixture to smelt the less fusible ore of the other mines, and entirely obviates the necessity of the addition of any foreign fluxing substances." The above comprise the mines being actively worked in the Sudbury district, and all belong to the Canadian Copper Company.

Q. 10. How long have these Spanish mines been worked?

Ans. It is difficult to say how long these Spanish mines have been worked, but it is well known that they were worked by the Romans and formed one of their principal sources of copper supply 2,000 years ago. Probably, or certainly, though no data can be given so as to state it for a fact, the Rio Tinto mine was worked by the Phoenicians prior to the Roman period. It may seem so incredible to many who suppose that the life of a mine (no matter how large), if worked steadily and on a large scale, cannot possibly exceed 40 or 50 years (and very rarely that); in the case of the Rio Tinto the records of its past working are wonderfully complete as to data, and the discoveries made from time to time in the old workings are silent but irrefutable testimony of the age of the mine. In 1887 a wooden water wheel was discovered on the reopening of old workings which had caved in about 1,500 years ago. This was one of many uncovered at various depths, and was found 407 ft. below the surface, therefore proving many years work prior to the caving in.

Mr. E. Cumeuge, a leading French engineer, in a report on these pyrites deposits in 1893, mentions that in the Rio Tinto alone the Phoenicians and Romans have left, as evidence of the activity with which they worked these mines, more than 180 miles of workings, and accumulated no less than 20,000,000 tons of slags and cinders on the surrounding dumps.

Q. 11. What number of men are employed by each of these Spanish companies?

Ans. We learn from an official source that the number of men employed by the Rio Tinto Company in 1893 was:

In mine.....	2,245
On top and in open cuts removing overburden, etc.	7,068
At Huelva (shipping port).....	1,161
Total.....	10,474

There are no official data available giving the number of men employed in the Tharsis and Mason & Barry properties, but no doubt the number would be in about the same proportion (possibly greater) to tonnage produced, say rather more than one man to each three tons of metallic copper produced per annum.

Q. 12. What is the whole amount of tonnage of iron ore which has been shipped from Lake Superior region, including the States of Michigan, Wisconsin and Minnesota, since mining first commenced in that region in about 1850?

Ans. According to the accurate statistics in the "Mineral Industry," Vol. III., the total amount of iron ore shipped from the Lake Superior region, from the opening of the ranges up to end of 1894, was 83,044,434 tons, to which can be added 11,000,000 tons for the past year, making a total up to date of 94,000,000 tons in round figures.

Q. 13. Are any of these Spanish mines subject to a duty to the Spanish Government, or to any individual or to any corporation?

Ans. The Spanish mines are not subject to any duty to the Spanish Government beyond the ordinary taxation on such property, and in the last report of the Rio Tinto Company the amount paid by it "in English income tax, French dues on bonds and shares, with taxes in Spain," sums up £29,147 6s. 1d., equal to about \$145,750 for the year.

Q. 14. Did the Rio Tinto Company purchase their mining property from the Spanish Government, and, if so, what amount of money did they pay for it?

Ans. The Rio Tinto Company bought from the Spanish Government their original property consisting of 4,710 acres, and which has been added to from the Government and private owners until the company now owns 16,000 acres. It is impossible to state exactly how much has been paid to the Spanish Government, but from the last published balance sheet, it is quite clear how much has been invested in purchase of mining property altogether. The amount is £3,331,095, or about \$16,655,475. In addition to this there has been invested in improvements at mine £738,000, or about \$3,690,000; in machinery and movable plant, £495,297, or about \$2,476,485; in land and houses in Spain, £243,675, or about \$1,238,325, and in addition to the above, in "extension, development work and removal of overburden," £230,699, or about \$1,253,495. Making a grand total cost of mine, plant and improvements in Spain of about \$25,303,825.

Q. 15. What amount of money has the Rio Tinto Company invested in a railway and docks used wholly in connection with their copper mines?

Ans. The amount invested in "railroad, pier, tunnel and railway workshops and rolling stock," for the successful and necessary operation of the mine, is £1,100,225, or about \$5,501,125.

This latter sum, added to those previously mentioned as invested in mine and improvements, amounts to about \$30,804,905.

Q. 16. What is the relative cost of producing copper from pyrites ores,

such as those of the Sudbury or the Spanish mines, as compared with the Michigan mines, where the ores carry native copper?

Ans.—On the authority of Dr. E. D. Peters, Jr., Commander Folger and others, reporting officially to the Secretary for the United States Navy, we learn that the roasting of the Sudbury ores cost 50c. per ton of ore, including handling from mine bin or loaded ore cars and delivery to blast furnace, and it is stated now to be considerably less. We know from the price of fuel and the rate of wages paid, including all repairs, renewals, etc., that with the furnaces in use at the Canadian Copper Company's works the cost of smelting cannot exceed \$1.50 per ton, no dead flux being used, and that about six tons of ore produce one ton of matte. This matte contains, say, 23% copper; therefore 460 lbs. of copper in matte are produced, so far as roasting and smelting is concerned, at a cost of \$12, or 2.69c. per pound. To this has to be added the freight on the matte to the refiners and cost of refining, amounting altogether to about 4c. per pound, making the cost of 1 lb. refined copper about 6.67c., without taking cost of mining into account.

In the case of the Rio Tinto the latest well authenticated statement of cost is that of Mr. E. Cumenge, above referred to, which for roasting, leaching, precipitating and freight on precipitate to England, would amount to 3.12c. per pound, to which add cost of converting into refined metal, say 2c. per pound, making the total cost 5.12c. per pound.

Cost of mining has, of course, to be taken into consideration in cost of production of copper, and in the case of the Sudbury ores we cannot put this at less than \$1.50 per ton, which will add 1.95c. to the cost per pound of refined copper, making a total of 8.64c. per pound.

At the same time, in making a comparison of cost of producing copper at Sudbury, the direct cost should not be reckoned with alone, as the nickel produced should bear part of the refining cost or its value must be looked upon as a very handsome profit on the operation of the two metals jointly.

The proportion of dead work in "stripping" at Rio Tinto is set down at 20c. per ton of ore, and the cost of actual mining, crushing, transportation to heaps, sorting, etc., at 50c., making a total of 70c., and taking the average grade of the ore treated, this would give a total cost of refined copper marketed of about 7.44c. per pound. It is true that the company claims to be still cheapening production, but it is impossible to arrive at any accurate estimate of cost, and no authentic statement on the subject has recently been made on independent authority. What makes it more difficult to arrive at an exact figure is the fact that the ore is handled by no less than three different processes, about one-third being exported crude and deriving its value from sulphur contents in addition to copper, a comparatively small percentage of selected ore being smelted to a high grade matte, to which selected ore there is occasionally added poor grade precipitate, and the wet process of extraction producing precipitate (cement copper), which is shipped to England in bags for reduction to metallic copper and refining.

The figures of cost as given above apply to the bulk of the copper product, viz., that in form of precipitate.

From the accounts published by the Rio Tinto Company, we learn that the copper produced in 1894 was 32,689 long tons. We also know that the average price of copper per pound in England during 1894 was 8.97c., and that the published accounts on the operations of the same year show a net profit of £230,086, of which £71,173 was brought into the balance sheet as undivided profit from the previous year. Deducting this amount, the net profit per pound of copper was apparently 1.08c. per pound, and therefore the cost of production 7.89c., or .30c. higher than the calculation made above, starting from a different standpoint, viz., that of cost of "stripping," mining, transportation, leaching, refining, etc.

In reality, from the accounts of the Rio Tinto, the actual and legitimate profits in placing copper on the market would seem to "disappear" entirely, for of the net available balance which we have taken as the profits on their own showing, £97,678 was credited to revenue account as "rent on company's houses in Spain (less repairs) and other profits" and "adjustment of exchange account," which, if deducted from the real business of copper production, would make the cost of copper per pound about 8.60c., or within .37c. of the average market value for the year.

Furthermore, it must be borne in mind that of the total copper produced, viz., 32,689 long tons, 12,183 tons was sold as copper in pyrites exported, for which it is not probable that the average price of refined copper mentioned above was obtained, at least in this country. The discount from the regular market price is very heavy, so that the direct cost of producing copper from Rio Tinto ore in the year 1894 clearly exceeded its market value.

But there is still another deduction from this apparent profit to be made, viz., the price realized from the sulphur contents of the pyrites exported. Taking the sale value of this at 7c. per unit after deducting all cost of mining, shipping, etc., more than the whole of the available net profit is more than accounted for by the sale of sulphur, and the copper production really shows a loss, as in the 485,441 tons delivered the value of the sulphur paid for amounted to over \$1,590,000, or £318,000.

The cost of producing copper from the Michigan mines of Lake Superior varies naturally widely according to the per cent. of copper contained and the economy with which the mine is worked. In the first place, it is well to point out that the copper mines of this district are dependent on their copper product alone and do not have the advantage of any by-product, as is the case at Sudbury, where the nickel value of the ore is greater than that of the copper, and at Rio Tinto, where, as we have already stated, there would be (on the basis of the operations of the year 1894) no profit at all were it not for the sulphur contained and paid for in the pyrites exported. The Atlantic company in the Lake Superior district on a copper contents of 0.7% produces copper at 8.5c. per pound marketed in the East. The most important producer, the Calumet & Hecla, does not publish accounts in the same complete and concise form as the Atlantic.

The cost of producing and marketing refined copper by the Calumet & Hecla for the 10 years ending December 31st, 1891, ranged between 16.3 and 7.9c. per pound, the cost in 1891 being 10c. per pound. The production for the fiscal year ending April 30th, 1895, was 31,233 tons of refined copper, and the amount of dividends during the same period was \$1,500,000 from which it may be assumed that if reserves were not impaired the cost of producing copper was in the neighborhood of 7.1c.

Q. 17. What is the actual cost of extracting the copper from the Sudbury copper-nickel mattes?

Ans. We have on good authority that the actual cost of extracting and refining the copper from the copper nickel mattes produced at Sudbury is about 1 1/2 cents per pound of copper.

Q. 18. At what price in the market is the Anaconda mine and works valued?

Ans. On the basis of price at which the sale of Anaconda shares was recently made in London the total value of the property was placed at \$36,000,000.

Q. 19. What amount of dividends have the Spanish copper mines, the Lake Superior copper mines, and the Montana copper mines earned during the past seven years?

Ans. The Spanish copper mines (including Mason & Barry in Portugal) have paid in dividends to their stockholders \$20,538,750, after providing for interest and sinking fund on their bonded debt, about \$7,810,000 in the past seven years. The Lake Superior copper mines in the same period have divided in profit about \$21,000,000, and the Montana mines have paid in dividends about \$7,000,000. This, however, does not include the profits of the Anaconda and other more or less private corporations, the former of which we learn from the accounts now published have made a profit on its operations from January 1st, 1891, to June 30th, 1895, of \$10,147,555.

Q. 20. What is the percentage of copper in Anaconda ores?

Ans. The percentage of copper in Anaconda ores during the past four years has been 7.66%, and for the first half-year of the current year 6.75%.

Q. 21. What are the relative values of the ores in the ground of the Spanish, Lake Superior, Montana copper and Sudbury mines as compared with the value of the plants, improvements and appliances for working, as shown by the selling value of the properties in their respective markets.

Ans. It is impossible to state the relative value of ore in reserve as compared with the plants, etc., in the various districts, but perhaps it is sufficient to state that these plants, improvements, etc., have no considerable and in some cases no value apart from the mines, and the value exists only so long as the mines supply the necessary amount of ore to operate the plants profitably. The selling value of the Rio Tinto is about \$42,375,000; that of Calumet and Hecla, \$30,000,000; that of Anaconda, \$36,000,000; and that of Sudbury, \$3,500,000.

In the case of the first, taking Rio Tinto as representative, it is asserted, that there has been proved by diamond drill sufficient ore at present rate of consumption to last from 50 to 100 years according to different authorities. With regard to Calumet and Hecla for Lake Superior, the principal shaft is down 5,000 ft. and the average thickness of the vein is from 13 to 14 ft. The development is such that 4,000 tons a day can be raised.

Anaconda, as the largest producer in Montana, has in sight, according to most recent and reliable reports, \$40,738,250 in value at the present market price of the three metals produced, represented by about 3,000,000 tons.

We have no means of ascertaining how much ore and of what value the mines of Sudbury belonging to the Canadian Copper Company have in sight, or "in the ground," but from all accounts the deposits are very large. In addition to the grade of ore referred to by Commander Folger and Lieutenant Buckingham in their report to the Secretary of the Navy, we learn that there are still higher grades hitherto unworked, and we have seen a certificate from the Carnegie Steel Company on two samples said to represent quite a large tonnage, giving respectively 23% copper and 5.57% nickel, and 20% copper and 7.61% nickel.

Q. 22. What is the cause of the great decline in the value of the shares of the French New Caledonia nickel in Paris, in the face of the large advance in price of copper and other mining shares in that market, taking into account at the same time the large increase in the consumption of nickel.

Ans. The answer to this question is perfectly simple and is owing to the steady decline in price of nickel which has been brought about by the nickel put on the market and produced from the nickel-matte of the Canadian copper mines.

ED. E. & M. J.

ZINC MINING IN MISSOURI.

Written for the Engineering and Mining Journal by H. K. Landis.

Shafts for exploration work or "gophering" are usually 4 x 4 ft. The deep shafts are, however, 4 1/2 x 6 ft., and 4 x 5 1/2 ft. in section. From the surface to rock contracts are let at the rate of \$1.50 per foot, including timbering. Rock work in small contracts is \$5 per foot for the first 10 ft., the price increasing with the depth up to as much as \$20 per foot. The average price is usually counted as \$10 to \$15 a foot in depth. Underground, the rock requires no timbering, except where loosened by blasting.

The Magnesian limestone of southwest Missouri has been subject to a great deal of erosion, and the Aurora deposits indicate this very plainly. On the top of the original magnesian limestone lie the secondary deposits containing the ores of zinc and lead enclosed by silicious replacements called locally chert. This secondary deposit seems to have been subject to much weathering and the action of silicious waters resulting in the formation of silicate of zinc and carbonate of zinc. The carbonate is naturally found nearer the surface. There is no uniform rule in the ore-bearing formations except that the blende occurs in a horizon which varies remarkably little in level. The following sections will give an idea of the order of formations:

Hayes City Mine.		Tom Thumb Shaft.	
10-12 ft.	Soil.	10 ft.	1 ft. Soil, 2 ft. hardpan, 7 ft. red clay.
30 "	Chert and clay.	4 "	Silicate of zinc.
55 "	Chert and blende.	12 "	Blende among boulders.
		15 "	Boulder ground.
	Louisville Mine.	30 "	Cherty limestone.
20 ft.	Clay and loose chert.	4 "	Blende with tallow clay.
30 "	Limestone and boulders.	16 "	Cherty limestone.
40 "	Galena and silicate of zinc in chert.	4 "	Blende.

The underlying limestone is still in its original horizontal position. The overlying strata have been replaced by secondary silicious formations. The ore deposits themselves follow the courses of supposed underground streams, and are called "runs" of ore, because they are continuous in a definite direction.

THE QUESTION OF EXTRA-LATERAL RIGHTS.

Written for the Engineering and Mining Journal by A. H. Wethey.

On Monday, November 11th, 1895, the Supreme Court of Montana rendered its decision in the Black Rock-Niagara case, which involved the question whether a vein which passed through one end line and one side line of a quartz lode claim was entitled to extra-lateral rights. This court rendered a decision in the Amy Silversmith, May 21st, 1890. This latter case differs from the one under consideration, inasmuch as the vein crossed both side lines.

The Montana Supreme Court decided that the Amy Silversmith vein carried with it extra-lateral rights, but the Supreme Court of the United States reversed this decision. Before giving the opinion of the Montana Supreme Court in the present case, I think it will be well to give a brief history of it, accompanied with maps to show more clearly the point in controversy.

Fig. 1 shows the relative positions of the claims. The Black Rock mine was located November 6th, 1875, and a patent was granted to its owners February 15th, 1882. The Raymond mine was located January 11th, 1883, and a patent was granted October 6th, 1891. The Niagara mine was located January 21st, 1885, and a patent was obtained for it in 1889 or 1890. It will be seen by reference to Fig. 1 that it was intended to cover

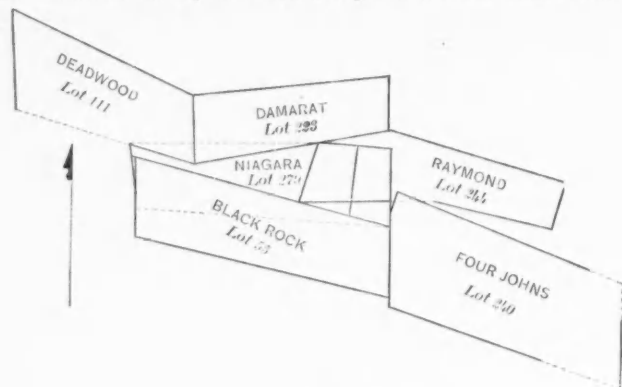


FIG. 1.

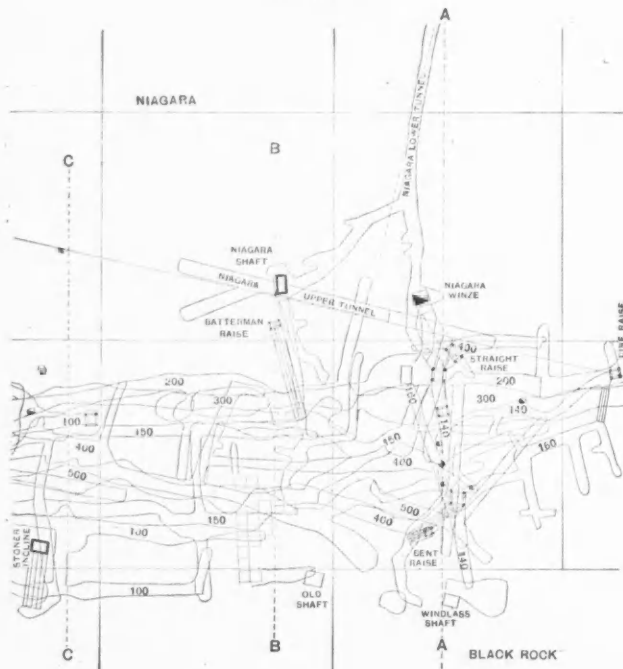


FIG. 2.

fractions of ground lying between older claims. The owners of the Niagara, although their claim was located two years after the Raymond, advised their application for patent, and finally compelled them to give up a portion of their claim, the compromise end line of the Niagara and Raymond claims being shown by the dotted line. This compromise being effected, the owners of the Niagara were allowed to obtain the United States patent to all the ground shown as overlapping the Raymond, and extending to the west end line of the Four Johns claim.

The hoisting works are erected on a steep hill, and overlook a deep gully. A tunnel, known as the Niagara Tunnel, was driven from near the bottom of this gully into the workings of the Black Rock mine.

Fig. 2 represents the underground workings of the Black Rock and Niagara mines. At the right hand is shown a long drift, and a crosscut on the 300-ft. level of the Black Rock mine. The drift was run in about the center of the vein, and shows the strike of it, while the crosscut on the east end shows the width of it. This crosscut was made just inside the compromise end line of the Niagara-Raymond claims, shown by the red line in Fig. 1.

Fig. 3 represents cross-section A-A shown in Fig. 2. This map shows the relative positions of the various levels on the Black Rock ground at this point, a vertical line between the Niagara and Black Rock claims being drawn to show this more clearly.

Fig. 4. represents cross section B-B, also shown in Fig. 2. This map shows the relative position of the levels on the Black Rock at this point, as compared with an imaginary vertical side line drawn between the Niagara and Black Rock claims.

The Bent raise, and Straight raise, shown in Fig. 3, come to the surface in ore, while the windlass shaft is sunk in ore. The Batterman raise shown in Fig. 4, was raised to surface on the hanging wall of a slip or fault. The light line shown as projecting down below the Batterman raise, and the light line just south of it, indicate the presence of slips or faults. Between these two slips or faults a large body of valuable ore was extracted.

In the evidence given in this case, I believe it was conceded on both sides that the Black Rock-Niagara vein had at one time stood considerably higher than at present, that by erosion and other causes the ground had worn down, and a mass of the vein had slipped down on the south side. The plaintiff's experts claimed that the ore body shown in Fig. 5 above the 150-ft. level, and from which a large amount of ore was obtained, was nothing but a huge boulder, which had slipped down from above.

Referring to Fig. 2, a raise is shown east of the line A-A, called the Line Raise. This was also raised on ore to the surface.

The defendant's experts claimed that if it were true that all the masses of the vein had slipped down from above in past ages, and now laid close together, separated only by talc seams and slickensides, that this was as much the apex of the vein as if it had been formed thus in the first place, and that there was a good ore connection through these faults.

The plaintiff's experts, however, claimed that the true apex was that portion of the vein which was in place, and had never moved. This portion was very narrow and if their contention were correct then the vein passed from the Black Rock into the Niagara near the point decided by the jury. If, however, the defendant's experts were correct in their theory, then the apex of the claim instead of being but a few feet wide, would be nearly 150 feet wide, and the hanging wall of it would not pass over the north side of the Black Rock at all. Judging by the appearance of the surface alone, prospectors seeking to locate a claim would naturally suppose the outcroppings they saw was the apex of a vein. Only later and extensive development work would prove that the ore they saw had

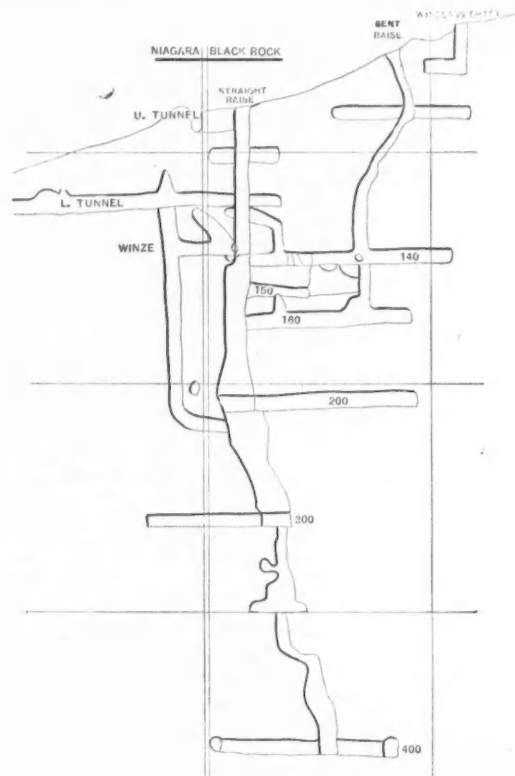


FIG. 3.

no depth, and that the true vein was perhaps a hundred feet or more north of them, and buried under a heavy bed of wash.

I have endeavored to render this point clear as illustrating the uncertainty that exists in locating mining claims from surface indications or out-croppings. The defendant's in this action had been working on their property for years, and in good faith, being confident that the ore they were extracting within their north side line apexed on their own ground as shown by the surface indications. It was only after the commencement of the suit against them by the Niagara owners that by extensive and costly development work they became aware of the peculiar formation of the ground.

It will not be out of place to state that the owners of the Black Rock mine also owned a one-third interest in the Niagara, and a one-half interest in the Raymond. The drift and crosscut extending into the Raymond ground, as shown in Fig. 2, was therefore in the line of developing the property in which they were personally interested.

In this article we will not consider how the jury reached the verdict they rendered, nor the instructions of the judge of the lower court but will pass on to the decision of the Supreme Court of Montana. This opinion was given by Judge De Witt, and is very voluminous. For the purpose of this article I will give a brief summary only of it.

"This case (The Black Rock-Niagara) was tried in the District Court

after the decision of King vs. Amy-Silversmith Mining Co., 9 Mont. 543, and before the reversal of that decision on appeal to the United States Supreme Court (152 U. S., 222), the case was tried upon the assumption that the law as attempted to be declared in 9th Montana was correct. We gave our best endeavors and research in that decision and arrived at a result, which we were willing to accede was not wholly in accord with the decision of the United States Supreme Court upon that subject."

"Even with the profound respect which we, in common with all Courts, entertain for the decisions of the United States Supreme Court, we think, and there is no impropriety in saying, and it is due to ourselves to say, that, the longer we observe the daily operation of the mining laws in practical affairs, the more satisfied are we that our decision of the Amy-Silversmith case was correct.

"As noted in the Amy-Silversmith case, the difficulties arise in applying the United States mining statutes to accidentally irregular locations, that is, locations where it is developed in time and by explorations, that the apex and strike pass through the side lines, or a side line and an end line (as in the case at bar), or enter and pass out of the same side line. We essayed in that case a solution of this difficulty, which could be applied to every irregularity, and which would secure absolute uniformity in all complications, and give to every mining location, as the statute intended and declared, the whole vein, in its whole depth, to the extent of the length of the apex which was located. We thought we had accomplished the result. With due deference to those who have differed from us, we think so still."

"We understand that the United States Supreme Court (in the Amy-Silversmith case) not only reversed our judgment, but discarded as untenable the principle upon which we pronounced it. This decision was received with regret, not only by the bench and bar in the mining regions, but by both practical and scientific miners.

"On April 15th, 1895 appeared the decision in the United States Supreme Court in the Last Chance vs. Tyler Mining Company, (see 157 U. S. 683).

"The case was decided in the United States Supreme Court without it being necessary to treat the question of the apex and strike passing through an end line and a side line.

"But as to this matter the court said: 'It has been held by this court in the cases heretofore cited, that where the course of a vein is across in-

This seems to us more reasonable than to apply a construction which will give to one locator the estate which the law contemplates, and deny it to another."

It will be noticed that Judge De Witt is of the opinion that the decision rendered by the United States Supreme Court in the Amy-Silversmith case is in error; and he therefore decided the Black Rock-Niagara case on the same principle as the Montana Supreme Court decided the Amy-Silversmith case. He argues that if the decision of the United States Supreme Court is correct, then the Niagara has no extra-lateral rights; on the presumption, however, that the United States Supreme Court was in error in deciding the Amy-Silversmith case he has rendered the opinion that the Niagara has extra-lateral rights. Justices Pemberton and Hunt concurred.

Should the United States Supreme Court decide, when the Black Rock-Niagara case comes before them, that the Niagara has extra-lateral rights, then it is apparent in the judgment of Judge De Witt that United States Supreme Court has reversed itself, and has accepted his opinion on this important point as correct. This would be a very flattering recognition of Judge De Witt's ability as a mining lawyer.

It will be noticed from Judge De Witt's opinions that it consists only of an elaborate review of the subject of a vein passing through one end line and one side line of a claim. He has not considered the equities of the particular case at law. He sympathizes with the poor prospector and locator who located the Niagara. In his own language he says: "We are still of opinion that the loss which a miner should suffer, if he is obliged to make his location before he can trace the apex and strike of the vein for its whole distance and thus makes his location irregularly,

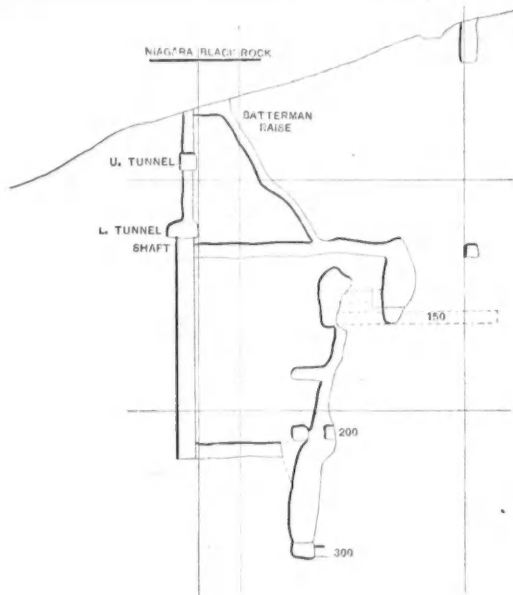


FIG. 4.

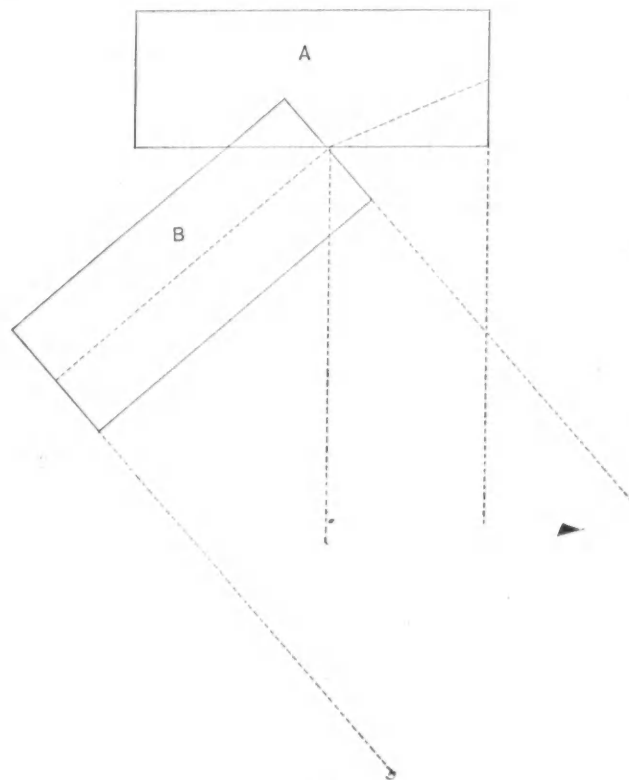


FIG. 5.

stead of lengthwise of the location, the side lines become the end lines and the end lines the side lines; but there has been no decision as to what extra territorial rights exist if a vein enters at an end and passes out at a side line."

"Is that a case for which no provision has been made by statute? Are the parties left to the old rule of the common law, that the owner of real estate owns all above and below the surface, and no more? Or may the court rely upon some equitable doctrine and give to the owner of the vein the right to pursue it on its dip in whatever direction that may go, within the limits of some equitably created end lines?"

"Mr. Justice Brewer wrote the opinion. There was no dissent. We assume that Mr. Justice Field concurred.

"The fact that the United States Supreme Courts aid in this case (with the justice concurring who wrote the Amy Silversmith decision) that it had never given any decision as to what extra territorial rights exist if a vein enters at an end line, and passes out at a side line, we think is a sufficient warrant to us to reopen the discussion as to what principle of decision should apply in these irregular locations.

"For it does not seem to us consistent to say that the dip of the Amy Silversmith must be cut off at their north side line, and that the Niagara may go beyond their south side line, simply because the Niagara vein on its eastward course on the strike, goes out through an end line instead of a side line. But when we undertake to apply the United States Flagstaff and Amy-Silversmith doctrine to the case at bar, we find that the Niagara cannot follow its dip out of any of its lines, and it is cut down to the common law rule of 'Ad coelum et ad Orcum.' What we contend for is a uniform construction of the law, a construction which will give the vein on the dip to every locator who has the apex in his location, and not give it to one who has the apex and withhold it from another who as fully has the apex; that shall give to it the Amy-Silversmith and the Niagara as well. Let us do this and make estates in mines uniform under the law,

should be the loss of so much length of the vein, on the strike, as by his irregular location he has failed to observe the length on the apex. If this be the consequence which he is to suffer by reason of his irregular location, he loses simply that which he failed to locate and he does not lose the vein of which he has located the apex. That he is to have the vein when he has the apex we believe is the intent of the mining law.

Now the locator of the Niagara knew he was only locating a fractional claim, and the end lines as shown in the patent granted to him by the United States are not exactly parallel. Whether a difference of a few feet in the parallelism of the end lines of a mining location would cause the loss of extra-lateral rights or not is doubtful.

Judging simply by the outcroppings on the surface the locators of the Black Rock were correct in locating that claim as they did. There was nothing to show that the apex did not continue downward into the ground for an indefinite distance. If it is the intent of the law to repair errors of judgment then the locators of the Black Rock claim should have the first opportunity to correct their error, seeing that they located that claim nearly ten years prior to the location of the Niagara.

Judge De Witt, referring to the decision rendered by the United States Supreme Court in the Amy-Silversmith, which he reviews at some length, says: "The further we follow this doctrine into its details the more untenable it appears. We shall abandon its pursuit and leave its reconciliation to reason, law and the intent of the statute, and practical application to others who may be more skillful in making a reasonable construction."

Referring to the result of the decision of the United States Supreme Court, Judge De Witt continues: "As we leave this confusion and turn to the other solution, that of the Amy Silversmith in the ninth Montana, difficulties disappear and there is light upon the whole path."

It will be noticed from the abstracts of Judge De Witt's opinion previously cited, that he considered he had found a solution in the Amy-Silversmith decision which could be applied to every irregularity.

In this connection I would draw attention to Fig. 5. This represents the claim "A" having the vein shown by the red line passing through one end line and one side line, and with the claim "B" having the same vein passing through both end lines. Under Judge De Witt's decision "A" would have extra-lateral rights, and these as shown by the dotted lines extended from both "A" and "B," would conflict with the rights of "B," while "A" may be the oldest location, yet if the locators did not comply with the law, while the locators of "B" did, should not "B" own the ore and not "A"?

Undoubtedly if the decision of the Supreme Court of Montana in the Black Rock-Niagara case is affirmed, it will result in interminable complications in determining the rights of the numerous irregular and fractional locations in Montana and elsewhere in the Western mining district. On the other hand, if the decision is reversed, and the United States Supreme Court adheres to their decision in the Amy-Silversmith case I believe that many complications will be avoided.

HIGH SILICON IRON IN THE BLAST FURNACE.

Written for the Engineering and Mining Journal by John S. Kennedy.

Sir: In a late number of the *Journal* is an interesting communication from Mr. J. C. Mathewson, chemist of the Ashland Coal, Iron and Railway Company, in reference to the manufacture of Bessemer ferro-silicon. While many particulars are given as to the analyses of silicon, phosphorus and sulphur, no mention is made of the percentages of manganese and the carbons, or of the slag composition. If these subjects are not considered in the light of trade secrets, their publication would be a valuable aid to the metallurgy of high silicon irons.

Aside from its value in protecting silicon from oxidation in the cupola mixture, manganese acts in the blast furnace as an aid to the manufacture of high silicon or "soft" irons. A hot furnace and a basic slag are essential to the combination of manganese with iron. The presence of manganese both in the iron and in basic slag increases their fluidity and permits the employment of high furnace heats without injurious consequences. The writer, when engaged in making an American Scotch softener, found no difficulty in running smoothly on an iron containing from 4 to 5% silicon, the slag analyzing from 30 to 31% silica, but there was sufficient manganese in the ore mixture to insure from 2 to 2.3% of that constituent in the pig iron.

The highest silicon iron ever made by the writer contained 8.753% silicon. While operating a coke furnace on an easily reducible ore mixture, making a 3% silicon iron, we were obliged to contend for several days with an annoying series of mishaps to our machinery which crippled our blowing power and resulted in frequent stops. The iron jumped to 6.3% silicon, and in the next two casts showed 8.026 and 8.753% respectively. The iron contained only traces of manganese and the slag was normally an acid one. During our troubles the bottom came up very rapidly so that it was almost impossible to get the last cast through the iron notch. The iron was very hot and thick and could hardly be led into the beds, while the slag was very difficult to manage. These troubles disappeared as soon as we resumed our regular rate of driving.

The following analysis, made some years since, of a Scotch ferro-silicon may be of interest. This iron is silvery white in color and has an irregular flake fracture:

ANALYSIS OF GOVAN FERRO-SILICON.	
Iron	83.16
Manganese	3.86
Silicon	10.55
Phosphorus	0.04
Sulphur	0.03
Carbon (graphite)	0.62
Carbon (combined)	1.84
	100.00

It will be seen that the Ashland furnace in making a ferro-silicon containing 12 to 13% silicon are to be congratulated on having excelled this foreign iron.

One peculiarity in the above analysis is the small percentage of total carbon present, only 2.36%, in an iron containing such high silicon. CHAMBERSBURG, Pa., Jan. 7th, 1896.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

WHO CANNOT BE SERVED AS OFFICIAL REPRESENTATIVE OF MINING COMPANY.—An attorney, in fact one created by deed, authorized by a mining corporation to apply for a patent to mining ground claimed by it and to execute such papers as may be necessary for that purpose, is not by virtue of such employment a "managing agent," within the meaning of the statute of that State in relation to service of process upon corporations.—*Mars vs. Oro Fino Mining Company* (65 Northwestern Reporter, 19), Supreme Court of South Dakota.

WHAT IS INCLUDED IN DEED TO MINERALS.—The meaning of the words minerals and ores in a deed cannot be limited or explained by declarations of the parties as to what was intended to be covered by the deed when reformation of the same is not sought. Though the words minerals and ores in a deed, standing alone, would include granite, where the surface rights granted are only sufficient land to erect suitable buildings for machinery and other buildings necessary and usual in mining and raising ores, they will be held to include only minerals obtained by underground workings.—*Armstrong vs. Lake Champlain Granite Company* (42 Northwestern Reporter, 186), Court of Appeals, New York.

POLLUTION OF STREAM BY MINING COMPANY.—It is no defense to a bill by a riparian proprietor, to restrain a mining company from polluting by discoloration the stream, to show that the discoloration is the natural and necessary result of mining operations prosecuted in the ordinary way. Such result may amount to a nuisance, and its maintenance cannot be legalized by the legislature, even upon terms making compensation for

the damage, and where the right is clear, and the facts undisputed, a court of equity is bound to give preventive relief; to refuse it is to allow such mining company to take the property of another upon terms of paying such compensation, from time to time, as a jury may allow. Where there is some danger of the occurrence of the discoloration in the future, the decree establishing the rights of the complainant should include a provision for a perpetual injunction.—*Beach vs. Sterling Iron and Zinc Company*, 33 Atlantic Reporter, 286, Court of Chancery, New Jersey.

Pig-Iron Production.—According to the returns which have just been issued, and which cover the whole of Germany (including Luxembourg), the production of pig iron during the month of November was as follows: Forge pig iron and spiegeleisen, 131,801 tons; Bessemer pig, 36,708 tons; Thomas pig, 243,851 tons; foundry pig, 77,463 tons; total for the month, 489,823 tons; against November last year, 481,909 tons, and against October this year, 511,254 tons. During the 11 months from January 1st to November 30th the total output has been 5,278,393 tons, against 5,061,089 tons last year, an increase of 217,304 tons.

Swedish and Luxembourg Iron Ore.—A comparison between Swedish magnetites and Luxembourg minettes smelted in Westphalia has recently been made by Herr Tiemann, their respective furnace yield being given as 63 and 37.4%, with contents—iron of 64.89 and 39.88% and phosphorus of 1.2 and 0.762%. A ton of pig iron is made for 28s. 9d., with 1.47 ton of Swedish magnetite at 19.56s., or for 27s. with 2.75 tons of Luxembourg minette at 10.01s. per ton. The following means of three analyses each are given of the two descriptions of ore imported from Gellivara and Grangesberg: Fe, 64.96 and 64.47%; Mn, 0.17 and 0.3%; Al₂O₃, 1.27 and 1.36%; P, 0.98 and 0.95%; MgO, 0.94 and 1.03%; CaO, 2.93 and 2.85%; SiO₂, 4.57 and 2.78%, with no copper in either and only a trace of sulphur in the Grangesberg ore.

PATENTS RELATING TO MINING AND METALLURGY.

United States.

The following is a list of the patents relating to mining, metallurgy and kindred subjects issued by the United States Patent Office. A copy of the specifications of any of these will be mailed by the Scientific Publishing Company upon receipt of 25 cents.

TUESDAY, DECEMBER 17TH, 1895.

- 551,390. CEMENT-KILN. Frederic M. Lunde, New York, N. Y. Combination of one or more chambers, each chamber having a series of removable, adjustable shelves, the shelves extending from side to side of the chamber and provided with supporting lugs and openings formed by the lugs.
- 551,441. ORE-SMELTING FURNACE. Henry P. Holland, San Francisco, Cal. Consists of walls, inclosed in a metallic casing, casing joints, uniting the casing of the firebox and the furnace; compressed air pipe; air chamber, between the walls about the firebox for receiving the air from the air compressor through the pipe, blow pipe holes, in the bottom of the firebox connecting the air chamber with the firebox for blowing the fires therein; blow pipe heat and flame flues, connecting with the firebox; circular flues about the smelting kettle, through which heat and flame are forced upon the roasted ore in the kettle; blow pipe holes, in the circular flues entering the kettle; discharge hole, for drawing off the molten metal from the kettle; discharge hole in the back of the kettle, for drawing off the slag; opening, provided with a plug having a handle in the top of the kettle through which the ore when frozen or solidified may be broken up or removed; ore feeder, ore feed regulator; gas and fume pipe, for conducting ore fumes from the smelting kettle to the water tank; water tank, into which the gas and fumes pass; faucet, for drawing off the water from the tank; and a gas escape pipe.
- 551,448, 551,449. STAMP BATTERY. Charles Raleigh, Johannesburg, South African Republic. Patented in England, February 19th, 1892, No. 3,239; in India, April 6th, 1892, No. 88; in Victoria, April 6th, 1892, No. 9,538; in New South Wales, April 8th, 1892, No. 3,693; in Queensland, April 12th, 1892, No. 2,448; in New Zealand, April 22d, 1892, No. 5,522, and in Canada, July 27th, 1892, No. 39,471. Combination of a stamp-stem and a tappet mounted thereon, a cam on one side the stem for engaging with the tappet so as to lift, turn from left to right and drop the stem, and a cam on the other side of the stem operating in the opposite direction the cams acting alternately, whereby the more regular distribution in the mortar-box of the ore or substance to be crushed is attained and the wear on the various bearings surfaces more evenly divided.
- 551,461. ART OF PRODUCING CARBIDE OF CALCIUM. William C. Clarke, New York, N. Y. Process consists in causing the current to pass between horizontally disposed electrodes, embedded in a mass of pulverized and intimately commingled lime and carbon, of such extent that a material proportion thereof will remain undecomposed by the passage of the current and gradually separating the electrodes as the material between them is reduced, so as to produce between the electrodes a body of the carbide surrounded by an undecomposed mass of the pulverulent mixture.
- 551,464, 551,465. DUST ARRESTER FOR MINING DRILLS AND REAMERS. Robert H. Elliot, Birmingham, Ala., Assignor to the Alabama Blasting and Mining Company, of Alabama. Combination of a drill or reamer spindle, and a frame loosely inclosing the same and of greater diameter than the mouth of the bore-hole, and a fringe on the face of the frame inclosing the mouth of the bore-hole, a sack secured to the frame and opening downward therefrom, and means for pressing the frame toward the mouth of the bore-hole.

Great Britain.

The following is a list of patents published by the British Patent Office on subjects connected with mining and metallurgy:

- WEEK ENDING NOVEMBER 23D, 1895.
- 25,173 of 1894. J. Meikle, Glasgow. To increase the yield of ammonia in the coking process, by injecting air and steam on the residual hot coke.
- WEEK ENDING NOVEMBER 30TH, 1895.
- 23,557 of 1894. J. Pfeifer, Kaiserlautern, Germany. Electrolytic method of precipitating gold from cyanide solutions.
- 25,074 of 1894. R. O. Lorenz, Göttingen, Germany. Making zinc-lead sulphides into chlorides and then separating them in an electric furnace.
- 662 of 1895. G. W. Perpet, Remscheid, Germany. Estimating carbon in iron and steel by a series of pencils of metals of gradually increasing carbon value.
- 1,348 of 1895. H. Brewer, Duisburg, Germany. Treating the residuary liquors of the chloridising-roasting process with calcium chloride, so that the salt may be recovered.
- 18,680 of 1895. H. Freise, Bochum, Germany. Igniting device for miners lamps.
- WEEK ENDING DECEMBER 7TH, 1895.
- 882 of 1895. J. J. Hood, London. Adding mercury or lead chloride to cyanide of potassium so as to preserve it in transit and store.
- 6,431 of 1895. A. Roger, Paris. In electrolytically precipitating aluminum from manganite, the use of an alkaline electrolyte and a mercury cathode.
- 18,679 of 1895. H. Freise, Bochum, Germany. Igniting devices for miners lamps.

PERSONAL.

MR. JAMES G. DAVENPORT has been appointed Superintendent of the Enterprise Colliery, near Mount Carmel, Pa., succeeding Mr. John J. Gilligan.

MR. H. VAN F. FURMAN, of Denver, Colo., has been appointed professor of mining and metallurgy at the Colorado State School of Mines, in place of Mr. E. B. Kirby, resigned.

MR. ROBERT M. RAYMOND, manager of the Harquahala Gold Mining Company, Limited, left London last week for Western Australia to take charge of the company's new property in Kalgoorlie.

MR. S. E. BRETHERTON has severed his connection with the New Mexico & Arizona Smelting Company. He had operated the smelting works at Ivanhoe, N. M., with considerable success for some time past.

At the celebration of the centenary of the Institute of France on January 4th, the American professors, SIMON NEWCOMB, ALEXANDER AGASSIZ and HENRY A. ROWLAND were created officers. All are corresponding members of the Academy of Sciences.

MR. A. A. BLOW, the well-known mining engineer of Denver, Colo., has returned there from a month's absence in London, and will remain in Colorado for a short time before leaving for his new field of labor in South Africa. Mr. Blow has made a three years' contract with the Sheba Mining Company operating in South Africa.

MR. FRANCIS T. FREELAND has been appointed General Manager of the Mineral Farm Consolidated Mining Company, Aspen, Colo., in addition to his duties as General Manager of the Isabella Gold Mining Company, of Cripple Creek; the Aspen Contact Mining Company; the Bimetallic Mining & Milling Company, Lenado; the Durant Mining Company; the Compromise Mining Company; the Late Acquisition Mining Company, and the Conomara Mine, all of Aspen, Colo.

MR. HENRY M. HOWE has added to his laurels and has been honored by receiving the great gold medal of the Verein zur Beförderung des Gewerbfleisses, together with a superb diploma. It is the highest distinction which a foreigner can obtain, for this is the foremost society of Germany and is under the immediate support of the government. The medal is a little larger than the Bessemer medal and is of beautiful workmanship. Mr. Howe has received three gold medals, one from each of the three foremost industrial nations of the world, within six months, of which both himself and the profession in this country may well be proud.

OBITUARY.

JOHN W. COLEMAN, founder of the San Francisco Stock and Exchange Board, died at San Francisco, Cal., on January 7th, aged 61 years.

ELIAS MILLER, member of the firm of Miller & Bachert, powder manufacturers, of Ringtown, Pa., died suddenly at Hazleton on January 3d, aged 58 years.

JACOB BREINIG died at Allentown, Pa., on January 4th, aged 84 years. In 1858 he went to Allentown and began the manufacture of paints and fertilizers, the plant having since become the Allentown Manufacturing Company.

L. N. DAUGHERTY, the well known mining engineer, died suddenly at San Francisco, Cal., on December 22d, aged 65 years. He formerly conducted the Investors' Confidential Agency, which was endorsed by the leading stock brokers.

JAMES CLARENCE POST, U. S. A., died in New York City, on January 6th. He was born in this city, and was appointed a cadet at West Point in 1861. He was graduated in 1865, and appointed a Second Lieutenant. He served in the garrison at Little Rock, Ark., until 1866, when he was appointed ordnance officer of the Department of Arkansas, and promoted to First Lieutenant. He afterwards served in the Engineer Corps at Jefferson barracks, and in 1867 was assistant engineer in charge of the improvement of Boston Harbor. He also assisted in the construction of the defenses of Portsmouth Harbor, N. H. He was appointed a Captain in 1871, and afterward promoted to the rank of Major, since which time he served at the American Legation in London. Of late years Major Post was detailed to the Engineering Corps in the Department of the East.

DAVID F. S. FORSHAY died in Brooklyn, N. Y., on January 1st, aged 52 years. For over 25 years he was a prominent member of the New York Stock Exchange. He was born in New York and in 1861 entered the employ of Taylor Brothers, a Scotch firm, established in 1840, which was then one of the leading dealers in specie in New York. While connected with this firm, in 1863, he became a member of the open board, which, on May 3, 1869, was amalgamated with the Stock Exchange. Fifteen years ago he formed a partnership with L. Zimmerman, under the firm name of Zimmerman & Forshay. Its specie and bullion department has received the greatest attention, but the company is a regular Stock Exchange house and deals largely in stocks and bonds. Mr. Zimmerman has had the manage-

ment of the counter business and Mr. Forshay had entire charge of the firm's interests in the Stock Exchange. The firm undertook a bold venture in 1886, when it accumulated over half a million trade dollars, which were then worth not more than 75 or 80c. each. But as they bore the Government stamp they were finally redeemed by the Government at par, and the banking house reaped a large profit from the transaction. More recently the firm attracted much attention at the time when Clearing House certificates amounting to about \$42,000,000 were issued by the banks. These certificates could not be cashed immediately and great confusion seemed likely to prevail, when Zimmerman & Forshay announced that they would pay cash for the certificates, charging a small premium therefor. The firm did a business of half a million dollars a day for some time and then sold its currency at a premium of 4%.

SOCIETIES AND TECHNICAL SCHOOLS.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—An ordinary meeting was held in Montreal on January 9th. The subject for discussion was "The Most Suitable Shape of Timber for Testing." The second part of a paper by Mr. C. B. Smith, on "Cement Testing," was read by the author.

WESTERN PENNSYLVANIA CENTRAL MINING INSTITUTE.—The annual election of officers held at Pittsburg last week resulted as follows: President, T. K. Adams; vice-president Daniel Boden; secretary, William Seddon; assistant secretary, J. C. Kyle; treasurer, Roger Hartley; trustees, August Steiner, T. B. DeArmit and Roger Hartley.

COLUMBIA COLLEGE.—The trustees of Columbia College held their first meeting for the year 1896 on January 6th, when the following appointments were made: Albert P. Gillette, assistant in the physical laboratory; Henry E. Keyes, Ph. D., assistant in the physical laboratory, and Dr. C. H. Strong, lecturer in psychology. It was decided to make the college a member of the National Educational Association. The Committee on Education has made an agreement with the New York Botanical Garden by which the botanical library of the college will be placed in a building to be erected in the garden. In return for this all the privileges of the garden will be accorded to the students of Columbia. W. C. Schermerhorn was re-elected Chairman of the Board of Trustees, and John B. Pine was re-elected clerk.

NORTHWEST MINING ASSOCIATION.—The Association has called a convention of the second vice-presidents—over 300 in number—to meet on February 22d, at Spokane, Wash. Invitations will be extended to the Governors of Washington, Idaho, Montana and Oregon; also to the Hon. James Baker, Minister of Mines, Hon. Mr. Martin, Minister of Lands and Work; Hon. J. A. Mora, M. P.; Hon. Edgar Dewdney, Lieutenant Governor; Hon. J. M. Kellie, M. P. P.; Hon. J. S. Clute, Commissioner of Customs; Hon. Mr. Ebberts, Attorney General; Hon. Mr. Turner, M. P.; N. Fitzstubs, Gold Commissioner; H. Abbott, General Superintendent of the Canadian Pacific Railway; William Brown, Assistant General Traffic Manager of the Canadian Pacific Railway and George McL. Brown, District Passenger Agent of the Canadian Pacific Railway, all of British Columbia.

INDUSTRIAL NOTES.

The Ohio Falls Iron Works, of New Albany, Ind., have shut down for an indefinite period.

The Ironton furnace of the Ironton Furnace Company, Ironton, O., is to be repaired and put in blast.

The Denver Rolling Mills and Iron Company, of Denver, Colo., has been incorporated, with a capital of \$40,000.

The Mounton Iron and Steel Works at Danville, Pa., have been sold to the Reading Iron Company for \$50, subject to a mortgage of \$350,000.

The new eight fire Catalan forge, at Standish, N. Y., will be lighted this month. It will be run by steam generated by the surplus heat of the forge fires.

The mills of the Lebanon Rolling Mill Company, Lebanon, Pa., resumed operations in all departments on January 6th with heavy orders on hand after a suspension of two weeks.

The American Wire Nail Works at Anderson, Ind., which have been shut down most of the time in the past two months, were started up on full time on January 2d with 800 men.

The West End Rolling Mill Company, of Lebanon, Pa., has been incorporated, with \$100,000 capital, the directors being Jacob Capp, J. R. Evans, J. H. Miller, H. M. Capp, C. Slenk, G. R. Ross and H. P. Moyer.

Francis Smith & Co., of San Francisco, Cal., report shipments 30-in. pipe to the Horsefly district, British Columbia, 30-in. and 36-in. pipe for an irrigation plant on the Sacramento River, Cal., and a complete plant of pipe and gates to southern Oregon.

The Lickdale Iron Company plant, at Lickdale,

Pa., has been sold at public sale in Lebanon, Pa., to Dr. Samuel L. Wiess for \$231, subject to a mortgage of \$100,000. The purchase includes the real estate, property rights and franchises of the company.

The National Tube Works Company at McKeesport, Pa., resumed operations on January 6, after an idleness of nearly a month. The resumption gives employment to nearly 3,000 men. The National Rolling Mill also started, giving work to about 2,000 men.

The plant of the Appalachian Steel and Iron Company, at Big Stone Gap, Va., which was sold recently, has been put into thorough condition. There has been considerable difficulty in securing ore miners. The new company is known as the Big Gap Iron Company.

The Berlin Iron Bridge Company, of East Berlin, Conn., has just completed for the Windsor Company, of North Adams, Mass., a new fire-proof store house, 70 ft. wide and 125 ft. long. The construction is composite, being iron and brick, the whole being fire-proof, as no wood work is used. The floors are made of terra cotta.

The California Machine Works (Wm. H. Birch & Co.) of San Francisco, have moved their plant on account of increase of business into the buildings formerly occupied by the Pacific Iron Works, Nos. 129 to 137 First street. This firm reports sales of coal bunkers to a San Francisco concern, several elevators to Honolulu parties and Lightner quartz mills to people in Oregon, California, and Zacatecas, Mexico.

Mr. R. Seelig, manufacturer of engineering and surveying instruments, Chicago, Ill., has purchased all the rights, tools and stock of the late firm of Seelig & Kandler, which dissolved on December 7th, 1895. The business will be conducted by him and improvements will be made according to the requirements of the profession. A handsomely illustrated catalogue and price list will soon be issued and sent to engineers on application.

At the annual meeting of the Carnegie Steel Company, Limited, held in Pittsburg, Pa., last week, the following Board of Managers was elected: H. C. Frick, John G. A. Leisham, W. H. Singer, H. M. Curry, F. T. F. Lovejoy, L. C. Phipps, John Pentecost, Charles M. Schwab, Alex. R. Peacock. The board organized by selecting H. C. Frick as chairman; John G. A. Leisham, president; L. C. Phipps, vice-president and treasurer; F. T. F. Lovejoy, secretary.

The new blast furnace to be located at Punxsutawney, Pa., will use Lake Superior ores and coke from the local ovens, making foundry iron for the general trade. Among the directors named are: Wm. A. Rogers, of Rogers, Brown & Co.; J. G. Munro, of Buffalo; Adrian Iselin, Jr., and Columbus O. Iselin, of New York. The furnace is to be 80 ft. high and modern in all its appointments. Julian Kennedy, of Pittsburg, has been retained as consulting engineer.

The Virginia Bridge and Iron Company has been incorporated at Richmond, Va., with the following officers: Samuel Walton Tasewell, president; C. Edwin Michael, secretary and treasurer, and Chas. C. Wentworth, chief engineer. This company has purchased the plant and succeeds the American Bridge Company, whose works at Roanoke have been idle since last March. Some contracts have already been secured, and it is expected the plant will resume operations at an early date.

The removal of two filters at the West Middlesex Furnaces, near Sharon, Pa., leaving only six men to do the work, caused all the workmen to strike on January 6th. The prospect of the furnaces throughout the valley is not bright. It is stated that the manufacturers are stocking their iron rather than sell it at the market figure. If the market does not improve shortly the manufacturers will ask their employees to accept a 10% reduction. The Hall Furnace has been banked and other producers are making preparations to shut down.

The Dow Steam Pump Works of San Francisco, Cal., reports trade in their standard line of pumps very active at present. They have just completed three large compound duplex pumps for the Mission Street Electric Railroad, one of their special duplex power pumps for Central America, and another of the same size for water-works in Chile; two oil pumps for the Selby Smelting and Lead Company; two sinking pumps for mines in Alaska, and one for Grass Valley, and they have under way several large orders which will take them till the end of January to complete.

The Secretary of State of New York reports that the corporations organized with his department during 1895 numbered 1,423, against 1,229 organized during the preceding year. This was the largest number of corporations ever organized in any one year, and they paid an organization tax of \$500,000. This is double the amount ever received from this source by the State in any preceding year. The increase is due to the more liberal corporation laws which have been enacted during the past three years, which has caused the formation of a class of corporations in this State which formerly organized under the laws of the State of New Jersey and of West Virginia.

The Barber Asphalt Paving Company, New York City, has placed a contract with the F. D. Cummer

& Son Company, of Cleveland, O., for one of its revolving sand heaters mounted on a railroad car. This car, in addition to being equipped with dryer hours, is also equipped with engine, elevators, sand screen, mixing platform; the car to have Westinghouse air-brakes and patent automatic couplers, and to be constructed so as to withstand, without injury, the usual knocks and shocks to which it will be subjected as part of an ordinary freight train. This car will be shipped from city to city, wherever the Barber Asphalt Paving Company may have contracts for paving. This Cleveland concern is also building a dryer and heater for the Omaha works of the Barber Asphalt Paving Company. The Cumbrer Company manufacture eight different styles of dryers, applicable to all sorts of materials.

The Etna Coal and Iron Company, incorporated under the laws of West Virginia, has secured control of the properties of the old Etna Furnace, at Ironton, together with the furnaces of the New York & Ohio Iron and Steel Company, near the former property, and will begin the work of improvement preparatory to starting the plant at an early date. The deeds for both properties were filed last week. With them came a mortgage executed by the Etna Iron and Steel Company to the Knickerbocker Trust Company, of New York, as trustee, and is given to secure an issue of gold bonds made due August 1st, 1945. The bonds will bear 6% interest, payable semi-annually, and redeemable at any time at 105 and accrued interest. The proceeds of the bonds will be used in payment of the purchase price and completing the necessary repairs of both the Etna and New York & Ohio Iron and Steel Company furnaces and putting them into active operation.

MACHINERY AND SUPPLIES WANTED.

If any one wanting machinery or supplies of any kind will notify the "Engineering and Mining Journal" of what he needs he will be put in communication with the best manufacturers of the same.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning goods of any kind, and forward them catalogues and discounts of manufacturers in each line.

All these services are rendered gratuitously in the interest of our subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

GENERAL MINING NEWS.

ARIZONA.

YARAPAI COUNTY.

GREEN MOUNTAIN.—This group of copper mines on Big Copper Creek, about 10 miles from Prescott, is reported, has been bonded to Montana parties for \$60,000. Present development work will continue, and it is expected that within 60 days work will be commenced by the company on a large scale.

YUMA COUNTY.

HARQUAHALA GOLD MINING COMPANY, LIMITED.—The manager's report for November states that prospecting has been resumed on a small scale in the Golden Eagle mine to test a few points. The drift south from No. 2 winze was advanced 25 ft., but with no change for the better. In the stope at the north end of workings some stringers were followed out and about 25 tons of ore taken out, averaging \$6 in value. The north drift is being extended a short distance to explore the ground a little further in that direction. In the cyanide plant the treatment of the tailings has been going on very steadily during the month without any particular change to note. A fourth precipitation box has been put in recently which will be used for the low grade solutions which had to be partially wasted for want of room. The result of operations for the month has been as follows: Tons treated, 4,100; bullion realized, \$11,800; operating charges, \$5,600; mining, \$400; extraneous expenses, \$800; profit, \$5,000.

CALIFORNIA.

THE CALIFORNIA DEBRIS COMMISSION has issued permits to the following mines to operate by the hydraulic process: Lost Camp mine, near Blue Canyon, Placer County; Forest Home mine, Amador County; W. H. Cole, near Grizzly Flat, El Dorado County; Pine Leaf mine, near Spanish Ranch, Plumas County; Ram Creek, near Brush Creek, Butte County; Irish Hill, near Oleta, Amador County. The following mines have been authorized to build dams to restrain the debris: Bull Neck, near Rancheria, Amador County; Mill Gulch, Amador County; Jay Bird, near Camptonville, Butte County; Wild Yankee, near Shady Run, Placer County; Meehan, near Aqueduct, Amador County; Trafton, near Yankee Jim's, Placer County.

AMADOR COUNTY.

(From Our Special Correspondent.)

CLINTON CONSOLIDATED.—This mine, at Wieland, six miles northeast of Jackson, is now being operated by the Union Consolidated Gold Mining Company. The hoisting plant is being moved, and when ready, sinking will commence and pushed rapidly.

NORTH GOVER.—An agreement has been prepared

by the owners of this mine, and Mr. Purinton to transfer that property for \$25,000, to be paid within a year, and sent to Col. Isaac Trumbo for his inspection and signature. This property adjoins the Governor which Colonel Trumbo is now operating, and can be worked from the latter property economically.

ONEIDA.—This company has been reorganized with a capital of \$3,200,000 in 32,000 shares, par value \$100 each.

PIONEER.—This mine at Plymouth has been incorporated by Dr. Thomas Boyesen, John Barton, Louis Beichling, George Goodman and ex-Judge John Curry, all of whom are largely interested in the Kennedy mine, and it will be actively worked.

CALAVERAS COUNTY.

THORP.—It is reported that this mine, situated three miles north of Angels, was recently sold to parties who had a bond on the property.

(From Our Special Correspondent.)

FALCON.—This mine, near Murphy's Mill, has been running a five-stamp mill about a month, and the clean up from the battery and plates amounted to over \$1,000. The working force has been increased. Mines in this vicinity are attracting more attention; much activity is looked for in the spring.

TULLOCH.—The Tulloch estate, owner of this mine, on the mother lode, 2½ miles southeast of Angels, has purchased the mill and other improvements on the property for \$6,000, and will resume work at once. This mine had been bonded by the Godbe Mining Company.

MONO COUNTY.

(From Our Special Correspondent.)

BULWER CONSOLIDATED MINING COMPANY.—The latest weekly letter from the superintendent says: About six tons of ore valued at \$25 per ton were extracted from the stopes above the 200 ft. level. South drift from crosscut No. 4, 200-ft. level, was extended 13 ft. face shows bunches of low-grade ore. South drift from upraise from south drift 100-ft. level was extended 15 ft.; face is in vein matter, which will prospect from \$4 to \$6 per ton.

MONO MINING COMPANY.—The superintendent writes: The upraise from the south drift from the west crosscut, 400 ft. level, was carried up 15 ft. The ledge in the top is, as last reported, 8 to 10 in. wide and of low grade.

ONTARIO SYNDICATE.—The claims of this company, 10 in number, located on the north slope of Mount Scowdan, are being developed by a tunnel, commenced at an elevation of 400 ft. above Mill Creek. They are now in 700 ft., and expect to push it on to Prospect Mountain.

NEVADA COUNTY.

WYOMING MINING COMPANY.—This company will hold a meeting on January 13th, at which time the corporation will be dissolved. The ground now belongs to the Champion company.

PLACER COUNTY.

(From Our Special Correspondent.)

GOLD OF OPHIR MINING AND DEVELOPMENT COMPANY.—Work has been commenced on three of the six claims belonging to this company. The open work is being vigorously pushed.

MAYFLOWER GRAVEL MINING COMPANY.—This company last week shipped bullion valued at \$1,850 to the San Francisco office.

SISKIYOU COUNTY.

(From Our Special Correspondent.)

GOLD BALL.—This mine, eight miles east of Sawyer's Bar, between the headwaters of Eddy's and White's gulches, is developed through tunnels. The vein is from 2 to 8 ft. wide, and carries a small percentage of sulphurets. A new 25-stamp mill has recently been erected, also six tanks for working ore by the cyanide process.

SONOMA COUNTY.

(From Our Special Correspondent.)

EDGEWORTH.—This mine, about 16 miles south of Santa Rosa, has been partially developed. A shaft has been sunk about 20 ft., and a tunnel run in from the side of the hill to meet the shaft. The ledge which is about 4 ft. wide at the surface carries gold and silver.

TUOLUMNE COUNTY.

(From Our Special Correspondent.)

LOUISIANA.—At this mine near Soulsbyville a 10-stamp mill is being erected. The shaft is down 350 ft., and the vein at the bottom is from 1 to 2½ ft. wide showing free gold.

COLORADO.

BOULDER COUNTY.

(From Our Special Correspondent.)

BELLE.—Two tons of mineral were shipped for a test mill-run last week, with results so satisfactory that shipments hereafter will continue regularly.

BLOOMER.—Bean Bros., of Denver, recently purchased the Bloomer group. A roaster is now under construction.

COLORADO.—This new property is producing some rich ore, although the bodies are less extensive than those of contiguous properties. The Colorado was abandoned years ago, and has only lately come again into prominence through the development of lessees.

COLUMBIA.—The large ore bodies opened up by the

company years ago are now being developed by lessees for everything in sight.

DEW DROP.—In the 700 ft. level a vein of ore has been exposed measuring 6 ft. across, and the concentrator is being taxed to its utmost capacity.

EVENING STAR.—Some valuable ore bodies have lately been opened up in this property, which recently came into control of Worth & Huling. Development is being carried on in a systematic manner, and the Modoc mill is kept busy handling the output.

GILES.—A good plant of machinery has just been placed on this property, and operations are going forward actively. A 10-stamp mill has also just been completed and is at work on the output from the mine.

GREY EAGLE.—The workings of this property are undergoing thorough repairs, preparatory to a resumption of operations at an early day.

INDIANA GOLD CHIEF MINING COMPANY.—This company was organized last week, with the following officers: E. A. Shafer, W. H. Coleman, F. A. Possell, Edward R. Vanderhoof, J. B. Berdell, C. W. Stover, S. L. Kilmer, J. B. Bertling and J. P. Olympus, the last named of South Bend, Ind. The company has purchased the Gold Chief group at Ward for \$20,000 and will erect a mill.

LIVINGSTONE.—A new shaft has been started; in consequence of which the mill has been closed down until the ore bodies are again opened up.

MORNING STAR.—The output of the Morning Star for 1895 is placed at \$120,000. The workings are in good ore, and the work is carried on by lessees at a depth of 250 ft.

ORO FINO.—Good ore has lately been encountered at this point, and shipments will begin as soon as the roads will permit.

POORMAN.—Long Bros. have secured a lease on this property, which is producing some rich ore.

RUBY.—A steam hoist has been placed in position at this property and some very high-grade ore is being taken out.

SENATOR HILL.—Some very good ore is being mined at this property, and shipments are made regularly to the local smelter.

SILENT FRIEND.—A vein 12 in. thick of rich ore has just been discovered in this property and a carload will be shipped to Denver immediately as a trial test.

SLIDE.—There are 100 men now at work on this property, and three carloads of ore are shipped weekly to the Denver smelters. This output, it is stated, will be increased to a carload daily during the present week.

SMOKY HILL.—George E. Lake has just completed the erection of a large plant of machinery at this point, and will resume sinking at once.

SMUGGLER.—Walter Clemens has been secured to superintend operations at this property, which will start up again in a few days after a long period of idleness.

TEAGARDEN.—This group is being operated by the Magnolia and Buckeye Mining companies, which have recently completed a mill at an expense of over \$40,000, and of a capacity of 50 tons daily.

UTICA.—This mine was probably the most productive of the county during 1895, the little settlement of Ward owing its existence to that famous property. The value of last year's output is estimated at \$200,000.

LAKE COUNTY.

(From Our Special Correspondent.)

FIRST NATIONAL.—This property is in the vicinity of the Rex, and parties are figuring on a resumption of work there.

FRENCHMAN.—Preparations have been completed for a resumption of work by lessees. The shaft is over 200 ft. deep and is to be sunk further, when drifting will commence.

GORDON.—Another strike is reported. In the lower workings a vein of mineral has just been struck 6 to 10 in. wide, which assays 50 oz. to the ton. The Gordon mill, which has a capacity of 15 tons daily, will be enlarged at once.

LEADVILLE MINING STOCK EXCHANGE.—This exchange has been organized with 75 charter members, and will have its first call on January 10th. The directors are J. J. Glynn, J. A. Shinn, R. R. Ripley, C. S. Brown, I. B. Griffith, G. B. Harker and F. E. McCullum.

NEW ELKHORN MINING COMPANY, LIMITED.—As stated in my telegram last week, this syndicate purchased the Fitzhugh and eight other properties from Messrs. Tracy, Ingham and other New York parties. Mr. Timothy Kyle, who has conducted the operations on the Fitzhugh for so long a time, has been appointed the Leadville representative of the company. No definite plans for future work have yet been decided upon.

PAWNOLES.—This property, idle for a long time, will probably be leased in the near future. In 1893 the Pawnoles was operated and a good iron ore body opened up. A very rich streak of chloride was encountered during development work.

REX.—Arrangements are progressing rapidly for starting this property. The new company is prepared to spend \$100,000 if necessary to get out the water.

SLIVER.—Word from this property is to the effect

DAVIS.
Davis mi
time past
Edward
purchased
adjoining
There are
which the
tung and

that a body of ore has been opened up for 6 ft., and that average assays give 150 to 300 oz. silver and 25% lead. The report could not be verified at the present writing.

THE IRON MARKET.—The year opens auspiciously for the iron producers, who are all increasing their output. The increased production of silicious ore in the Cripple Creek section means a greater demand for the Leadville iron as a flux for the smelters. The iron bodies of the downtown properties especially, have been opened out to a wonderful extent. The Coronado, Welden, Sixth Street, Grey Eagle, Northern and others, have great bodies of iron ore exposed. In the Bison the showing is wonderful, there being masses of oxidized iron 80 ft. high for a distance of 600 ft.

OURAY COUNTY.

(From Our Special Correspondent.)

NEVADA.—J. Clamp and Edw. Krisher are now doing development work on this property and shipping some rich ore.

OURAY GOLD BELT.—George Hurlburt, Chas. Armstrong and several others are running a tunnel on the Ouray Gold Belt. This tunnel will be 1,700 ft. long and is expected to tap the American-Nettie, Puzzler and other great ore bodies. They have 12 men at work and have the tunnel driven in to the depth of 700 feet.

OURAY ORE OUTPUT.—Ouray County's output for 1895 was 75,000 tons; value, over \$2,000,000; gold, \$820,000; silver, \$1,180,000; lead and copper, about \$100,000.

PITKIN COUNTY.

(From Our Special Correspondent.)

DURANT MINING COMPANY.—This company is working about 100 men and a large number of patch leases. The output is about 3,000 tons per month. A contract has been let to sink the Aspen-Forest shaft an additional 200 ft. A new station is being cut in the Old Conomara shaft at a depth of 950 ft.

MINERAL FARM CONSOLIDATED MINING COMPANY.—In order to discharge some pressing obligations of the company contracted by an earlier management and to sink a large main shaft from the Cowenhoven Tunnel for the systematic exploration of its deeper lying ground, the stockholders have authorized a mortgage for \$75,000 at 8% annually, payable on or before three years, the stockholders to have the privilege of first subscribing in proportion to the number of shares held, and in addition to receive a bonus of four shares for each dollar subscribed of the stock now in the treasury. Twenty-one patch leases are running in the old workings, and the company is breaking ore on the 10th level. The output for last month was about 400 tons, with better prospects for this month.

IDAHO.

BOISE COUNTY.

ALDER CREEK GOLD MINING COMPANY.—This company has been incorporated with quarters at Placerville. The capital stock is \$1,000,000. The directors are J. S. F. Batches, W. H. Soward, J. F. Soward, J. C. Soward and J. W. Moakler.

MICHIGAN.

COPPER.

ATLANTIC MINING COMPANY.—The output of this company during December amounted to 200½ tons of mineral.

FRANKLIN MINING COMPANY.—Advices from Houghton, state that in all probability this company has struck the Pewabic lode on the Franklin Junior property. The Pewabic shaft is now down about 300 ft., and in the last 20 ft. sunk the formation resembles in every respect the Pewabic lode and is rich in copper. The shaft is on the hanging wall and is all in lode, showing that it is wider than the shaft, which is 8 ft. Mining men of experience are said to pronounce it the genuine Pewabic lode. The new engine and boiler houses at the Franklin are completed, but the rebuilding of the hoisting machinery is dragging, and it will be two to three weeks before hoisting can be resumed. The Franklin mine produced no copper in December, owing to the fire.

QUINCY MINING COMPANY.—The output of the Quincy mine for December 1895 was 850 tons and 1,800 lbs. of mineral, as against 1,000 tons for the preceding month and 700 tons for December 1894.

TAMARACK JUNIOR MINING COMPANY.—According to the Lake Linden *Native Copper Times*, the advantages arising from carrying on the bulk of the hoisting through No. 2 shaft at the Tamarack Jr., has proved so marked that an increased amount of rock can be obtained with less hands. A few days ago 15 or 16 men were discharged. New openings into the lode near the No. 2 shaft, it is reported, are showing up nicely.

WOLVERINE MINING COMPANY.—The Wolverine mine produced 100½ tons of mineral in December. The November output was also 100½ tons.

IRON—GOGEBIC RANGE.

DAVIS.—The negotiations for a transfer of the Davis mine which have been conducted for some time past resulted in its sale on December 27th. Edward N. Breitung of Marquette and others have purchased the property. The old Milwaukee mine adjoining the Davis is also included in the deal. There are four sections of land, including that on which the two mines are located, which Mr. Breitung and his associates have secured. Mining op-

erations at the Davis will be resumed soon, says the *Marquette Journal*. Captain James Matthews has been engaged as underground captain, as he had charge of the mining work there for some time before the mine closed down last July, and is thoroughly familiar with the property. A supply of coal has been ordered and as soon as it arrives work will be resumed. A full force will be employed from the start. Operations at the Milwaukee mine will also be resumed at a near date. This property was shut down some four or five years ago, when the lease of the operating company expired. The fee of both properties is owned by the same parties. The Davis and Milwaukee are on the same vein. The ore is a non-Bessemer but is of a desirable grade. The Davis is looking fairly well, there being considerable ore in sight, but the Milwaukee was not looking so well at the time work there was abandoned. It is expected, that good ore in workable body will be found there.

OWYHEE COUNTY.

DE LAMAR MINING COMPANY.—The report of Capt. J. W. Plummer, the manager for November, states that the usual amount of prospecting was done during the month without any change of importance. In the milling department, for the first time in many months, the batteries did not work in their accustomed satisfactory manner, and towards the end of the month they had to be gradually overhauled. This caused a shortage in the amount of ore crushed for the month. Work performed during November was as follows: Crushed (wet), 3,238.82 tons; crushed (dry), 2,913.15 tons; assay value of the pulp, \$23.91, of which \$18.33 was in gold and \$5.58 was in silver; assay value of the tailings, \$5.07; percentage saved, total, 78.80%; Dore bars produced, 1,748.525; number of ounces pure gold produced, 26,712.03; value of gold produced, \$34,972; value of silver, \$16,027; surplus on sales of bullion, \$5,657; 59 sacks slums, \$839; ore shipped during the month, \$15,000; miscellaneous revenue, \$1,137; total receipts, \$73,633; expenses, \$38,946; estimated profit for month, \$34,687. "Pelatan-Clerici Process."—The treatment tank is now complete as far as we can go. We are waiting for the balance of the machinery from the manufacturers, who have been much longer in filing the orders than we anticipated."

MINNESOTA.

IRON MENABI RANGE.

(From Our Special Correspondent.)

BIWABIK.—This company has stopped all work stripping till spring. It is likely that all summer will be required to complete the contract given to the Drake & Stratton Company. Five steam shovels and the accompanying steam locomotives, cars, etc., have been working on it all fall, and are about half through. An immense body of ore has been shown up, and the mine can easily ship 1,000,000 tons during the year if found advisable. The mine is now something like 600,000 tons behind in its tonnage contracts and is likely to make some big shipping records to catch up as soon as the conditions are favorable.

MINNESOTA IRON COMPANY.—This company has closed its option on the Virginia or Moose property, at the townsite of Virginia, and will mine 112,000 tons a year at a lease of 18c. It is not likely that this output will be achieved the coming year, however. The mine has shown up a large amount of ore under the intelligent exploration carried on by the company. It is generally believed that it is a continuation of the Oliver and Lone Jack ore body. The Minnesota company has now under option on this range about 13,000 acres of lands, supposed to be mineral bearing, and is engaged in exploring most of them. The options run, generally speaking, for 180 days, and are expected to show up an immense quantity of ore. Most of these explorations are in towns 58-17 and 58-18. The company's Genoa mine, which is expected to be a large shipper the coming season, is being put in condition as fast as possible, and will be a model mine. Its Elba, which has been reported to be on the way towards becoming a shipper, will not be opened this season, but will be left in reserve. This property is in fee to the Minnesota Iron Company, and contains vast quantities of ore.

ROUCHELEAU-RAY PURCHASE.—This 80-acre tract on which the Lake Superior Consolidated has an option, at the basis of \$1,250,000, for which it paid 10 per cent. of that amount as heretofore reported, is being explored for them by Cole & McDonald, who will do a large amount of work. There is little question that the option will be taken up and the property transferred, at the end of the 90 days of the option bond.

IRON—VERMILION RANGE.

(From Our Special Correspondent.)

HARTMAN VS. WARREN.—Last week the United States Circuit Court made a decision in the case of Emil Hartman vs. James Warren, et al. The case is of the greatest importance to one of the most valuable iron ore finds ever made on the Vermilion. The plaintiff, who lost in the department of the interior to the assigns of Warren, who are the Minnesota Iron Company, 13-25ths, and Huntress & Brown and others 12-25ths, where a patent was issued a short time ago to Warren, sought to show that Warren, at the time the Chippewa scrip was issued to him under which the land was entered by Huntress & Brown, was a citizen and not in tribal relations, and had no right to receive the scrip and profit thereby. He sued alleging errors, and was

defeated. It is understood that the case will be appealed to the United States Court of Appeals, where a decision may be reached in a year. The outcome is not in much doubt. When settled, the 80 acres of the famous Warren tract, just a mile east of the town of Ely and the Chandler mine, will be the scene of activity in mining operations. The Minnesota Iron Company has the whole tract under lease at 20c. a ton for the undivided 12-25ths, or at the rate of about 40c. on the whole output, a stiff royalty for a mine 110 miles from the lake, but one that may be reduced.

ROBINSON LAKE.—Capt. Jas. Bale has uncovered ore on Robinson Lake, midway between Tower and Ely, that is said to assay from 68 to 69% iron, and not over .025 phosphorus. It is the best ore found on the range, if all that is said of it is true. It is likely that a mine will be opened as soon as possible.

SUDAN.—Over 1,000 men are now at work at the Sudan mines of the Minnesota Iron Company. It is expected to put on about 400 more during the winter.

MISSOURI.

JASPER COUNTY.

(From Our Special Correspondent.)

JOPLIN ORE MARKET.—For the week ending January 5th there was a light output of ore on account of the water being up in the drifts of a large number of the big producers and also a light turn-in. The Jack market was steady and firmer. The top price for zinc ore was \$23.50 per ton and the average \$22 per ton. Lead ore brought \$18 net to the sellers. Some operators are inclined to hold their jack in hope that the development of the smelter combine's plans will raise prices. The turn-in last week was as follows: Joplin, zinc, 770,210 lbs.; lead, 167,940 lbs.; value, \$11,482; Spring City, zinc, 20,530 lbs.; value, \$225; Zincite, zinc, 21,740 lbs.; value, \$239; Webb City, zinc, 1,047,170 lbs.; lead, 42,490 lbs.; value, \$15,574; Cartersville, zinc, 630,110 lbs.; lead, 293,370 lbs.; value, \$12,822; Galena, zinc, 2,300,000 lbs.; lead, 309,000 lbs.; value, \$27,100; Oronogo, lead, 19,480 lbs.; value, \$323; District, total zinc, 4,673,869 lbs.; lead, 823,790 lbs.; value, \$67,768.

CARTERVILLE.—This has been for a long time one of the best mining camps in the district and the outlook for the coming year is the brightest in its history. The Eleventh Hour, Chatham, Perry, Victor, Richland, Davey Daugherty & Co., Get There, Edgar, Cartersville Company and the Troup are all good mining lands and are getting in better shape for a big run than ever before. While a number of the mines are partially drowned out at present, they will in a few weeks be thoroughly drained and ready to hoist ore.

CIRCLE.—Dermott & Gunning have leased the Circle land and are running there big pumps steadily. They are also putting in a three drill air compressor and will do their drilling in the main drifts with air drills. There are a number of good paying mines on this ground when the water is out and they will be drained in a short time. Considerable ore is being taken out of the upper ground.

MONTANA.

DEER LODGE COUNTY.

(From Our Special Correspondent.)

EMERY.—This mine, in the Zozel district, 10 miles north east of Deer Lodge City, before the slump in silver, was a producer of considerable promise, Phil Harrington who has leased this property, is now working 35 men, and shipping 17 tons of ore per day, which runs 45 oz. in silver and \$12 in gold and also carries 18% of lead. This ore goes to East Helena. At present Harrington is sinking another 100 ft. on the 150 ft. shaft, which is going down through the vein. Recent average assays show the ore to be getting richer as depth is attained. At present it has increased to 90 oz. in silver and \$18 in gold, and 18% lead. The vein has widened out from 14 to 20 in. Mr. Anton Krier, of Butte, has a sublease on the Emery. A short time ago he shipped two car loads of ore to the smelter. One car of the first grade of the ore netted \$700, and the one car of second-class ore netted \$300. A new strike has also just been made in the Emery. A vein has been opened that is fully 16 in. wide which carries 85 oz. in silver and runs \$12.80 in gold.

TWIN CITY MINING COMPANY.—George H. Tong began an action in the district court, at Anaconda, against this company for \$1,556, aggregating the amounts of eight checks issued on the First National bank in payment of wages due miners, but on which payment was refused because of lack of funds to the credit of the company. The claims were assigned to the plaintiff.

FERGUS COUNTY.

(From Our Special Correspondent.)

GILT EDGE.—This property has closed down under attachments issued against the company on which judgments were obtained. It was supposed that the new management had sufficient capital to pay off these claims and operate the mine until the returns would pay expenses and it was hoped leave a profit.

JEFFERSON COUNTY.

(From Our Special Correspondent.)

FREE COINAGE.—Messrs. A. K. Prescott and Owen F. Smith have made a strike in the Free Coinage, in Lump Gulch, uncovering a body of solid galena 15 in. wide and running 200 oz. in silver, in which many samples show native silver. This was on the 300 level. The ore body continues to look well as development proceeds. This mine has paid for its development.

HOPE MINING COMPANY.—The Hope mine and mill, at Basin, has passed into the hands of new men, or practically so. The large stockholders will retain an interest in the company, but it is evident that there will be a new management. Nothing is known as to the terms of the sale. New machinery will be added to both the mine and mill in order to work the mine more profitably, as well as to turn out a greater amount of concentrates.

KATIE.—The fact that lumber and other building supplies are coming into Basin for the Katie mine confirms the statement made that the concentrator will be rebuilt as fast as the weather will permit. The owners of the Katie have taken a lease and bond on the Homestake, a well-known property in Park Canyon, Silver Bow County. This fact probably gave rise to the story that a smelter would be erected at Basin to treat the Homestake ores, which carry a considerable per cent. of copper.

PARK QUEEN.—John S. Miller, one of the owners of the Liverpool and other claims in Lump Gulch and of the Diamond Hill, in the Park district of this county, has purchased a group of claims five miles from the Diamond Hill, consisting of the Park Queen, Prairie Queen, Bullion King, Isabella and Last Chance lodes, for which, it is said, he paid \$40,000. He has put a force of 20 men at work and expects to be shipping ore by January 15th. All are gold properties, except the Bullion King. These properties lie between Crow Creek and the Missouri River and are in a district which is rapidly developing into one of the great mining centers of the State.

LEWIS AND CLARK COUNTY.

(From Our Special Correspondent.)

LEE MOUNTAIN.—Buskett and Davis have leased the Lee Mountain mine at Rimini. This is an old property. The ore is mostly galena, which lies 2-ft. thick on each wall of the 40-ft. vein. There are bunches of ore in the vein matter between the walls, and the whole would probably pay to concentrate. So far this mine has not been a profitable one to the owners. A concentrator was built to work the ores many years ago, but through some fault of construction, it never was a success. The lessees may be able to work the mine to a better advantage; they will not attempt to put the concentrator in repair.

PENOBSCOT.—This property is dropping its stamps every day, and it will probably be sometime before it is closed down. The new vein discovered a few weeks ago, keeps its character as development progresses.

TOUSLEY GULCH.—There are men now at work to get the properties lying north of Belmont Mountain in a company so that the ores may be worked in the Old Empire mill. The mines of Tousley Gulch are worth developing. The Empire company owned the Bell Boy in this gulch, taking out of it a handsome profit, after paying \$40,000 for the property. Across the gulch, east of the Bell Boy, gold has been found distributed in what seems to be a white shale. On either side of this deposit, the country rock is massive clay slate, black when broken, some of it whitening on being exposed to the weather. There is no doubt lime in it, and some claim that magnesia is also present. Where gold is found the slate is broken up and is white clear through. A careful sampling, both by fire and panning, showed that all the white stuff carried gold and that a part of it was very rich, yielding over \$200 to the ton. A rich streak of gold ore was struck on the old Tousley claim, but in another vein. All these veins have their strikes almost east and west, and as some of them have failed at depth it is feared that others may do so. But there are so many veins, and there are so many varieties of ore, including gold, silver, lead and copper (the latter in very large veins), it is believed that the district presents a good field for the investment of capital.

MADISON COUNTY.

CLIPPER.—Pony is an old gold district, but it is producing some rich ore. From the Clipper W. W. Morris shipped ore that netted \$90 the ton, while a car of concentrates netted \$110.

MEAGHER COUNTY.

(From Our Special Correspondent.)

BENTON.—There are 40 men at work in the Benton group of mines on Snow Creek, and a car of high-grade ore is being shipped every week, bringing in a good revenue.

BROADWATER.—These mines, at Neihart, are looking well as development proceeds. An upraise is now being made to ventilate the mine, and when this is done, there will be room for a much larger force of men. The shaft is being sunk in ore of a good grade. It is said there is sufficient stoping ground opened up to keep the present force at work for two years.

FLORENCE MINING COMPANY.—This declared a dividend of 3c. a share. Stopping will begin soon above the 300-ft. level, the quality of the ore being highly satisfactory.

GALT.—This mine shipped 10 car loads of ore last month, all of a good grade. The greater part of the ore was taken from the 150-ft. level, and it is not probable that stoping will go on below until the Queen of the Hills people have completed the extension of Galt tunnel into their own ground.

SILVER BOW COUNTY.

(From Our Special Correspondent.)

BUTTE DISTRICT.—The number of silver properties that are being worked in and around Butte, on

lease, is increasing. On the Blue Wing 20 men are employed and considerable rich ore is being shipped. On the Alice properties a large number of tributaries are at work. On the Belle of Butte, a silver property, three gangs of leasers are at work, and doing well.

SILVER LICK.—A lessee has placed machinery on the Silver Lick, a silver property immediately west of the old Glengarry, and on the same vein. The Glengarry company paid several dividends from a rich shoot of ore in this vein, and also opened up a copper property in the flat north of the Parrot smelter, which is now called the Glengarry No. 2, and which belongs to the Montana Ore Purchasing Company. The vein shows strongly on the surface, and there are several more on the property. The ore, being entirely silver, will have to be of good grade to pay.

WABASH.—This mine, some distance north of Walkerville, is shipping considerable ore.

NEVADA.

CHURCHILL COUNTY.

WHITE CLOUD.—It is reported that Mr. George Lovelock, of Lovelocks, has sold the White Cloud copper mine near the Humboldt line, to an Eastern company for \$19,000.

ESMERALDA COUNTY.

SILVER STAR.—According to our exchanges this camp is quiet as usual. The mill is now running on Owens ore, which amounts to over 300 tons of high grade. Several lots of from 20 to 50 tons have been crushed lately, giving good satisfaction. A steady improvement is noticed in the mines and average of the ore.

ORMSBY COUNTY.

LE GRAND ORO MINING COMPANY.—This company, of Carson City, has located 5,595 acres of placer at Buckeye and has quite a number of men at work, some for the company and some on leased ground. The King Brothers, who have been working on the upper part of the ground, have a bed-rock proposition with only 22 ft. of bank, and are said to be realizing \$10 a day to the man. On the 94 claim eight men are at work in a 40-ft. shaft and drifting through the gravel.

STOREY COUNTY—BRUNSWICK LODGE.

BRUNSWICK EXPLORATION COMPANY.—The latest weekly official letter from the superintendent says: Shaft No. 1 on Hale & Norcross ground near the Chollar Company's north boundary, has been sunk a distance of 16 ft. on the incline, passing through porphyry and quartz; total depth, 278 ft. Shaft No. 2 on the boundary of the Con. Cal. & Virginia and Best & Belcher company's grounds has been sunk 8 ft. on the incline, passing through hard porphyry; total depth, 184 ft. The Gould & Curry Company's tunnel, started in Savage Company's ground, has been extended 12 ft., passing through hard porphyry; total length from mouth of tunnel, 447 ft. Best & Belcher.—800 level—East crosscut No. 3, started at a point in the main north drift, 360 ft. from our south boundary, was advanced 7 ft.; total length, 269 ft.; face in hard porphyry. Gould & Curry.—200 level—The west cross-cut No. 5, which was started in the northwest drift, 432 ft. from the main west drift, was advanced 8 to a total length of 1,664 ft.; face in hard porphyry.

STOREY COUNTY—COMSTOCK LODGE.

Following are the latest weekly official letters from the mine superintendents:

CHOLLAR.—In the stopes above the south drift from No. 2 crosscut we are driving north on the seventh floor. The bunches of pay ore continue to look about the same. In the stopes above No. 2 crosscut work has been confined during the week to the third and fourth floors, from which points we extracted and sent to the Nevada mill for reduction 62 tons of ore, the average of the battery sample assay being \$29.63.

HALE & NORCROSS.—Have been working north on the fifth and sixth floors in No. 1 upraise, also north and south on the seventh floor, the ore streak continuing at all points. The ore in this upraise is of high grade, but the streak is not quite so wide as at last report.—No. 2 upraise.—Have been working north and south on the seventh and eighth floors. The ore streak on these floors continue to look fully as well as last reported. Extracted during the week 23 cars of ore, assaying per mine car sample, \$99.91 per ton.

OPHIR.—All that was remaining of the ore stored in the mine has been raised to the surface, amounting to about 203 tons, assaying, per mine car samples, \$42.81 per ton. Shipped to the Mexican mill 390 tons and 1,250 lbs. of ore, the average assay value of which, per railroad car samples, was \$36.95 per ton. The mill has crushed and concentrated all the ore that has been shipped to it, 472 tons and 930 lbs., the average assay value of which, per battery sample, was \$27.08 per ton. The concentrates are being sacked for shipment to the Selby Smelting and Lead Company, to be treated for the gold and silver that is contained in them.

OVERMAN.—Extracted from north drift 900-ft. level $8\frac{1}{2}$ tons of ore valued at \$41.81 per ton.

POTOSI.—From the old workings from the south drift 550-ft. level we have drifted south along the hanging wall 30 ft. on the fourth floor, which shows old fillings and bunches of ore. In the stopes above the north drift 550-ft. level work has been confined to the 10th, 11th, 12th and 13th floors, from which we saved and shipped to the Nevada mill for reduc-

tion 135 tons of ore, the average assay of the battery sample being \$28.53 per ton. Shipped two bars of bullion of the par value of \$5,549.

NEW JERSEY.

MORRIS COUNTY.

HURD.—This mine at Port Oram has begun operations again, though it will be several months before all the rock which recently fell can be removed.

NEW MEXICO.

GRANT COUNTY.

PRINCE.—This mine at Silver City has been purchased by John Brockman for a price said to be \$275,000, and 40 men have been put to work upon it.

SANTA FE COUNTY.

BENDER-THOLL-BATES.—Mr. J. M. Tholl has his new improved 5-ft. Huntington mill at work on ore from the Bender-Tholl-Bates mines at Golden, and results are reported to be satisfactory.

NEW YORK.

LIVINGSTON COUNTY.

RETSOF MINING COMPANY.—At Rochester, last week, Justice Adams granted an injunction against the Retsof Mining Company, restraining it from interfering with the property or traffic of the Genesee & Wyoming Valley Railroad Company. The Retsof Company, which is engaged in salt mining at Greigsville, is also the chief stockholder and virtual owner of the short line of railroad known as the Genesee & Wyoming Valley road. Some time ago it leased the road to the present managers, and in November, on the ground that the lessees had violated the terms of the lease, the salt company took forcible possession of the railroad plant. Then followed several legal battles and at the same time an attempt was made by the lessees to regain possession of the road, and a conflict between armed men seemed imminent. The decision of Justice Adams is a victory for the railroad company, but it is not likely that this will end the controversy.

OHIO.

WASHINGTON COUNTY.

GLENDALE OIL COMPANY.—A press dispatch from Marietta says that this company has made a strike in the Berea Grit, on the Becker Farm, six miles east of Marietta, which, unless all indications fail, will prove a gusher. From the knowledge of the Berea and the indications are that the well will make several hundred barrels per day. The strike has caused much excitement among Ohio oil men.

OREGON.

LANE COUNTY.

BOHEMIA.—It is reported that the mills at this place have shut down on account of the heavy snow. The new mill on the Champion mine was run 18 days with good results. A force of prospectors will be placed on the Annie mine to run tunnels during the winter.

GRANT COUNTY.

LONG CREEK.—It is feared that trouble will result from the rival claimants to the No Man's Land and Jordan mines in the Black Butte District. John Rudio and others, who are now doing assessment work on the properties, have been ordered off by Messrs. Gage and Herrman, owners of the larger part of the district.

PENNSYLVANIA.

ANTHRACITE COAL.

Fire in the old workings of the Sterrick Creek shaft known as Brown's Coal Bed, near Scranton, was discovered on January 5th. A large force of men were at once put to work to prevent its entering into other portions of the mine, and the fire was under control on the following day.

CRANBERRY COLLIERY.—A fire started in C. Pardee & Company's Cranberry colliery, Hazleton, on January 4. The high wind soon fanned the flames into a fury and the few attendants did not have time to get at the fire extinguishers kept on the premises. The breaker was one of the largest in the region, with two underground openings leading to it, and employed 600 hands. Across the ridge stands Crystal Ridge colliery, operated by the same company, and shortly after the fire at Cranberry got under way another blaze started in the tower there. Fortunately the watchman and attendants at Crystal Ridge discovered the blaze there when in its incipency, and succeeded in confining it to the tower. The Cranberry breaker, however, burned so fiercely that nothing could be done to save it. The tower leading to the shaft on the south side of the breaker was burning also and only the strong north westerly wind prevented the flames from sweeping down the mine opening.

LUKE FIDDLER.—An accident occurred at Luke Fiddler colliery at Shamokin on January 5th, by which four men lost their lives. They were going back into the shaft after a blast, and had been lowered to a distance of 300 ft. from the bottom when the rope caught and the men were thrown headlong down the shaft to instant death. The colliery is operated by the Mineral Railroad and Mining Company.

MR. LOOKOUT.—The breaker on this colliery, owned by Simpson & Watkins, of Scranton, and located at Wyoming, was burnt down on January 8th. The breaker was erected about four years ago at a cost of \$150,000. The fire broke out directly over the engine house and is supposed to have originated from an overheated journal. In a few minutes the flames ignited the large amount of coal dust and an

explosion followed. Foreman William Davis put a large force of men to work manning the fire-fighting appliances, but their efforts were of no avail. Word was sent to General Superintendent J. B. Crawford and Harry P. Simpson, of Scranton. The large structure spanned the Bloomsburg Division of the Delaware, Lackawanna & Western Railroad tracks, and has blocked traffic on that line. It was built of Georgia pine, and was insured for \$83,000. Mr. Simpson has stated that the company would immediately begin the work of rebuilding the breaker on a much larger scale. The breaker and mine gave employment to nearly 1,000 men and boys, all of whom will now be idle.

PARK COLLIERY No. 2, owned and operated by Lentz, Lilly & Co., two miles from Mahanoy City, was burned on January 4th. The origin of the fire is unknown. The entire structure was consumed. It was the largest individual breaker in the regions and gave employment to 700 hands. Loss, \$150,000; insured.

SCHUYLKILL COAL EXCHANGE.—The following collieries drawn to return the prices of coal sold in December, 1895, to determine the rate of wages to be paid, make the following returns as the average rates for that month: Turkey Run, \$2.34; Girard Mammoth, \$2.18; Richardson, \$2.16; Bast, \$2.41; Lawrence, \$2.77. The average of these rates is \$2.37 and the rate of wages to be paid for last half of December, 1895, and first half of January, 1896, is 4% below \$2.50 basis.

BITUMINOUS COAL.

JENKINS COAL COMPANY.—According to a press dispatch from Pittsburg, the entire interest and equipment of the T. M. Jenkins Coal Company has been absorbed by James Jones & Son. The money consideration, including the amount paid for considerable property bought by the Jones firm from other persons, will aggregate \$250,000. By this deal the Jones firm ranks with the largest firms engaged in the local river trade.

NEW YORK & CLEVELAND COAL COMPANY.—W. P. De Armit, president of this company, notified its employees recently that, beginning with the new year, the mining rate would be 6c. per ton, an advance of 5c. over the rate then paid. The increase was voluntary and indicates that a uniform rate of 6c. for this year will be arranged by the joint scale committee of operators and miners. If a uniform rate is established there, the miners claim it will mean better wages in Ohio, Indiana and Illinois.

NORTHAMPTON COUNTY.

A disastrous cave-in occurred at F. M. Howers slate quarry at Howerton, lately. The workmen had warning and no one was hurt. It will cost \$5,000 to remove the debris.

SOUTH DAKOTA.

LAWRENCE COUNTY.

(From Our Special Correspondent.)

HOMESTAKE MINING COMPANY.—This company has opened up a vein of silicious ore in the Whale Mine near the Highland hoist, much of which runs very high in gold. The vein is about 16 in. thick and is very soft and brittle. Several men are at work there, and the ore is being carried away in bags.

KILDONAN.—A large gold brick, the first one produced in the new Kildonan mill, was shipped East on December 18th. Messrs. McKay and Sumner, the principal owners of the mine and mill, were highly pleased with the result of the initial run. The mill is now running steadily, treating from 75 to 90 tons of ore per day. A new engine of 65 H. P. has been ordered, which will be put in place as a reserve to operate the roadsters, in case it becomes necessary to shut down the big tandem engine, that now runs the entire machinery and the electric dynamos. Next season the owners of the mill expect to double the present capacity of the plant, the present building having been built and arranged with that end in view.

PENNINGTON COUNTY.

SHERIDAN COPPER DISTRICT.—The best developed and most promising copper prospects in the Black Hills have been found near Sheridan, where the famous Blue lead is located and on which several locations have been made, says the *Deadwood Pioneer*. During the past few weeks interest in these claims has been revived, at first by the bonding to S. A. Flower of a control of the stock of the Gray Eagle Copper Mining Company, and by the more recent sale of three claims on the Blue lead by Henry Schenk to a syndicate of Ohio capitalists. The new owners of the Schenk property will run a tunnel to strike the ledge exposed at the apex by the Gray Eagle Company. The Ohio syndicate, known as the Black Hills Copper Mining and Smelting Company, is said to have ample capital to develop the mines and erect a smelter, when thought practical.

UTAH.

SALT LAKE COUNTY.

NIAGARA MINING COMPANY.—An important strike is reported from Bingham in the property of this company. The strike was made at the breast of a drift 100 ft. from the tunnel. The point at which the ore was encountered is in the ground of the Spanish claim and in reaching it a tunnel 2,500 ft. has been driven in addition to 100 ft. of drifting. The ore is a sulphide, and while the streak at this time is small, the walls are gradually widening out. The ore is 40 ft. lower than the point at which it was left above.

VIRGINIA.

PULASKI COUNTY.

FORNEY MINING COMPANY.—This company has been developing its zinc property near Allisonia, on the Cripple Creek branch of the Norfolk & Western Railroad, for the past two or three years, and is reported to have discovered several good veins of ore, both sulphide and carbonate.

WYOMING.

ALBANY COUNTY.

(From Our Special Correspondent.)

ALBIAN.—Work was resumed a few weeks ago on this property. The vein was found to be almost flat, with a streak of rich ore on the foot walk. Last week the vein took a sudden turn and is now dipping at an angle of 80°. The change in the dip has also changed the appearance of the vein. The property is one of the best prospects in this section.

CARBON COUNTY.

(From Our Special Correspondent.)

RAWLINS MINING AND SMELTING COMPANY.—This company is working its iron mines constantly. The company is not only shipping this ore as a flux to the Denver smelters, but also to the paint mills. The Rawlins hematite produces as good an iron paint as is known in the Rocky Mountains.

LARAMIE COUNTY.

(From Our Special Correspondent.)

IRON ORE.—Mr. Fredericks, of Frederick, recently discovered a deposit of high-grade limonite. The discovery is only a few miles from the celebrated Heartville iron mines and will no doubt be of great value to mix with the Heartville hematite for the production of certain grades of pig iron.

NATRONA COUNTY.

(From Our Special Correspondent.)

WYOMING SYNDICATE COMPANY.—This company, composed chiefly of Chicago people, owns some rich soda deposits near Johnstown. It has erected a large plant and expects within a short time to commence the manufacture of bicarbonate of soda. The proposition is a new one. The deposits is a mixture of sulphate and carbonate of soda. This company expects to convert the carbonate into a bicarbonate at a small expense and will pay no attention to the sulphate.

UINTA COUNTY.

(From Our Special Correspondent.)

P. J. QUEALY COMPANY.—Mr. Quealy, one of the pioneer coal men of the state, has opened up a valuable coal mine near Harris Fork, in the same field that the Diamond mines are located. The Quealy Company is now arranging for a large plant, and expects to open a large mine. The coal vein is 6 ft. thick.

FOREIGN MINING NEWS.

FRANCE.

COMPAGNIE FRANCAISE DES PETROLES DE L'AMERIQUE DU SUD.—This company, with a capital stock of 2,000,000 francs divided into 20,000 shares, has been organized in Paris to obtain, buy, develop and work petroleum concessions in South America and to establish refineries, etc. The directors are Constant Bechu, Ubaldo Boquet, Leon Landais, Alexis Tricart and Louis Vacheron.

GERMANY.

Exports of fuel from Germany for the ten months ending October 31st, are reported by the "Kohlen Zeitung" as follows, in metric tons:

	1894.	1895.
Coal.....	7,814,186	8,191,932
Coke.....	1,891,802	1,903,731
Brown Coal (lignite).....	16,672	15,468
Briquettes.....	156,195	165,709

Austria-Hungary and France, were the chief takers both of coal and coke. The lignite all went to Austria. Imports for the ten months were as follows, in metric tons:

	1894.	1895.
Coal.....	3,261,384	4,145,268
Coke.....	34,319	572,265
Brown Coal.....	5,761,258	5,786,650
Briquettes.....	69,934	58,557

The larger part of the coal came from Great Britain. The coke was chiefly from Belgium, and that country also furnished most of the briquettes. The brown coal all came from Austria.

MEXICO.

CHIHUAHUA.

DON ENRIQUE MINING COMPANY.—The property of this company was sold at auction in New York recently. It consists of 300,000 acres of land situated in the District of Abasco, 10 silver mines, two ranches, a reduction works and 14 houses. Don Enrique Miller, a Mexican prospector, discovered these mines, and when the company was organized to develop them it was named after him. Charles T. Barney, of New York, was one of the largest stockholders. Don Enrique Miller was made the manager. About five years ago the works of the company were destroyed by fire. Since that time all operations have been suspended, and the mines have filled with water. Besides the capital furnished by Mr. Barney, some \$75,000 was borrowed for working expenses from the Banco Minero, of Chihuahua, and this loan becomes due next month. It was decided by the stockholders to close up the affairs of the old company and reorganize.

Mr. Barney assigned his claim to Edward L. Patterson, of the law firm of Arnold, Greene & Patterson, No. 3 Broad street; Mr. Patterson secured judgment for \$50,000 and Gerald Hull Gray was made receiver of the company. At the sale the receiver offered the equity of the company in all its properties, together with all privileges, franchises, government concessions, tools, machinery, vehicles, cattle, etc. The equity was knocked down at the nominal bid of \$1,000, to Herbert L. Terrill, of No. 80 Broadway. Mr. Terrill represents a syndicate composed of Charles T. Barney, Oliver H. Payne and himself, and it is proposed to pump out the mines and resume their development. Mr. Terrill will go to Mexico next month.

COAHUILA.

LA EXPLORADORA.—A rich find of ore is reported from Viesca, the fortunate company being La Exploradora, which is composed of Saltillo capitalists. Mr. F. Rodriguez Gonzalez is the president. The present assay of the ore in the mine is 184 oz., and the best 1,930 oz. of silver to the ton. This company owns several other claims, all situated in the Aguachili mountains, and expects to cut the same vein in some other claims.

SANTA MARIA.—In the same mountain a company of Parras gentlemen are working the Santa Maria mine, which produces at present about 15 tons of ore weekly, running on the average 12% copper, and from 50 to 100 oz. of silver per ton. This company has sunk two shafts and is at present opening a tunnel, which will facilitate the extracting of large quantities of ore as soon as they cut the vein. On the same mountain are located La Coahuilense and La Bufo. The last named has very rich ore, as a sample shipment of two tons of ore to a Monterey smelter realized to its owners, after paying the expenses of extracting, freight and smelting charges, \$150.

HIDALGO.

LA BLANCA mine is improving daily, and 500 cargass a week are being extracted. The extraction at Encino y Anexas has now reached 200 cargass per week of 20 marc ore, and the mine is looking well. It is reported that the ore from the Santa Gertrudis is improving very much in quality. A fairly good vein has been encountered in Guadalupe Hidalgo. Owing to the pumps in the Maravillas not being of sufficient power to enable the company to sink the shaft, larger cylinders and all the necessary machinery have been ordered and received from England, and it is expected that within a month the new pumps will be working. The required shaft will then be sunk.

LATE NEWS.

TENNESSEE COAL, IRON AND RAILROAD COMPANY.—This company has given notice that from January 10th the wages of its 5,000 coal miners will be reduced 5c. per ton, in accordance with the sliding wage scale contract in effect between the company and its men, whereby 37% c. is to be paid for each ton of coal mined when iron is \$8.50 or less per ton, and an advance of 2 1/2 c. per ton in wages for each rise of 50c. per ton in iron prices. Other companies which advanced wages last summer will also put the reduction in force, so that 10,000 miners will have their wages cut 11%. The miners are dissatisfied, but it is thought they will agree to carry out the present contract, which expires in July.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Jan. 10
Statement of shipments of anthracite coal (approximated) for week ending January 4th, 1896, compared with the corresponding period last year.

	1895.		1896.
	Week.	Year.	
Pennsylvania Railroad.....	57,755	57,755	51,449
Phila. & Reading Railroad.....	236,339	236,339	194,688
Totals.....	294,094	294,094	246,147

PRODUCTION OF BITUMINOUS COAL, in tons of 2,000 lbs., for week ending January 4th, and year from January 1st:

	1895.		1896.
	Week.	Year.	
Shipped East and North:			
Allegheny, Pa.....	45,665	45,665	35,170
Barclay, Pa.....	.....	.....	.....
Beech Creek, Pa.....	68,266	68,263	65,436
Broad Top, Pa.....	.....	.....	6,412
Clearfield, Pa.....	101,021	101,021	79,252
Cumberland, Md.....	.....	.....	4,259
Kanawha, W. Va.....	.....	.....	73,781
Phila. & Erie.....	806	806	1,813
Pocahontas Flat.....	.....	.....	43,361
Totals.....	215,758	215,758	344,813

* Week ending January 7th.

	1895.		1896.
	Week.	Year.	
Shipped West:			
Monongahela, Pa.....	12,418	12,418	12,221
Pittsburg, Pa.....	56,123	56,123	42,848
Westmoreland, Pa.....	41,932	41,932	91,596
Totals.....	90,473	90,473	117,665
Grand totals.....	306,231	306,231	463,878

Production of coke on line of Pennsylvania Railroad for the week ending January 4th, 1896, and year from January 1st, in tons of 2,000 lbs.: Week, 125,98 tons; year, 62,336; to corresponding date in 1895, 96,481 tons.

Anthracite.

With weather conditions in favor of the seller, and an increased coal consumption, the anthracite

market is nevertheless far from being strong, and prices have continued to sag.

The cold weather of the past week should make a difference of at least 50,000 tons a day in the consumption of coal throughout the country, and in addition it causes a natural restriction in the production.

In this market, while there are not many old orders to be filled, we find that dealers are pretty well supplied. Moreover, as is the case at this season of the year, there have been no large orders placed, most of the buying having been of a hand-to-mouth nature. The character of the business is, therefore, not calculated to advance prices after all, especially as some companies have a considerable amount of unsold coal above ground on cars or elsewhere. We have been assured by two of the largest companies that their stocks just now are very light but, as we have stated, there are others of whom this is not true. The production has been fairly heavy, although owing to natural causes, some restriction has been observed.

Prices are weaker. Three weeks ago the demand was so light that dealers would not have bought much coal even if "concessions" had been offered to them. Just so soon as the demand increased and dealers began their shopping tours "inducements" were in order. For average grades of coal we quote: Stove, \$3.35@3.40; egg and chestnut, \$3.10@3.20; broken, \$2.90@3.00, all net on board. Some off grades have sold for less and certain coals for more, but the above are fair average prices. We have received advices from Boston informing us that a certain interest has been offering stove coal there at \$3.85 alongside below bridges. Even if this interest had made an arbitrary rate of 50c. such a quotation would mean \$3.25 on board here.

We have been assured by prominent officials that the rumored president's meeting is a myth. There has been no action taken by any president to bring about such a meeting, and it does not look probable at this writing that any such gathering will take place this month. The market goes along in a dull routine way. It is yet too early to decide what the "coal policy" of the various companies will be during the current year. In the meantime the public should learn that the retailers are getting their coal cheaply, and it should profit thereby.

Bituminous.

The soft coal trade is very dull. Outside of a few hold-over contracts that call for continuous deliveries throughout both winter and summer months, most of the producing companies have but very few orders on their books, and the few are generally limited in some way that prevents shipment. This, of course, calls for a reduction in the output of the mines which, however, is not uncommon at this time of the year, when ice and snow interfere so much with free shipments.

Most of the companies keep standing in cars at the various shipping ports coal enough for one or two cargoes to take advantage of any possible low charter that might apply on such limited orders as they may have on hand, or any new order that may come in. It is also desirable not to have too much coal on hand at this time on account of the freezing of it on the cars, which makes it extremely difficult to handle, as it practically has to be re-mined out of the cars, which breaks it up too much.

The Sound ports continue to consume the most coal at this time, the far East mill business being practically nothing. New York trade comes next. All rail business is comparatively good, being the steady of all in the way of taking coal.

In regard to the proposed combination, some of the trade state that if the plan is not brought forward within the next week or ten days it will be ineffective during the coming contract season. This is, to some extent, the history of previous efforts to control the market.

What little transportation there is good. The car supply is also good, there being more cars in the hands of the railroads than can be used and embargoes to points on "foreign" roads are being removed.

Vessels are very scarce, and the different shipping ports are full of ice, making charters almost impossible to secure. We quote nominal rates of freight from Philadelphia as follows: To Boston and Salem, 95c.; Portland, 95c. @ \$1; Sound ports, 80c.; Wareham, 90c.; Portsmouth, \$1@1.05. From the lower ports rates are 10@15c. higher.

Nominal prices are unchanged. We quote f. o. b. at the various ports, as follows: Norfolk and Newport News, \$1.90@2.15; Baltimore, \$2@2.20; Philadelphia, \$1.75@2.20; New York harbor shipping ports, \$2.20@2.65; alongside New York harbor, \$2.40@2.75; alongside Boston, \$2.75@3.

The payment of a semi-annual dividend of 2 1/2% by the Maryland Coal Company has been favorably received by more people than the stockholders. To the excellent management of this company and the superior grade of its product are doubtless due the good showing. The company expects to retire \$67,000 of bonds which mature in November next. The company paid 4 1/2% during 1895, and has \$35,000 surplus, which will be devoted to the redemption of the bonds. The company is to be congratulated on its able officers.

Buffalo, N. Y. Jan. 9.

(From Our Special Correspondent.)

The cold weather which prevailed for several days, the thermometer at one time denoting four degrees below zero, was good for the coal trade, and business was brisk in consequence at unchanged quotations.

Yesterday and Tuesday the temperature was higher with occasional flurries of snow. It was noted in some portions of the interior of this State that the thermometer fell as low as 20° below zero! Supply of coal, both anthracite and bituminous, fully adequate for all the requirements of the trade. Coke fairly active and firm.

Lieut. Charles S. Ripley, of the United States navy, has been appointed successor to Lieutenant Blow, as the officer in charge of the hydrographic department of the great lakes.

The directors of the Cleveland Steel Barge Company closed a contract with a New Jersey firm to construct for them three steel propellers and 10 steel barges, each 100 ft. long, 18 ft. wide and 12 ft. deep. They will be built this winter and will run next season between New York and Cleveland by the Hudson River, the Erie Canal and Lake Erie.

Indications all point to restricted appropriations for river and harbor improvements by Congress this year in the lake districts.

There passed through the lake portage ship canals in 1895, 328,000 net tons of coal, bound west.

The Toronto, Hamilton & Buffalo Railroad is practically completed, and a trip was made over the line last Saturday. It is understood that this connection will be used by the Canadian Pacific Railroad as a means of entering Buffalo, and, as a consequence, using one or the other of the railroads running to New York and elsewhere.

Chicago, Jan. 8.

(From Our Special Correspondent.)

Through the instrumentality of a severe cold wave the Chicago coal market assumed a livelier appearance, but it only lasted while the cold weather was here. The few closing days of the week brought warmer weather, and in consequence trade quieted. It is more and more evident that this market depends on the state of the atmosphere; for with the advent of a particularly cold spell business becomes brisk enough to suit anybody, but just as soon as it begins to warm up then trade contracts in proportion. Freight rates as per agreement having been advanced 2 1/2c. per ton on hard coal from the East, the amount of coal brought here to anticipate the increased cost of transportation has been large, and there is an abundance of anthracite coal in town at the present time. Prices per ton have increased somewhat, though they do not indicate that all of the advance in freight rates has been added.

The bituminous coal market for the week has been good, though, like hard coal business, it settled a little toward the end of the week. Most of the buying is for immediate wants, despite the fact that coal can be had at rates that were never more advantageous to the consumer.

Coke has been advanced 35c. The quantity of coke in Chicago is large, dealers having been stocking up in anticipation of a rise.

Pittsburg, Jan. 9.

(From Our Special Correspondent.)

Coal.—The Ohio River is again closed and navigation suspended; many of the boats that left on the last run are still tied up between this point and Cincinnati where they will remain for the present. The weather during the past 24 hours has moderated very materially. The weather superintendent promises rain and sufficient rise for another coal run. There is now loaded sufficient coal for another run. Most of the mines are in full operation, producing plenty of coal. Prospects are brighter; investigating committees of miners and operators find uniformity prevailing in the Pittsburg district.

Pittsburgers have bought 1,500 acres of coal land of the Connellsville coking coal; the coal lies on Jacob's Creek, and is the largest tract of coal land that has been sold in the Connellsville region for several years. The deal covers about 20 tracts in that neighborhood for \$165 per acre. The purchase price will aggregate about \$247,500. The sale is made to Herbert De Puy, of Pittsburg, who is supposed to represent Pittsburg capitalists; the field will be developed at an early day.

Connellsville Coke.—There was a large falling off in coke movements chargeable to the holidays. Shipments have taken a big drop, and as many of the plants are idle no improvement is looked for the present week. The demand is expected to fall off the present month, which is in doubt, owing to the advance in the price to \$2 per ton, but the shipments will likely remain about the same. For the week they were 158,032 tons, a falling off compared with the preceding week of 25,572 tons. Ovens in blast, 16,164, with 1,783 idle; during the week 125 ovens were added to the active list. There are ample ovens in blast now to supply all demand for coke until after the effects of the New Year charges are over. An all round five days' run was made. The week's shipments amounted to 8,719 cars, distributed as follows: To Pittsburg, 2,098 cars; to points East, 1,791 cars; to points west of Pittsburg, 4,830 cars.

The Illinois Steel Company of Chicago, after making unsuccessful efforts to renew 1895 contracts in Connellsville, has contracted with the Pocahontas Coal and Coke Company, the selling agency of the Flat Top and Pocahontas coke fields, on the Norfolk & Western Railroad, for 500,000 tons of coke to run through 1896, to be delivered at the rate of from 30,000 to 40,000 tons a month. This order will be distributed pro rata among the Norfolk & Western mines. The Illinois Steel Company used Flat Top coke in 1892 and found it satisfactory.

Shanghai, China.

Dec. 6.

(Special Report of Wheelock & Co.)

Coal.—Our market for Japan coal has assumed a brighter appearance since we last wrote, and a quiet little business has been done, though upon pretty low terms. Our friends in Japan still report an advance in prices, but this has in no way affected us here; our stocks are very large, and can be drawn upon for some time yet, and we see no prospect of improvement as, when the Northern ports are closed, there will be any amount of tonnage available and cheap at that, and there is every reason to suppose that we shall still be able to obtain coals, if not at lower, at any rate at present quotations. There have been sales of Komatsu coal at 3 65 taels per ton ex-godown and further inquiries at same rate. Cardiff has relaxed again into a quiet state, nothing having been done and no demand. American anthracite has been changing hands at 11-50@12 taels per ton, but the demand is very small. The *Lillian J. Robbins*, with 500 tons on board for this, having put into Saigon dismantled, her cargo will probably not be brought on here. There has been nothing of consequence done in Sydney Wollongong; the deliveries have been very small and the year will close with very large stocks on hand. Quotations are for Cardiff, 10-50 taels per ton; Australian Wollongong, 9-50 taels per ton. For Japan coal we quote for Takasima lump, 5-75 taels per ton; Namazuta lump, 4-75 taels per ton; other sorts 3-25@3-50 taels per ton for such as can be procured.

Kerosene Oil.—There has been a considerable business done among the natives, especially in Devoe's at prices ranging from 1-60@1-71 taels per case, according to prompt, large native operators having apparently entered the field. Russian has also been dabbled in at 1-62 1/2 taels per case, and Batoum bulk at 1-57 1/2 taels per case. We have heard of nothing from first hands, but 1-65 taels we believe is being asked. Including the arrival of 40,000 cases Russian on December 1st, our stocks in godowns are now 195,000 cases American and 190,000 cases Russian the equivalent of 140,000 in Batoum bulk. Quotations are: For American Devoe's 1-69 taels per case, and Chester, 1-65 taels per case; Russian Batoum, 1-62 1/2 taels per case, and Batoum bulk, 1-57 1/2 taels per case.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Jan. 10, 1896.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending				From	
	Jan. 11, 1895.	Jan. 10, 1896.	Jan. 9, '95.	Jan. 10, '96.	Jan. 9, '95.	Jan. 10, '96.
Anthracite.	38	21,632	51	26,700	33,933	42,428
Coke.	124	14,123	169	180,200	228,050	257,429
Charcoal.	23	5,140	21	4,900	8,077	7,000
Totals.	185	171,895	240	221,800	270,120	316,857

The general condition of financial affairs, to which reference is made elsewhere, affects the iron trade in common with all others. The uncertainty attending the future cannot fail to have a depressing influence, for the time at least. The first result is a contraction in output, and we hear of a number of furnaces going out of blast, while very few new ones are coming in. Prices generally are not yielding much, however.

The Lake ore contracts for the season are, as a rule, still unsettled, and from all appearances they will remain so for some time to come. There is so much uncertainty as to the future, that furnacemen are not ready to agree to any considerable advance.

Iron ore imports continue large, most of them being on contracts already made. Cuban and Spanish ores are the bulk of the imports.

There is to be an advance to \$2 per ton on Connellsville coke, it is understood. This increase over the recent price of \$1.60 will probably bring out coke from the Pocahontas and other coal-fields, more abundantly than heretofore.

NOTES OF THE WEEK.

The steel for the new battle-ships to be built at Newport News is to be furnished from Pittsburg mills.

The National Association of Manufacturers of the United States will hold its first annual meeting in Chicago, beginning January 21st. One of the subjects to be discussed is the promotion of export trade.

Some time ago the Association of American Steel Manufacturers appointed a committee—Charles L. Taylor, of the Carnegie Steel Company; Percival Roberts, Jr., of the Pencoed Steel Works, and Charles S. Price, of the Cambria Iron Company—to consider the question of adopting standards for structural shapes. It is understood that the committee, after much discussion and correspondence, has agreed upon standard dimensions and formulas for beams and channels, which will be submitted for adoption.

The German iron trade at the close of the year is reported in a satisfactory condition, and the mills are generally well supplied with home and foreign orders. The pig iron production of the German furnaces for the eleven months to November 30th was 5,278,333 metric tons, an increase of 215,304 tons, or 4.2% over the corresponding period in 1894.

New York. Jan. 10

The local market is uneasy in sympathy with the general financial condition. Apart from the usual lull pending stocktaking and the settlement of last year's business, there is a doubt as to the volume of business to be expected which prevents the closing of contracts for any considerable amounts. At the same time the shops and foundries in this section are fairly busy, though some complaints are heard of the absence of new orders. The general feeling is that business will be uncertain for a month yet. Individual opinions differ very widely, but the feeling of uncertainty is common to all.

Pig Iron.—There are a good many inquiries for pig iron for future deliveries, and a good deal of negotiation is going on; but no large contracts are reported. There has been some small buying for immediate use, and some large concerns have been taking small quantities to tide them over for the present. The greatest hesitation seems to be as to quantities needed, though more confidence is expressed as to the future than was the case two weeks ago. As we anticipated, there has been a general reduction on Southern irons, in spite of the refusal of the makers to lower nominal rates. Prices are generally a little lower than in the closing week of 1895.

We quote for tide water deliveries: Northern iron, No. 1 foundry, \$13.25@13.75; No. 2, \$12.25@12.75; gray forge, \$11.75@12.25. For Southern irons prices are: No. 1 foundry, \$12.75@13.50; No. 2 foundry, \$12.25@12.75; No. 1 soft, \$12.25@12.75; No. 2 soft, \$11.75@12.25; forge, \$11.50@12.

Cast Iron Pipe.—There are quite a number of inquiries, and two or three good contracts have been let for New England delivery at prices not made public. Makers look forward to at least a fair spring business.

Spiegel-isen and Ferro-Manganese.—The market is quiet, and we continue to quote nominally \$51.50@52 for ferro and \$25@25.75 for spiegel-isen.

Steel Billets.—The market is quiet with few sales and prices unchanged; \$18.50@19 for billets at tide water. For wire-rod we quote lower prices, \$25@26.50 for New York delivery.

Merchant Iron and Steel.—While the market is quiet the volume of small orders keeps up better than was expected. For the opening of the year, indeed, business is good, and this is the strongest section of the market. In prices no material changes are reported. Bars are 1.25@1.40c. for common and 1.35@1.50c. for refined. We quote for soft steel bars 1.30@1.40c.; open-hearth machinery steel, 1.50@1.60c.; steel hoops, 1.65@1.75c.; steel axles, 1.65@1.80c.; links and pins, 1.60@1.75c.; tire steel, 1.85@2c.; spring steel, 2.10@2.25c. Rivets are 2.20@2.30c. for steel, and 3@3.30c. for iron.

Structural Iron and Steel.—New projects for building have been checked for the present. Some large ones are said to be in preparation for spring, but negotiations generally depend upon the financial situation. The contract for the material for the Appraisers Stores in New York has been let to Post & McCord; it is understood that the steel will come from Pittsburg. Prices are a little lower, and we quote, for angles, 1.55@1.65c.; channels, 1.65@1.75c.; tees, 1.75@1.85c.; beams (up to 15-in.), 1.60@1.70c. for large orders, and 1.85@1.95c. for small lots.

Plates.—Business has been light, and the range of prices is lower for most kinds. No large orders can be noted, and smaller ones are generally of the retail class. Universal mill plates are 1.50@1.60c. For steel plates we quote: Tank, 1.45@1.55c.; boiler shell, 1.55@1.65c.; good flange, 1.80@1.95c.; firebox, 2.10@2.40c. Charcoal iron plates are 2.20@2.30c. for shell, 2.70@2.80c. for flange, and 3.20@3.30c. for firebox.

Steel Rails and Rail Fastenings.—Rails are unchanged at \$28 per ton at mill, or \$28.75 at tide-water for standard sections. For street rails the financial uneasiness has checked for the present inquiry for new projects.

Rail fastenings are quiet and prices generally lower. Quotations are: For fish and angle-plates, 1.4@1.50c.; spikes, 1.65@1.80c.; bolts, 1.95@2.05c.; for square nuts, and 2.05@2.15c. for hexagon nuts.

Scrap Iron.—The market for cast scrap is quiet just now and there is little immediate demand. Stocks are small, however. In the absence of recorded transactions we quote \$9.50@10.50 per ton.

Buffalo. Jan. 9.

(Special Report of Rogers, Brown & Co.)

The pig iron market in this vicinity for the past week has been weak, and in general the sales reported have been of the hand-to-mouth variety, indicating a feeling on the part of buyers that the bottom has not been reached, and that they will see lower prices later on. On the other hand, a few of the larger consumers have been sounding the market, and indications point toward a heavier tonnage in the next few weeks. The usual holiday dullness has given the furnaces that have been behind with their orders a much needed chance to catch up with their order book, and affords them an opportunity to prepare for the business of the new year. The week closes with not only Southern iron stronger, but local irons strong also. This has been caused largely by it being quite apparent to furnaces in general that the much talked of advance in coke has come to stay for a while at least. This, together with the advance in ore, and the heavy sales made by local furnaces during the past few weeks has caused them to be much firmer than for some time past. We are

still permitted to quote on the cash basis, f. o. b. cars, Buffa'o: No. 1 foundry strong coke iron, Lake Superior ore, \$13.50; No. 2 foundry strong coke iron, Lake Superior ore, \$13; Ohio strong softener, No. 1, \$16; Ohio strong softener, No. 2, \$15; Jackson County silvery, No. 1, \$16.25@17; Southern soft, No. 1, \$15.15; Southern soft, No. 2, \$14.65; Hanging Rock charcoal, \$18.50; Lake Superior charcoal, \$15.75@16.25.

Chicago. Jan. 8.

(From Our Special Correspondent.)

The condition of the iron trade of Chicago during the week just passed has been unsatisfactory to dealers in general. All lines show that little business has been transacted, and it looks as if there will be a slow trade until the usual yearly inventory of stocks has been taken. Again, there appears to be a great uncertainty as to prices, and consumers in general are seemingly holding off from buying in quantity on that account.

Pig Iron.—There have been but few sales of pig iron in this market during the week. Those who are buying are ordering for only limited amounts, and it looks as though consumers would continue to buy in small quantities for some time to come. The business of the week was divided about evenly between the Northern and Southern furnaces at prices that are a little off from those quoted: Lake Superior charcoal, \$14@15; local coke foundry, No. 1, \$14@15; No. 2, \$13.50@14; No. 3, \$13@13.50; local Scotch foundry, No. 1, \$14@15; No. 2, \$13.50@14; No. 3, \$13@13.50; Southern coke No. 2, \$12.85; No. 3, \$12.6; Southern, No. 1, soft, \$13.10; No. 2, soft, \$12.85; Southern silveries, No. 1, \$14; No. 2, \$13.50; Jackson County silveries, \$14.50@16; Ohio silveries, No. 1, \$15@15.50; No. 2, \$14.50@15; Ohio strong softeners, \$15@15.50.

Structural Material.—A few fair-sized contracts for building and bridge material have been closed during the past week, most of them having been on the market for some weeks past. There is nothing new in sight of any importance. Prices are lower, as follows: Beams and channels, 1.75@1.80c.; angles, 1.50@1.55c.; plates, 1.55@1.60c.; tees, 1.75@1.80c. Small lots from stock are quoted 1/4 to 1/2c. higher.

Bar Iron.—The market is a waiting one, and consumers are apparently determined to abide their own time. Quotations are now 1.30c., and it is presumed that after February 1st 1.35c. will be in vogue.

Steel Rails.—No business of any account has been placed in Chicago during the week. The Illinois steel mills remain closed.

Billets.—No business has been transacted by the mills here, and there is little to indicate an early improvement. There are no quotations.

Old Rails and Wheels.—Some small business has been transacted in old iron rails at \$15@15.50. No business is reported in old wheels, their quoted price being about \$14.

Cleveland, O. Jan. 9.

(From Our Special Correspondent.)

Sales of iron in this district are practically nil. The market is dead and prices are again weakening. Some small sales of Bessemer iron have been made in the Valleys at \$9.75, equivalent to about \$10.40 at Cleveland, but these are reported to be at second hand, and are said to be under cost of production. Furnace men, if asked for prices, would quote \$13, but there are no buyers, for consumers are not yet convinced that the lowest notch has been reached.

Stocks of pig iron are accumulating, but production, having reached the stage of no profit, is beginning to decrease.

Had there been any desire on the part of the ore-men to fix prices early in the year the present unsatisfactory condition of the iron market would have discouraged them. There has been talk of an advance of \$1.35 in ore this year, or from \$2.90 to \$4.25, but the present feeling among consumers now seems to be that not more than \$4 for standard Bessemer will be realized, an advance of \$1.10 over last spring's prices. The ore-men, however, have not yet established their scale of prices definitely, and they may not do so for some time.

To-day a considerable number of outside ore-men are gathering at Cleveland, and during the next few days meetings will be held here to agree if possible upon the output. The Mesabi companies were not parties to the understanding last year, and their production was unrestricted. Ore-men say that everything now indicates an arrangement during the next few days, whereby all the high-grade producers will regulate their output during the coming season. After this is determined, the question of prices will be taken up. But shippers say they are not in a hurry to quote prices with the iron market in its present depressed condition.

Until prices are fixed there will be no active efforts made to engage vessel charters for the season. All that is now known to have been accomplished in that line is the covering of a block of 300,000 tons from the head of Lake Superior to Lake Erie ports at \$1 by one large shipper, and two boats chartered for the season at \$1.10 by another.

There are no sales of ore at present and prices continue nominal, as follows: Standard specular Bessemer, \$4.25@4.50; standard hematite Bessemer, \$3.75@4; standard specular non-Bessemer, \$3.25@3.50; standard hematite non-Bessemer, \$2.75@3.

Philadelphia. Jan. 10.

(From Our Special Correspondent.)

Pig Iron.—Since last week considerable business has been done in a quiet way in all kinds of pig iron

to cover actual requirement at a slight shading below December asking prices. Southern irons are selling at a trifle less and a few thousand tons, altogether have been taken. Home irons are more particularly wanted, but makers and buyers are unsettled in their views as to what is best to do, on account, partly of coke and ore, while prospects are better. There is no way of approximating to how much business is likely to be done this winter. No. 1 Foundry is selling at \$13; No. 2 at \$12.50; forge at \$11.25@12.

Steel Billets.—Buyers have been obliged to come in and cover but nearly all are still waiting to see what ore and coke will rule at. Makers quoted \$19 to-day, but sales have been made very lately at 18.50. Everything is unsettled as to prices and probabilities. If the ore-men win soon there will be a rush to cover.

Merchant Bar.—The sharp competition for the restricted volume of business is being intensified this week, and still lower figures were named to large buyers, who up to present writing have made no response. We have entered into better conditions. There is said to be a good deal of car building to be given out soon.

Skelp.—Grooved skelp is quoted at 1.30, with only a moderate amount of business.

Sheets.—There is more business this week, and mill-men said on Monday that their orders that day indicate an improvement. Prices are going to be in buyers' favor.

Merchant Steel.—All makers report some improvement in a small way.

Pipes and Tubes.—An improving demand set in on Monday, and some business has been sent to mills.

Plate and Tank.—Two good orders for boat plate were given out for Delaware River shipyards, and some more business is promised. The plate mill outlook has improved considerably within a few days, and mill agents say they are much encouraged with what has opened up this week.

Structural Material.—The work secured this week foots up much better than we expected. Quite a lot of work is to be done this winter. Many buyers waited until the turn of the year as a matter of precaution, and they see no use in waiting any longer, they say. Angles, 1.50; beams and channels, 1.60.

Steel Rails.—The only thing gathered this week, and that from outside sources, is that if the schemes now in the hands of financial people go through there will be lots of girder work.

Old Rails.—The reason why so little business is done in old rails is that buyers will not pay \$14.50.

Scrap.—This week's movements in scrap show the mill men are wanting it. Choice railroad is \$14; No. 1, wrought, \$13; old axle, \$17; axle turnings, \$9.

Pittsburg. Jan. 9.

(From Our Special Correspondent.)

Raw Iron and Steel.—Business during the week, as might have been expected, has been very quiet. The completion of stock taking and repairs, book statements, inventories and preparations for the new year has engrossed attention to the exclusion of much other business. The unsettled financial situation has also restrained any effort to push commercial enterprise so early in the new year; at the same time the undertone of the market seems to be gaining strength daily. The iron trade has not recovered from the holiday inertia, but there is a general expectation of a more active business later in the month. Prices of finished iron continue weak and irregular, and, while inquiries for crude are improving, the situation indicates the necessity for a reduction of output before there shall be any substantial reaction in values. The market for the future is slowly taking definite shape and it is pretty certain that the anticipated squeeze in Lake ore will hardly take place. Certain parties are of the opinion that the Frick Company will not be able to maintain coke prices on the \$2 basis, but others have a different opinion and are confident that the advance in coke has come to stay. It is assured that the demand for iron and steel products the present year will be exceptionally large and it seems equally clear that prices will not reach the high level that was deemed probable when the iron ore men and coke men contemplated advancing prices for their products.

At the present time, however, the demand for iron is only moderate, and there is little likelihood of any activity before another week. The Bar Iron Association that was in session at Chicago concluded its labors after re-classifying rates. The work of the members was to make arrangements whereby the various mills are enabled to compete in each other's home territory; compensation is made for freights, and the amounts thus expended are proportionately pooled. Some Valley furnacemen say the reported 5,000 ton sale of Bessemer in the Valley was not correct; others say the sale was made.

Pig Iron.—There is not much of interest to report in this department; a fair business has been done since the holidays, but there is little to show that prices in the near future will show much change. Michigan ore rates show an advance of \$1.10 per ton over last year's prices. The principal producers of Lake Superior Bessemer ore have fixed prices of standard Marquette and Gogebic Bessemer at \$4 per ton this year; non-Bessemer ore is not included in the agreement. The tone of the

market at the close was prices have evidently been

Tons.	Cash.
5,000 Bessemer, Jan., Feb., Mar., at mill	\$11.00
3,000 Bessemer, Jan., Feb., Mar., Pitts	11.25
2,000 Bessemer, Jan., Feb., Pittsburg	11.10
2,000 Bessemer, Jan., Feb., Pittsburg	11.15
1,000 Gray Forge, Jan., Feb., Pitts	11.50
1,000 Gray Forge, Jan., Valley	10.60
1,000 Bessemer, Jan., Feb., Pittsburg	11.50
500 Bessemer, Jan., Feb., Pittsburg	11.25
500 Gray Forge, Jan., Feb., Pittsburg	11.50
500 Bessemer, Jan., Feb., Pittsburg	10.85
500 Bessemer, Jan., Feb., Pittsburg	11.00
350 Bessemer, Jan., Feb., Pittsburg	11.00
100 Bessemer, Jan., Feb., Pittsburg	11.75

Tons.	Cash.
100 Cold Blast	\$23.50
75 No. 2 Foundry	17.75
50 No. 1 Foundry	18.00
50 Cold Blast	23.50
50 Cold Blast	23.50
25 No. 1 Foundry	17.85

BLOOMS, BILLETS AND SLABS AT MILL.

2,000 Billets, Feb., Mar., at mill	\$36.40
2,000 Billets, Jan., Feb., Mar., at mill	16.30
1,000 Billets, Jan., Feb., at mill	16.25

Cartagena, Spain. Dec. 20. (Special Report of Barrington & Holt.)
Owing to the difficulty in obtaining ore freights only four cargoes have been moved in the month, three of which were of high grade manganiferous ores, two of these going to the United States. A good many steamers, however, are now expected as freights are somewhat easier, though still high for this time of the year. We quote at present for ordinary 50% Portman ore 5s. @ 5s. 2d. per ton; special low phosphorus ore, 5s. 2d. @ 5s. 4d. per ton; extra quality low phosphorus, 6s. per ton; special iron ore, 50% iron, and guaranteed under 0.03% phosphorus, 6s. 8d. per ton; specular iron ore, 60% iron, and guaranteed below 0.03% phosphorus, 8s. 6d. per ton. For manganiferous ore we quote for No. 1, 20% iron and 20% manganese, 13s. per ton; No. 1 B, 25% iron and 17% manganese, 10s. 2d. per ton; No. 2, 31% iron and 15% manganese, 10s. per ton; No. 3, 35% iron and 13% manganese, 9s. 2d. per ton. For manganese ore 35% @ 40%, we quote 1s. per unit.
We quote for iron pyrites, 40% iron and 45% sulphur, 10s. 6d. per ton, and for superior yellow ochre, 42s. per ton. All prices are f. o. b. shipping port, Portman or Cartagena.

METAL MARKET.

NEW YORK, Friday Evening, Jan. 10, 1896.
Gold and Silver.

Prices of Silver per Ounce Troy.

Jan.	St. Ex.	London Pence.	N. Y. Cts.	Value of \$1.10	Jan.	St. Ex.	London Pence.	N. Y. Cts.	Value of \$1.10
4 1/8	30 1/2	66 3/4	517	517	4 1/8	30 1/2	66 3/4	517	517
6 1/8	30 3/4	66 3/4	517	517	9 1/8	30 3/4	66 3/4	517	517
7 1/8	30 3/4	66 3/4	517	517	10 1/8	30 3/4	66 3/4	517	517

Silver has been steady with demand chiefly from India and the Continent. The French Government has bought quite freely for subsidiary coinage. There has been no demand for China and Japan, although it is the opinion of good judges that a complete restoration of good feeling between the two countries, followed by more active trade relations, would broaden the demand for silver in that direction.
We add quotations of London prices for January 1st and 2d were 30 1/2 each day. The New York quotation for January 2d was 63 3/4 c. per ounce.
The United States Assay Office at New York reports the total receipts of silver at 61,000 oz. for the week.

Gold and Silver Exports and Imports.

At all United States ports, November, 1895, and years 1895 and 1894 in coin and bullion:

	Gold.		Silver.		Total excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
Nov.	\$11,066,463	\$592,584	\$5,418,091	\$1,027,033	E. \$17,861,914
1895.	\$1,130,639	\$1,229,593	\$4,677,148	\$1,599,548	E. \$6,178,676
1894.	\$2,917,555	\$20,229,611	\$3,352,917	\$1,336,398	E. \$16,103,443

Imports and exports of gold and silver in ores for

decidedly firmer; bottom reached.

Tons.	Cash.
1,000 Billets, Jan., Feb., at mill	16.15
1,000 Billets, Jan., Feb., Mar., at mill	16.25
500 Billets, Jan., at Wheeling	16.00
500 Billets, Jan., at mill	16.25
MUCK BAR.	
500 Neutral, Jan., delivered	\$20.00
500 Neutral, Jan., Feb.	19.75
STEEL WIRE RODS	
350 Jan., delivered	\$23.00
SHEET BARS.	
1,000 Delivered	\$18.00
1,000 At maker's mill	17.50
SPELTER.	
50 Prime	\$3.75
FERRO-MANGANESE.	
50 80%	\$2.50
50 8%	\$2.75
BLOOMS, BILLETS AND BAR ENDS.	
1,000 Bloom and bar ends	\$13.00
SKELP IRON.	
300 Sheared	\$14.4 m.
300 W. Grooved	1.25 4 m.
200 N. Grooved	1.25 4 m.
SKELP STEEL.	
320 Sheared	1.30 4 m.
20 W. Grooved	1.15 4 m.
100 N. Grooved	1.15 4 m.
SELECT SPEIGEL.	
50 Jan.-Feb.	\$33.00
SCRAP MATERIAL.	
500 No. 1 R. R. Wro't	\$12.50

the eleven months to November 30th are reported as below:

	Gold.		Silver.	
	1894.	1895.	1894.	1895.
Imports	\$57,674	\$1,743,817	\$5,879,558	\$11,399,855
Exports	28,345	335,223	200,982	272,120
Excess, Imports	\$69,329	\$1,408,594	\$6,678,576	\$11,127,735

These imports and exports in ores are not included in the table of exports and imports of coin and bullion given above.
Adding the exports and imports in ores to those in coin and bullion, we have the following statement for the eleven months of the present year to November 30th:

	Exports.		Imports.		Excess.
	Gold.	Silver.	Gold.	Silver.	
Total	\$89,481,862	\$32,975,410	E. \$56,510,452	E. 27,149,865	
Total	\$128,435,130	\$54,774,813	E. \$83,660,317		

The statement includes all United States ports, the figures being furnished by the Bureau of Statistics of the Treasury Department.

Gold and Silver Exports and Imports, New York

For the week ending January 10th, 1895, and for year from January 1st, 1895, 1894, 1893 and 1892:

	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
Week	\$3,527,883	\$1,864	\$1,045,168	\$17,500	E. \$4,532,687
1895	3,527,883	15,589	1,192,398	52,023	E. 4,652,699
1894	5,673,876	36,891	1,191,173	76,652	E. 6,751,523
1893	218,146	143,151	1,728,196	74,787	E. 1,728,494
1892	2,64,495	40,202	1,428,204	20,355	E. 3,48,132
1891	53,346	252,319	839,695	10,872	E. 539,850

Of the gold exported for the week \$44,600 went to the West Indies, the rest to Great Britain. The silver nearly all went to London.

FINANCIAL NOTES OF THE WEEK.

Business generally is in an uncertain temper. The condition of the currency and the complications attending the new issue both affect unfavorably, while the discussions in Congress have also had a disturbing effect. That January will not be a very prosperous month seems to be admitted, though there are some signs of an improvement later on.

The decision of the President with regard to the bond issue has been to call for general bids for the loan—that is, to make it a so-called "popular" loan for \$100,000,000 in 4% bonds, and payment for the bonds is to be made in gold. This action has evidently been taken in consideration of the recent discussions in Congress and in the newspapers.

Notice is given that sealed proposals will be received at the office of the Secretary of the Treasury, at Washington, until February 5th for the purchase of \$100,000,000 of United States 4% coupon or registered bonds, in denominations of \$50 and multiples of that sum, as may be desired by bidders.

The subscription under this call reported have thus far been very few. Very probably many who would be inclined to take bonds in moderate amounts may be deterred by anticipations of difficulty in procuring gold to pay for them. If the loan is taken in small amounts, the chances are that it will benefit the Treasury little more than the first \$50,000,000 loan did. The banks and individuals may furnish the gold, and then take an early opportunity to replenish their stocks by presenting legal tenders to the Treasury for redemption. It is not certain, of course, but quite probable that this will be the result.

Gold exports for the earlier part of the week amounted to \$3,575,000, and \$1,250,000 is reported taken for shipment on Saturday's steamers. On the other hand at least \$500,000 is reported on the way from London. The situation is unsettled, and there is much uncertainty as to further exports. A premium of from 1/2 to 1% for gold coin has been offered in some cases, apparently by parties who want to bid for the new bonds.

There is nothing to prevent a syndicate from bidding for the entire loan and receiving it. In that case some conditions as to procuring the gold might be made; but the only difference then from last year's loan will have been the postponement for a month of a necessary transaction, to the great disturbance of business. It is to be regretted that this course should have been adopted in deference to a supposed public opinion, the actual existence of which is at least doubtful.

The tariff and bond bills passed by the House of Representatives are now in the Senate Committees. The only action taken on them so far is a vote of the Finance Committee in favor of attaching a free silver coinage amendment to the bond bill.

According to the statistics collected by Bradstreet, the total number of business failures in the United States in 1895 was 13,913, as compared with 12,721 in 1894, an increase of 2.2%. This is the largest number of failures ever reported since the record was begun, with a single exception of the panic year, 1893, when the aggregate number of failures was 15,500. As compared with that year the falling off in 1895 is 16%. The total amount of liabilities of failing firms, corporations and individuals in the United States last year aggregated \$158,842,445,

or more than \$9,000,000 in excess of the total in 1891. The grand total of assets of such failing firms, corporations and individuals during the year was \$88,115,539 or more than \$8,000,000 in excess of the previous year's total. The average commercial mortality among all business firms and corporations in 1895 amounted to about 1.23%, as compared with 1.21% in 1894 and 1.5% of the total engaged in business in 1893. The proportion of assets to liabilities in the total of 1895 was 49%, as compared with 50% in 1894, and 52% in 1893. The largest proportion of failures last year was in the West and Northwest.

The statement of the United States Treasury on Thursday, January 9th, shows balances in excess of outstanding certificates as below, comparison being made with the corresponding day of last week:

	Jan. 2	Jan. 9	Change.
Gold	\$6,709,046	\$53,341,194	D. \$4,354,942
Silver	15,215,108	16,156,916	I. 841,808
Legal tenders	81,895,523	81,111,398	D. 3,778,128
Treasury notes, etc.	22,234,693	22,706,578	I. 472,885
Total	\$185,047,776	\$178,223,395	D. \$6,818,780

Government deposits with national banks on the same date amounted to \$14,244,616, a decrease of \$26,401 during the week.

Total United States Treasury notes issued under act of July 14th, 1891, in general circulation and in the Treasury, \$137,747,284. Against these are held in the Treasury 13,715,928 colored standard silver dollars, and silver bullion purchased at a cost of \$124,001,352, making a total of \$137,747,280.

The receipts of the United States Treasury for December were \$26,283,937, and the disbursements \$25,814,317, showing an excess of receipts of \$474,620. For the half of the current fiscal year ending December 31st the receipts were: Customs, \$82,341,273; internal revenue, \$76,884,465; miscellaneous, \$8,312,314; total, \$167,538,053. The disbursements were \$182,962,760, or \$15,394,707 in excess of the receipts. For the corresponding period in 1894 the excess of payments was \$27,464,465.

The following statement shows the coinage executed at the mints of the United States during month of December, 1895:

Denominations.	Pieces.	Value
Double eagles	404,877	\$8,096,514.00
Eagles	25	250.00
Half-eagles	44	220.00
Quarter-eagles	54	135.00
Total gold	494,950	\$8,097,145.00
Standard dollars	320	\$320.00
Half-dollars	36,320	18,160.00
Quarter-dollars	118,320	37,080.00
Dimes	290,320	29,032.00
Total silver	385,280	\$75,592.00
Five cents	140,610	\$7,030.50
One cent	10,050,610	1,005,061.00
Total minor	10,221,220	\$107,826.90
Total coinage	11,011,450	\$8,281,573.90

The value of the total coinage executed for the year 1895 was \$59,616,357 gold; \$5,638,010 silver; \$382,431 minor; a total of \$65,196,798 in all.

The descriptions of money coined at the San Francisco mint in the past two calendar years compare as follows:

	1894.	1895.
Double eagles	\$2,971,000	\$22,870,000
Eagles	250,000	490,000
Half eagles	279,500	560,000
Standard dollars	1,253,000	430,000
Half dollars	2,724,315	551,043
Quarter dollars	662,205	111,170
Dimes	3	112,000
Total	\$25,447,653	\$25,427,213

While the difference between the two years is only \$20,000, there was an increase of \$419,500 in the gold coinage and a decrease of \$439,310 in the silver coinage. Since the establishment of the mint at San Francisco in April, 1854, the coinage has been as follows: Gold, \$870,356,857; silver, \$137,786,623; total, \$1,008,143,480.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending January 4th gives the following totals, comparisons being made with the corresponding weeks in 1895 and 1894:

	1894.	1895.	1896.
Loans and discounts	\$118,807,699	\$493,391,000	\$165,580,700
Deposits	518,524,600	552,847,800	491,614,900
Circulation	17,744,100	11,435,100	13,952,900
Specie	11,073,400	75,867,000	68,954,700
Legal tenders	102,354,400	98,207,000	73,728,700

Total reserve.... \$217,427,800 \$174,074,000 \$143,683,400
Legal requirement.... 129,631,150 138,211,950 122,903,750
Surplus reserve.... \$88,796,650 \$35,862,050 \$20,779,650

Changes for the week this year were increases of \$3,840,000 in surplus reserve; \$1,840,500 in specie, and \$26,200 in circulation; decreases of \$12,885,800 in loans; \$369,100 in legal tenders, and \$9,474,400 in deposits.

The last statement of the Bank of Russia, of date December 1st-13th, shows holdings of 449,990,800 rubles gold and 57,292,800 rubles silver. The total note circulation was 1,060,100,000 rubles. The ruble metal is worth 77c; the ruble paper about 49c. In

addition to the notes in circulation there were 61,180,000 rubles in notes held in reserve.

For convenience of comparison we have grouped together in the table below the specie holdings of the leading banks of the world at the latest dates covered by their reports. The amounts are reduced to dollars, and comparison is made with the holdings at the corresponding dates last year:

	Gold.	Silver.	Total.
Asso. Banks of New York	.....	.....	\$68,551,700
1895	.....	.....	75,867,000
Bank of England	\$227,659,000	.....	227,659,000
1895	174,400,560	.....	194,400,560
Bank of France	383,869,100	\$246,664,800	633,533,900
1895	415,896,524	246,553,020	662,579,544
Imp. Bank of Germany	.....	.....	208,270,000
1895	.....	.....	256,210,000
Austro-Hungarian Bank	120,203,750	63,301,000	183,504,750
1895	76,281,000	69,805,000	146,086,000
Netherlands Bank	17,581,000	31,154,000	51,738,000
1895	20,452,000	34,223,000	54,675,000
Belgian National Bank	.....	.....	20,666,000
1895	.....	.....	26,792,000
Bank of Spain	40,022,000	50,493,000	90,515,000
1895	40,921,000	5,613,000	93,564,000
Bank of Italy	59,890,000	9,950,000	69,840,000
1895	59,745,000	13,676,000	73,421,000
Imp. Bank of Russia	351,560,000	44,810,000	396,370,000
1895	.....	.....	.....

The return for the Associated Banks of New York is of date January 4th; all the others are of date January 9th, except the Bank of Italy, whose return is dated December 10th, and the Bank of Russia, December 1st-13th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England reports its gold only, not considering silver at all. The Imperial Bank of Germany and the Belgian National Bank do not report gold and silver separately.

Shipments of silver from London to the East for the year to December 19th are reported by Messrs. Pixley & Abel's circular as below:

	1894.	1895.	Changes.
India	£1,876,053	£3,498,096	D. £1,337,957
China	2,711,771	1,670,223	D. 1,481,748
The Straits	1,189,746	753,883	D. 435,863
Total	£3,777,570	£5,882,002	D. £2,104,432

Nearly half of the decrease shown has been made up by the increased sale of Council bills on India.

Indian exchange continues strong and the last allotment of Council bills in London showed the full amount of 50 lakhs taken at an average price of 13 9d. per rupee. After the allotment some special transfers were sold at 14d. per rupee, the highest price for a long time. There is talk of replacing the short sterling bills now outstanding in London, £1,000,000 in amount, by a rupee loan, a large part to be placed in India.

New capital issues in London for the year 1895 amounted to £104,690,000, as compared with £91,835,000 in 1894 and £49,141,000 in 1893. The amount of issues made by mining and exploration companies is stated as below by the London *Economist*; we have reduced the figures to dollars.

South African mines	\$21,040,000
West Australian mines	33,960,000
Other mines	16,021,500
Land and exploration companies	32,778,500
Total	\$103,800,000

This amount of capital is equal to about 20.5% of the total amount of the issues reported.

Domestic and Foreign Coins.

The following are the latest market quotations for the leading foreign coins:

	Bid.	Asked
Mexican dollars	\$0.52 1/4	.....
Peruvian soles and Chilean pesos	46 1/2	49
Victoria sovereigns	4.87	4.90
Twenty francs	3.86	3.90
Twenty marks	4.75	4.80
Spanish 25 pesetas	4.83	4.85

Other Metals.

As our usual market reports gave way last week to the yearly statements, we give below, in order to preserve the continuity of our record, a brief summary of the quotations of the leading metals for the week ending January 3d. Our regular report for the current week follows this statement.

Copper.—Quotations were on January 3d: For Lake, 10c.; electrolytic, 9 3/4@9 1/2c.; cathodes, 9 1/2c.; casting copper, 9 1/2c. The London market opened at £41 10s. for g. m. b.'s, and declined to £41 2s. 6d.

Tin.—Tin closed January 3d at 12 7/8c. for spot and January, and 12 8/16c. for later deliveries. London opened at £60 10s., and closed at £53 for spot and £58 10s. for three months' prompt.

Lead was quoted at 3 05c. New York, without takers. London closed at £11 6s. 3d. for Spanish, and £11 8s. 9d. for English.

Spelter was unsettled, and we quoted 3 50@4c. at East St. Louis, and 3 75@4 25c. New York.

Antimony remained quiet at 7 1/2c. for Cookson's, 7 1/2c. for U. S. Star and 7c. for Hallett's.

Copper.—The monotony characteristic of the market for the last few weeks still continues. The

political troubles seriously interfered with consumption abroad, from where our market had received far more support during the last few months than from consumers here. The market being thus bare of any support, prices receded much more quickly than was anticipated. The sale of Calumet copper effected about 10 days ago, more than covered the requirements of manufacturers at the present rate of consumption, so that the other companies cannot so easily find an outlet for their product. As a result thereof, stocks are beginning to accumulate, but they have not as yet become of a menacing nature. Very little business has been transacted during the week, and quotations, which are 10c. for Lake, 9 1/2c. for electrolytic copper, 9 1/2c. electrolytic cathodes, and 9 1/2c. for casting, must therefore be considered more or less nominal.

The foreign market early this week opened at £41 for spot g. m. b.'s, subsequently declined to £40 10s., advanced again to £41 5s., but closes at £41. Recent advices are to the effect that consumption is not quite as satisfactory as it was until a short time ago, but that it would assume its normal proportions the moment political differences were removed. Manufactured kinds are quoted: English tough, £44 10s.@£45; best selected, £15@£15 10s.; strong sheets, £51 10s.; India sheets, £49 10s. yellow metal, 4 1/2@d.

Copper Exports.—The exports of copper for the nine days ending January 9th are as follows:

	Fine Copper.*	Mt.
From New York to		
Liverpool—Cable	375	122
Rotterdam—Obdam	30	.....
Liverpool—Umbra	.....	105
Bristol—Inculonga	.....	205
Swansea—Boston City	150	172
Havre—La Bourgogne	75	.....
Genoa—Aisatia	49	.....
Rotterdam—Amsterdam	522	.....
Hamburg—Fatria	155	.....
Swansea—Chicago City	30	273
Liverpool—Wakefield	105	.....
Liverpool—Cevic	55	75
Antwerp—Southwark	55	.....
Rotterdam—Obdam	387	.....
Havre—La Normandie	100	.....
Liverpool—Lucania	75	.....
.....—Pascal	47	.....
Bremen—H. H. Meier	20	.....
Liverpool—Teutonic	.....	105
Swansea—Brooklyn	.....	105
Hamburg—Prussia	40	.....
From Baltimore to		
Liverpool—Ulstermore	56	109
Hamburg—Christiana	233	.....
Havre—Alra	360	.....

* Fine copper includes ingot, bar, plate, cake and pig copper.

Tin has recovered somewhat from the serious decline of last week, not so much, however, as the result of a better demand as that of higher prices cabled from abroad. The price, which at the beginning of the week was 12c., is now about 13 1/4c. The knowledge that large stocks of tin are held by financial institutions is of a nature leading one to look upon the advance inaugurated in London with suspicion, it being assumed that it was done with the view of unloading, as conditions such as now prevail do not justify higher values in this metal just as little as in any other. What is required is a good and steady consumption, which alone would warrant higher values, and this is the more true of tin, whose statistical position is anything but gratifying.

The London market opened at £59, and closes today at £30 7s. 6d.@£60 10s. for spot, and £61@£61 2s. 6d. for three months' prompt.

Lead is again lower, the price having declined to 3c., at which manufacturers have at last concluded to buy more liberally. Whether, however, their purchases will be sufficient to check the decline is doubtful, consumption being on a greatly reduced scale and production showing no signs of falling off, not even at the greatly reduced prices.

The foreign market too is very much weaker, the price for Spanish having declined to £11 12s. 6d., and for English to £11 5s., with the tendency in a lower rather than in an upward direction.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead continues dull and trading is very light. The latest sales are on a basis of 2 80 for common and 2 82 1/2 for refined lead. The demoralizing advices from the seaboard have made buyers very apathetic, and on this account they seem unwilling to load up on a large scale with lead.

Spanish Lead Market.—Messrs. Barrington & Holt write us as follows from Cartagena, Spain, under date of December 20th: The local market during the first part of the month was very firm; during the last fortnight the quotation for pig lead on wharf has fallen a real per quintal of lead, and is today quoted at 58 reales, which is 15 5/10 reales higher than the quotation of December 18th, 1894, during which period the lead market was so depressed. The average local quotation for the month past has been 55 6/10 reales, which taking exchange on London at 29 88 pesetas per pound, is equivalent to £1 19s. 7d. per ton of 2,240 lbs. f. o. b. Cartagena, the silver to be paid at the rate of 14 50 reales per ounce, at which rate it has remained throughout the month, although the price in England is 1 1/2d. per ounce lower than it was a month ago. We quote for lead ores 8s. 9d. per cwt. for Putters ore; for Linares ore, 6s. 9d. per cwt. for sulphide, and 4s. 6d. for carbonate. Exports of pig lead from this port for the past month have been 2,575,734 kilos, to

London; 924,809 kilos. to Antwerp; 1,104,829 kilos. to Marseilles; 406,095 kilos. to Newcastle—total, 5,011,468 kilos, of which 251,000 kilos. were desilverized lead. Among other exports from this port we note 25 tons galena to Antwerp; 30 tons galena and 401 kilos. silver ingots to Marseilles; 30 tons copper pyrites and 10 tons yellow ochre to London.

Spelter.—Matters have become somewhat more settled in comparison with the end of last week, and the fact that the combination has been definitely carried through has had the tendency to give the market a stronger tone than it has experienced for several months. At the higher figures, however, consumers have not bought freely, though if the combination can prove that they have the situation well under control, and they have enough funds to do so, they will most likely get ready to purchase.

Antimony is quoted at 6 1/2c. for Hallett's, 7 1/4c. for United States Star, and 7 1/2c. for Cookson's.

Nickel.—Quotations are 33@36c. per lb., New York, for small lots. For large orders lower prices can be made. The London prices are 13@15d. per lb.

Platinum.—Prices are again higher and we quote \$13@\$14 per oz., New York. London quotations are higher at 48@50s. per oz.

For chemical ware, best hammered metal, Messrs. Eimer & Amend, N. w York, furnish the following quotations, the prices given being respectively for orders of over 250 grams; for orders of over 100 grams and less than 250 grams, and for orders of less than 100 grams: Crucibles and dishes 48c., 49c. and 50c. per gram. Wire and foil are 45c., 46c. and 47c. per gram. The current retail price for crucibles is 60c. per gram.

Quicksilver.—Quotations are steady at \$40 per flask, New York. London prices are £7 7s. 6d. per flask, with £7 5s. quoted from second hands.

The Minor Metals.—Quotations for these metals are given in the table below, the prices being for New York delivery:

Aluminum:	
No. 1, 99% pure rolling ingots, per lb.	50@55c.
No. 1, " ingots for re-melting, per lb.	48@53c.
No. 2, 94% pure, "	42@50c.
Bismuth, per lb.	\$1.35@1.75
Platinum, per oz.	\$13@14
Tungstic acid, per lb.	70c.
Tungstic acid, per lb.	45c.
Ferro-tungsten, 60% iron lots, per lb.	60c.

The variations in price are chiefly on size of order.

Imports and Exports of Metals.—Imports of metals into the port of New York for the week ending January 2d, as reported by the New York Metal Exchange, were as follows: 24,063 boxes and 400 tons tin and black plates, 34 casks antimony, 1,650 tons spiegeleisen, 599 tons ferro-manganese and 40 tons manganese ore from the United Kingdom.

Exports of metals from this port for the week were: 10 tons old brass, 9 tons zinc skimmings, 45 tons sulphate of copper and 2 tons old metal to the United Kingdom.

Arrivals at Baltimore for the week ending January 2d were: 5,217 tons iron ore from Cuba; 3,200 tons iron ore from Spain; 155 tons ferro manganese, 76 tons spiegeleisen, 15 tons and 13,477 boxes tin plates from the United Kingdom.

Arrivals at Philadelphia for the week were: 6,000 tons iron ore from Cuba, and 150 tons iron ore from Portugal.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Jan. 10.

Heavy Chemicals.—There is a firmer tone to the heavy chemical market, due to the improved demand and to the stiffening in prices. The agreement among the foreign alkali makers, which we reported in our last issue, has had a beneficial effect on values. Caustic soda is rather stronger, and a good business is reported this week for both spot and future delivery. Alkali is a shade higher, with a slightly improved business. Bleaching powder is easier, and a fair business has been done during the week. We quote: Caustic soda, 2 25@2 37 1/2c. for spot, according to test; Carbonated soda ash, 48% is 90@1c., according to quantities and deliveries. Alkali is 80@90c., according to test and package. Bleaching powder, \$1 85@2. Sal soda, 65@70c.

Acids.—A fair volume of business on contracts has been done this week, and prices, though not higher, are somewhat firmer. The jobbing demand has also been better. Our quotations per 100 lbs. in New York and vicinity, in lots of 50 carboys or over are as follows: Acetic acid (in barrels), \$1.40@1.70. Muriatic acid, 18", 75@80c.; 20", 80@90c. Nitric acid d, 36", \$3.50@4; 40", \$4@4.50; 42", \$4.75@5.25. Oxalic acid, \$7.10@7.60. Mixed acids, according to mixture. Sulphuric acid, 68", 75@85c.; chamber acid, \$6.50@7.25 per ton at factory. Blue vitriol is in demand, with sales at \$3.90@4.10 according to size of order.

Brimstone.—We quote for shipments, best un-mixed seconds, \$15.25@15.50. Thirds are 25@50c. less. Spot or nearby is \$16.50 for seconds.

Fertilizing Chemicals.—There is no change of moment to report of the fertilizer market this week. Buyers are holding off before placing their contracts. Prices show no change of importance. Quotations are as follows: Sulphate of ammonia, gas liquor, \$2.50@2.55; bone, \$2.40@2.50. Dried blood, high grade, \$1.85@1.95; low grade, \$1.60@1.70 per unit. Azotine, \$1.80@1.90. Concentrated phosphate (30% available phosphoric acid), 70@71 1/2c.

per unit. Acid phosphate, 13% to 15% av. P₂O₅, 57c. per unit at seller's works in bulk. Dissolved bone black, 17% to 18%, P₂O₅, 90@92c. per unit. Acidulated fish scrap, \$12, and dried scrap with few or no sales, nominally \$21 f. o. b. fish factory. Tankage, high grade, \$19@20; low grade, \$18@19. Bone tankage, \$21; ground bone, \$19@20. Bone meal, \$21 @ \$22.50.

In lots of 50 tons on contracts we quote, per 100 lbs.: Double manure salts, 48-53% (basis of 48%); New York, Boston and Montreal, \$1.10; Philadelphia and Norfolk, \$1.12½; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$1.15. Sulphate of potash, 90% and minimum, 96% respectively (basis of 90%); New York, Boston and Montreal, \$2.08@ \$2.10; Philadelphia and Norfolk, \$2.10½, Charleston, Savannah, Wilmington, N. C., and New Orleans, \$2.13.

Muriate of Potash.--Quotations for lots of 50 tons are as follows: 80-85% and minimum 95%, respectively (basis of 80%); New York, Boston and Montreal, \$1.78, Philadelphia and Norfolk, \$1.80½; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$1.83.

Kainit.--Prices for kainit (minimum 23%) are as follows for invoice and actual weights respectively New York, Boston and Philadelphia, \$8.80; Norfolk, \$9.15; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$9.55.

Nitrate of Soda.--Messrs. Mortimer & Wisner, the well-known brokers of this city, send us their statement of nitrate issued under date of January 2d:

	1895.	1894.	1893.
	Bags.	Bags.	Bags.
Imported into Atlantic ports from West Coast S. A., from Jan. 1, 1895, to date.....	819,214	714,631	767,332
Imported into Atlantic ports from Europe, from Jan. 1, 1895, to date.....	4,709	.....	16,712
	823,923	714,631	784,044
Stock in store and afloat Dec. 31, 1895, in New York.....	48,189	55,067	36,838
Boston.....	.....	1,300	3,090
Philadelphia.....	150	.....	.....
Baltimore.....	5,000	2,000	5,100
Norfolk, Va.....	.....	.....	.....
Charleston.....	.....	.....	.....
To arrive, actually sailed	310,000	259,000	125,000
Vis. supply to Mar. 15, 1896	363,839	317,367	169,938
Stock on hand, Jan. 1, 1895.	58,367	44,938	15,454
Deliveries past month. . .	93,526	123,568	124,837
Total yearly deliveries..	828,042	701,202	754,560
Prices cur., Dec. 31, 1895.	1.75	1.95@ 1.97½	1.77½@ 1.70

Included in the deliveries of 1893 are 9,500 bags shipped to European ports.

MINING STOCKS.

Complete quotations will be found on pages 54 and 55 of mining stocks listed and dealt in at:

	Aspen, Colo.	St. Louis.
New York.	Colorado Springs.	Paris, France.
Boston.	Duluth, Minn.	Mexico.
Philadelphia.	Helena, Mont.	Shanghai, China.
Baltimore.	Salt Lake, Utah.	Valparaiso, Chile.
Pittsburg.	San Francisco.	London, England.
Denver, Colo.		

NEW YORK, Friday Evening, Jan. 10.

There is as yet no sign of the boom in mining stock speculation which many of the optimistic brokers have been expecting for months past. During the past week what little trading took place was of a desultory nature.

The Comstocks were without any change of consequence. In Best & Belcher 1,000 shares were sold at 97c. Consolidated California & Virginia was steady at \$2.65@2.80 with sales of 355 shares. Comstock Tunnel as usual reports fair transactions; the price was stationary at 7c., with total of sales of 2,600 shares. Other sales were: 300 shares of Mexican at 65@75c.; 300 shares of Union at 45@50c., and 200 shares of Yellow Jacket at 55c.

The Colorado stocks were in fair request. Chrysolite advanced from 18c. to 23c., and reports total sales of 2,300 shares. Lacrosse was stationary at 10c., with sales of 1,700 shares. Of Leadville Consolidated 700 shares changed hands at 12c. Other sales were: 700 shares of Isabella at 60c. and 400 shares of Brece at 25c.

The California stocks were very quiet. Brunswick Consolidated shows sales of 300 shares at 7c.; and 100 shares of Quicksilver, common, at \$3.

Other sales consisted of 150 shares of Ontario, at \$7.50@8; 100 shares of Horn Silver at \$2.30 and 200 shares of Phoenix at 9c.

At the weekly auction sales of the New York Real Estate Exchange, held on January 8th, the following stocks and bonds were sold: \$18,500 Newport Mining Company's, of Wisconsin, first mortgage bonds, sold at 50%; 10 Crown Hill Colliery, first mortgage, 6% gold bonds of \$500 each, due 1910, with January, 1896, coupons on, hypothecated, sold at 12%.

The New York Mining Exchange continues to make active preparations for commencing business

by the end of this month. It will have its headquarters at No. 35 Broadway, which are now being fitted up. Mr. Isham B. Porter is now in Colorado making arrangements with the exchanges there. It is announced that a large body of Colorado brokers will accompany Mr. Porter on his return, and will be present at the opening of the new exchange. A complete mineral exhibit will also be brought to this city and placed on the exchange for the inspection of the public.

Boston, Jan. 9.

(From Our Special Correspondent.)

The new year opens with quite an active market for copper and other mining stocks, but there is a tendency in some of the specialties to a lower range of prices. The dealings in Boston & Montana have been larger than usual, the stock working up early in the week to \$69, with a subsequent decline to \$65, and a rally to \$68½, which was the closing price to-day; about 25,000 shares changed hands during the week. Butte & Boston declined from \$13 to \$11½, with recovery to \$12½. There is a quiet buying of this stock by inside parties, and the offerings are not large.

There has been some investment buying of Calumet & Hecla this week which has kept the price strong at \$295@300. Quincy has been in good demand also by investment buyers, and sold at \$120@123, with latest sales at \$121. The scrip sold at \$65@67. Tamarack shows weakness for some reason which does not appear. After selling at \$121, it declined on free offerings to \$114, with a rally later to \$117½. The scrip sold at \$90. Tamarack, Jr., holds steady at \$13, with but little stock offered. Oseola has been more active than usual; buyers seem to think there is money in it at present prices. It sold at \$25 early in the week, declined to \$22, rallied to \$21 and closed at \$23½. Kearsarge and Franklin have ruled dull; the former sold at \$11½ down to \$10½, and the latter at \$11@ \$11½ for small lots. There is but little Franklin in the market, and it is difficult to buy round lots. Atlantic sold up to \$16½, and declined to \$15, at which figure it is in demand. Wolverine declined from \$6½ to \$5½, rallying to \$6½, and later sales were made at \$6. Arnold sold at \$1. The dealings in Old Dominion copper have been light. It sold at \$17, declined to \$16, and a small lot sold at \$16½.

The Gold stocks have shown some activity. Merced declined to \$29, but rallied to \$33. Boston & Cripple Creek sold at 37½c; Gold Coin at 95c., and later at 97½c. Santa Ysabel sold at \$9.

The Pioneer was listed on the Exchange to-day and sold at \$5½, declining later to \$4½, at which it closed in good demand. Napa Quicksilver sold at \$7½ for 50 shares.

We learn that an effort is being made to reorganize the Santa Fe mine, which was quite active in this market some years ago.

Cleveland, Jan. 9.

(From Our Special Correspondent.)

The Chandler Company has declared a dividend of \$3 per \$25 share on its capital stock of \$1,000,000, payable February 1st, or \$120,000 on its 40,000 shares. There have been recent transactions in the stock and \$40 is now bid. There is also considerable inquiry this week for Republic iron stock. But in general the iron ore stock market sympathizes with the close money market which now prevails at Cleveland and buyers are not numerous. Following are quotations:

Name of Company.	Par val.	Jan. 9.	
		Bid.	Ask.
Aurora.....	\$25		\$8
Chandler.....	25	\$38	40
Cleveland-Cliffs Iron Co.....	100	40	42
Jackson Iron Co.....	25		70
Lake Superior Iron Co.....	25	30	32
Lake Superior Consolidated.....	100	20	.....
Minnesota Iron Co.....	100	70	85
Pittsburg & Lake Angelina.....	25	75	85
Republic Iron Co.....	25	12	13

Denver, Colo., Jan. 4.

We are informed by Mr. L. F. Parsons, Manager, that in the Colorado Mining Stock Exchange Clearing House the total sales of listed stocks for 1895 was 63,149,450; total unlisted stock, 28,954,725; grand total, 92,104,175 shares, and the amount of cash passing through the clearing house for the month of November was \$182,700.

It must be remembered that the Colorado Mining Stock Exchange carries on a regular bank clearing house; accounts are all settled as between banks in a regular clearing house. The system was adopted from the clearing houses of the New York banks and has been pronounced by all visiting exchanges to this city to be the most perfect system ever seen. This is the only exchange in the state that has a regular clearing house of this kind and therefore can protect its brokers and their customers, and, as a perfect record is kept of all the sales, different prices and accounts handled, reference can be made to any account two or three years back in order to find out exactly how and what transactions took place on such and such a day.

Colorado Springs, Colo., Jan. 4.

(From Our Special Correspondent.)

The year has opened well in the mining stock market. During the past week, in spite of the New Year's holiday, trading was quite active and a good volume of business was done. The good showing made by Cripple Creek last year has encouraged

purchasers and the exchanges hope to do a prosperous year's business. Their records for 1895, as shown in the annual reviews published in last week's *Engineering and Mining Journal*, redound to the credit of their officers.

At the Mining Stock Association for the three days ending to-day the total sales were nearly 400,000 shares, and it must be remembered that the day after a holiday is seldom if ever one of active trading, and that there is, in addition, only one call on Saturday. The Board of Trade keeps up its record with total sales for the week ending to-day of 4,198,432 shares, of a cash value of \$278,432. A good business was also done at the Consolidated Exchange.

BY TELEGRAPH.

Messrs. Gardner & Co. wire us the closing quotations of the Colorado Springs Mining Stock Exchange for the week ending January 9th as follows:

Name of Company.	3	4	6	7	8	9
Alamo.....	10	.09½	.09	.08½	.09	.10
Anaconda.....	72	.21	.21	.21	.21	.21
Argentum-Juniata.....	50	.47	.47	.47	.47	.45
Blue Bell.....	12	.12	.12½	.12	.12	.12
Cripple Creek Con.....	21	.21	.21	.21	.21	.21
Golden Crater.....	5.00	5.00	5.00	5.00	5.00	5.00
Golden Fleece.....	1.65	1.65	1.65	1.70	1.70	1.70
Isabella.....	.60	.60	.60	.59	.58	.55
Mollie Gibson.....	.51	.48	.45	.45	.45	.51
Mount Rosa.....	.17½	.17½	.21	.21	.21	.18½
Pharmacist.....	.15½	.15½	.15½	.15	.14½	.15½
Portland.....	1.30	1.37	1.79	1.88	1.80	1.85
Silver State.....	.29½	.28½	.28½	.28½	.28½	.28½
Union.....	.41	.43	.45	.45	.43½	.41
Work.....	.25	.25	.25	.24½	.24½	.21

San Francisco, Jan. 4.

(From Our Special Correspondent.)

Considering the close of the year and the breaking in of a holiday upon the week, there was a fair show of activity in the market, and prices were higher than for several weeks past. The dealing once more made it manifest that the amount of floating stocks actually on the market is really small.

The close shows all prices pretty well sustained, some quotations being as follows: Consolidated California & Virginia, \$2.40@2.45; Ognir, \$1.40@1.45; Hale & Norcross, \$1.05@1.15; Best & Belcher, 85@87c; Cholzar, 67@71c.; Occidental, 65@66c.; Potasi, 58@61c.; Sierra Nevada, 55@57c. Nothing was heard from the Bodies.

The sales at the regular sessions of the San Francisco Stock and Exchange Board for the year just closed have been as follows, in comparison with 1894:

	Shares	1895.	1894.
January.....	210,410	214,315	194,700
February.....	234,700	264,590	285,730
March.....	264,590	463,895	262,810
April.....	463,895	784,275	274,030
May.....	784,275	323,250	231,640
June.....	323,250	178,300	187,595
July.....	178,300	281,945	229,850
August.....	281,945	2,044,500	334,245
September.....	2,044,500	4,420	259,160
October.....	4,420	276,681	352,675
November.....	276,681	234,040	246,055
December.....	234,040	3,956,115	3,155,710
Total.....	3,956,115	.....	3,155,710

The falling off in 1895 was a serious one, 800,365 shares, or over one-fifth of the total of 1894.

The Gold Mining Exchange of San Francisco was formally organized December 22th, with the following charter members: Oscar Newhouse, Theodore Reichart, Wilfred Page, C. L. Hovey, S. P. Holden, W. K. Flint, F. J. Fletcher, Walter Turnbull, H. D. Ranlett, C. J. Schuster, I. R. Wilbur, William S. Lyle, George R. Wells, C. W. Randall, P. T. Dickenson, C. G. Yale, John Daggett, B. F. Lacy, John Landers, J. F. Crosett, Oliver O. Howard, Jr., Emil Sutro, Thomas H. Herlack, Geo. Hudson, R. Herold, Jr., Julius Jacobs, J. H. Roberts, D. E. Miles, Henry Pichoir, W. R. Smedberg, F. Chappellette, P. T. M. Wate, A. S. Wolberg, L. L. Bromwell, F. C. Siebe, Louis G'ass, Robert McMurray, George Habernicht, E. K. Stevenot, E. C. Godfrey, George F. Beveridge, David Roderick, S. R. Thorne, M. A. Hurley, D. T. Callahan, Leroy G. Harvey.

Officers were elected as follows: Walter Turnbull, president; ex-Governor John Daggett, vice president; John F. Crosett, secretary; D. E. Miles, treasurer. A meeting was held this afternoon (January 4th) to finally complete the organization, arrange for securing quarters and beginning business. Another meeting will be held January 13th. It is announced that many applications for membership have been received. The new Exchange invites correspondence with mine owners and companies. The Secretary's office is in the Mills Building, San Francisco.

The announcement of the formation of this new exchange for dealing in gold stocks, and the general opinion that a change is desirable if the present Exchange is to live has decided the Executive Committee of the San Francisco Stock and Exchange Board to take some action toward encouraging the listing of shares. Accordingly a new rule has been adopted, and steps are to be taken to induce mining companies to act under it. The new rule reads as follows:

"The fee for placing mining stocks on the regular list shall be \$500 each, and no stock shall be bought or sold at any of the sessions of the Board unless the same shall have been approved by the Stock-List Committee and regularly listed. The Board reserves the right to suspend the calling of any stock at any time by a two-thirds vote of the mem-

bers present. All mining stocks remaining on the list over one year shall pay \$100 per annum in advance, and said annual fee shall become due on the 1st day of January, and any stock upon which said fee shall remain unpaid on the third Tuesday in February shall be stricken from the list by a majority vote. No stock so stricken from the list shall be replaced except by the payment of a fee of \$500, as hereinbefore provided, and reference to the Stock-List Committee."

The following committee was appointed to take measures to secure the listing of desirable mines: Joseph Marks, M. J. McDonald, R. F. Morrow, A. J. McDonnell and C. E. Paxton.

NOTES OF THE WEEK.

A special meeting of the stockholders of the Consolidated Wyoming Mining Company has been called for January 13th, for the purpose of taking the necessary action toward dissolving the corporation and the surrender of its franchise. The Wyoming people, it will be remembered, sold the property some time ago to the Champion Mining Company as a settlement of a suit between the two companies. The purchase money has now all been paid, and the affairs of the Wyoming Company are substantially all settled, so that the only thing remaining is to formally announce its decease and divide the assets.

The annual meeting of the Sierra Nevada Mining Company has been called for January 15th.

The Home Gold Mining Company, of Nevada County, has levied an assessment of 5c. per share, delinquent February 1st.

The Mono Mining Company, of Mono County, has levied an assessment of 10c. per share, delinquent February 3d.

According to the *Daily Report* of this city, the mining assessments falling delinquent here in 1895 amounted to 112, of a total value of \$1,261,216, against \$1,543,600 in 1894. Of the 112 assessments for the year, 66 were levied by Nevada mines, 42 by California mines and 4 by Mexican mines. The Nevada mines took \$1,068,266 of the total; California mines, \$171,950, and the Mexican mines, \$21,000. The assessments in 1895 were the smallest for at least 12 years.

BY TELEGRAPH.

SAN FRANCISCO, CAL., January 10.—The opening quotations to-day were as follows: Best & Belcher, 90c.; Bodie Consolidated, 40c.; Bulwer, 10c.; Chollar, 69c.; Consolidated California & Virginia, \$2.45; Eureka Consolidated, 25c.; Gould & Curry, 47c.; Hale & Norcross, \$1.25; Mexican, 61c.; Mono, 5c.; Ophir, \$1.45; Sierra Nevada, 55c.; Union Consolidated, 44c.; Yellow Jacket, 43c.

London Stock Market.

(From Our Special Correspondent.)

December 28, 1895.

The result of the disturbances in the Transvaal has naturally had a depressing effect on the market for South African mining shares. The gold industry will not be ruined, but some mines will be shut down and production will fall off for a period. The diamond mines are, of course, not in the Transvaal, so that they will not be affected in the same degree, but no doubt they may be closed temporarily also.

In consequence of these probabilities the London mining market has been practically at a standstill during the past week. In any case it would have been dull, as, after the recent slump, Christmas week is not chosen for the initiation of business. The only transactions have been on the part of jobbers who wished to get their books even. Generally the quotations are lower all round and for no special reason. For instance, De Beers have dropped to £22 as compared with £30 some weeks back, in spite of the announcement of a dividend at the rate of 36% per annum for the six months ending December 31st.

There seems to be some possibility of the British South Africa Company tackling the question as to whether some method may be devised for suppressing the swarms of unqualified mining experts. In all new mining countries, for instance, at present Charteredland and West Australia, it has been long a miserable scandal crying loudly for redress. The countries are full of ex-bartenders and store clerks who will write opinions on mining properties to suit the taste of the owner at so much a line. It is useless to say let the honest experts form an association such that the membership shall in itself constitute a diploma of ability for such associations are invariably started by the very people whom one would like to keep out. The British South Africa Company are at present considering a scheme for appointing a number of official experts, whom any vendor or promoter may call in to report on properties. It is argued that the very fact that a vendor does not apply to a government expert will be against him. Such a plan would work admirably if the best men were appointed, but as the government officials who would have the appointments in their hands would not know a good mining engineer from a bad one, the selections would not always be happy.

The West Australian department has not been active and hardly any transactions have taken place. It is interesting to see from the October returns that the output of gold from the Murchison district is increasing considerably. The figures were 10,985 oz.,

as compared with 13,818 oz. from Coolgardie district. The whole of the other districts produced only 2,922 oz. Early in the coming year the crushing plants at several of the most important properties will commence operations.

The American section has naturally been quite lifeless, owing to the President's interpretation of the Monroe doctrine. No movements have occurred in quotations and nothing is heard of any new properties just now.

The market for Indian gold mining shares has received a decided stimulus from the issue of the report of the Champion Reef Company for the year ended 30th of September, although those who followed the fortnightly and monthly reports were able to anticipate the results. During the year the total amount of gold produced was valued at £264,460, and the net profit was £139,393. On the capital of the company, £300,000, a dividend of 65% has been declared. From 49,705 tons of quartz, 65,871 oz of gold was produced, while 3,249 oz. were obtained from 14,385 tons of tailings. Twenty additional head of stamps have been put in during the year making the total 100, while 40 more are ordered. Additional plant is also being erected for the treatment of tailings. The reserves of ore have increased by 40,000 tons during the year and the mine continues to open up in a most satisfactory manner. Just recently the capital of the company has been increased to £220,000 by the issue of 20,000 new shares at a premium of £3 per share. The money thus provided, £80,000, was used in buying 116 acres from an adjoining estate. Altogether, the company is in a first-rate condition, and there are not many on the English market to compare with it.

Paris.

Dec. 29.

(From Our Special Correspondent.)

The market here during the last full week of the year has not been in a happy condition. The Eastern question had for the moment ceased to occupy much attention, when the news of your President's message on the Venezuelan affair came to disturb matters profoundly. The South African gold stocks, as the most prominent and—since the recent collapse—the most sensitive point in the market, felt the effect of the depression and have been generally lower, though without much selling.

In most of the other shares there has been quiet and an absence of business, except with the shares of the copper companies. These have generally been stronger on account of the better prices of the metal. Cape Copper is especially firm on a report to the stockholders showing a large increase in the yearly income.

An exception must also be made for the shares of Le Nickel. For some time past, as you know, these had been steadily falling, but two weeks ago they rose suddenly on a report that an agreement had been concluded with the American producers, whose representative is now in Europe. The shares then went up from 117 fr. to 235 fr., more than doubling in price. The report has not been confirmed as yet, and this week there have been many fluctuations; the stock closes at 173 fr., which is 62 fr. less than the previous week, but still 55 fr., above the lowest point reached.

The DeBeers Company has declared its half-yearly dividend at 17%, or 5 fr. higher than it has paid for sometime past. This will make the total return 30% for the year.

Your American stock Rebecca has been firm on a statement that dividends may be expected to begin in February, probably at the rate of 0.50 fr. per share monthly.

I am told that one or two large blocks of De Lamar were lately sold here by parties who were forced to realize in order to meet their engagements. The transactions were private and I cannot give the exact price, but believe it to have been very good—higher, in fact, than was paid some time ago.

The Anaconda copper stock has so far received no attention here and is but little known. Some parties to whom I have showed your published figures have expressed surprise at the magnitude of the company's operations, and could hardly believe that the mines were the greatest producers in the world.

The foreign commerce of France for the eleven months ending November 30th is reported by the Ministry of Commerce as below:

	1894.	1895.
	Francs.	Francs.
Imports:		
Food	1,093,391,000	914,637,000
Raw materials	1,930,557,000	1,894,227,000
Manufactures	496,984,000	524,957,000
Total	3,520,932,000	3,333,821,000
Exports:		
Food	293,174,000	553,825,000
Raw materials	685,392,000	790,714,000
Manufactures	1,396,635,000	1,613,039,000
Postal parcels	63,054,000	101,714,000
Total	2,738,255,000	3,059,352,000
Excess, imports	782,677,000	274,469,000

Some particulars as to our Bank situation at the close of the year, in comparison with a year ago, will be interesting, and I give them below:

	1894.	1895.
	Francs.	Francs.
Bank of France, circulation	3,455,809,000	3,473,200,000
Reserve, gold and silver	3,292,100,000	3,293,600,000
Loans, individual	293,300,000	367,600,000
Loans, state	140,990,000	140,000,000
Rate of discount	2 1/2%	2%
Rate on one-year Treasury bonds	2%	1 1/2%
Price of 3% rentes	101.45	109.55
Wheat, per quintal	17.44	18.18

The Bank's loss in specie is in some sort a measure of the transfer of funds to London on account of the Chinese loan and other transactions.

As to your President's message, while it is criticized here because of its somewhat brusque and undiplomatic terms, not much surprise is expressed at its substance. Of course we, in common with all European powers, are not prepared to admit the full force of the Monroe doctrine as it is laid down. That a nation so strong as yours should establish a foreign policy and assume a continental leadership is, however, regarded as entirely natural. There is some satisfaction here also at the prospect of a check to the arrogant assumptions and the hypocritical greed of our insular neighbor. Some of our best thinkers and of your well-wishers here, however, would like to warn you against the spirit of militarism, which is much easier to admit than to dislodge, and which is costing us so much here in Europe. I may add that the fact that this assertion of the Monroe doctrine comes from your President carries much weight here, where he is regarded as a statesman of high order; even M. Leroy Beaulieu, who strongly disapproves of his message, admits that he has often proved his clear-sightedness and courage.

I regret that 1895, which has been a year of so many vicissitudes, and which at one time promised so well, closes with a doubtful outlook. The continued accumulation of money at the financial centers; the distrusts which prevent new investments; the unsettled and dangerous state of the Turkish question; the doubtful condition of affairs in the Far East; the possibility at any time of a financial crisis in Spain and Italy; all these and many minor causes combine to make us view the New Year with apprehension. And now to these is to be added the possibility of a struggle between your country and England, which would disorganize the business of the world.

But what will you have? We must take courage, hope for the best and work as though sure that the hope will be realized.

Meantime I must wish to your country continued advance and good progress to a settlement of your troublesome questions. To all your readers I must wish prosperity in 1896, and to yourselves and to all those who have taken the trouble to follow my little letters I send my best greeting and a cordial shake of the hands.

AZOTE.

MEETINGS.

Alice Gold and Silver Mining Company, annual meeting at the office of Walker Brothers, Salt Lake City, Utah, January 14th, at 5 p. m.

Chihuahua Mining Company, annual meeting, at the office in New York, January 13th, at noon.

Lone Star Quartz and Gravel Mining Company, annual meeting at the office, No. 508 California street, San Francisco, Cal., January 18th, at 2 p. m.

Minas Prietas Mining Company, annual meeting, at the office, in New York, January 16th, at noon. Transfer books close January 14, and re-open January 17th.

Phil Sheridan Mining and Milling Company, annual meeting at the directors' room of the Stock Growers' National Bank, Pueblo, Colo., January 14th, at noon.

Red Umbrella Mining Company, annual meeting, at the office room, 51 Hagerman Building, Colorado Springs, Colo., January 14th, at 10 a. m.

Sierra Nevada Silver Mining Company, annual meeting, No. 309 Montgomery street, San Francisco, Cal., January 15th, at 1 p. m.

DIVIDENDS.

Gold Coin Mines Company, dividend of 1 1/2%, payable January 30th to stockholders of record January 17th, 1896, at the office, No. 53 Broadway, New York City.

Gold & Globe Hill Mining Company, of Cripple Creek, Colo., dividend of 2c. per share, paid January 4th.

Smuggler Union Mining Company, dividend of 50c. per share, paid January 2d.

ASSESSMENTS.

Name of Co.	Loc'n.	No.	Divq.	Salv.	Amt.
Anita Gold	Cal.	7	Jan. 18	Feb. 4	.01
Bullion Con.	"	"	Dec. 24	Jan. 27	.10
Butte & Boston ..	Mont.	"	Jan. 10	Feb. 3	4.00%
Con. Cal. & Va. ..	Nev.	"	Dec. 28	Jan. 16	.25
Con. New York ..	"	14	Jan. 15	Feb. 6	.05
Florence G. & S. S. D.	"	"	Feb. 1	"	.02%
Gold Bar Con.	Cal.	"	Dec. 21	Jan. 16	.03
Hale & Norcross ..	Nev.	10	Jan. 15	Feb. 7	.15
Hte.	Cal.	"	"	"	.10
Inter-Mountain ..	S. D.	"	"	"	.001 1/2
Kimberly G & S. ..	"	7	"	"	.002
Live Oak Con.	Cal.	"	"	"	.10
" & Minuet	"	"	"	"	.01%
Mexican	Nev.	53	Dec. 23	Jan. 14	.25
New Basil Con.	Cal.	29	Jan. 6	Feb. 1	.05
Occidental Con.	Nev.	21	"	"	.15
Overman	"	71	"	"	.10
Rainbow	S. D.	9	"	"	.001
Superior	Cal.	1	Dec. 9	Jan. 31	.05
Tetro	Utah.	2	"	"	.01
Ybarra	Mex.	3	Jan. 27	"	.50

STOCK QUOTATIONS.

BOSTON, MASS. Table with columns for Name of Company, Location, Par value, and daily price ranges from Jan. 3 to Jan. 9. Includes companies like Allouez, Arnold, Atlantic, etc.

* Official quotations Boston Stock Exchange. † Ex dividend. Total sales, \$3,219.

INDUSTRIAL COAL AND COAL RAILROAD. Table with columns for Name of Company, Par value, and daily price ranges from Jan. 4 to Jan. 10. Includes companies like Balt. & O., Ches. & O., etc.

* Official quotations N. Y. Stock Exchange. Total shares sold, 136,925

COLORADO SPRINGS, COLO. Table with columns for Name of Company, Par value, and daily price ranges from Dec. 31 to Jan. 10. Includes companies like Ajax, Alamo, American C., etc.

* Official quotations and the sales of the Colorado Springs Board of Trade Exchange aggregated \$41,606; † sales of the Colorado Springs Mining Stock Association, \$75,640. ‡ sales of the Consolidated Exchange, \$12,900. † Holiday.

NEW YORK. Table with columns for Name of Company, Location, Par value, and daily price ranges from Jan. 4 to Jan. 10. Includes companies like Alice, American Flag, Barcelona, etc.

* Official quotations N. Y. Stock and Con. Stock & Petroleum Exchanges. Total sales, \$11,695.

PITTSBURG, PA. Table with columns for Name of Company, Location, Par value, Bid, Ask, and Selling price. Includes companies like C. I. Al., Mansfield, etc.

* Official quotations Pittsburg Stock Exchange.

ST. LOUIS, MO., STOCKS. Table with columns for Name of Company, Company's Office, Par Value, Bid, Asked, and Last Dividend. Includes companies like Central Lead, Con. Coal, etc.

* Official telegraphic quotations San Francisco Stock Exchange.

SAN FRANCISCO, CAL. Table with columns for Name of Company, Location, Par value, and daily price ranges from Jan. 4 to Jan. 10. Includes companies like Alta, Becher, Bodie Cons., etc.

* Official quotations Baltimore Stock Exchange.

BALTIMORE, MD. Table with columns for Name of Company, Location, Par value, Bid, Asked, and Last Dividend. Includes companies like Balt. M. & S. N. C., Conrad Hill, etc.

* Official quotations Baltimore Stock Exchange.

MISCELLANEOUS SECURITIES. Table with columns for Name of Company, Location, Par Value, Bid, and Ask. Includes companies like Acetylene Gas, Catacauy Ore & Iron, etc.

LONDON.

Dec. 28.

Table with columns: NAME OF COMPANY, Country, Product, Capital stock, Par value, Last dividend, Quotations. Lists various mining companies like Alaska-Mexican, Alaska Treadwell, etc.

DENVER, COLO.

Table with columns: NAME OF COMPANY, Par value, Dec. 30, Dec. 31, Jan. 1, Jan. 2, Jan. 3, Jan. 4, Sales. Lists companies like Addie C., Agate, Alamo, etc.

PARIS. Week ending Dec. 20.

Table with columns: NAME OF COMPANY, Country, Product, Capital Stock, Par value, Divs. last year, Prices. Lists companies like Acierles de Creusot, Anzin, etc.

*Holiday. †All the companies are located in Colorado. Total shares sold: Hsted, 2,932,115; unlisted, 816,500.

PHILADELPHIA, PA.

Table with columns: NAME OF COMPANY, Location, Par value, Jan. 2, Jan. 3, Jan. 4, Jan. 6, Jan. 7, Jan. 8, Sales. Lists companies like Acety. L.H. & P., Bethlehem, etc.

MEXICO. Week ending Jan. 2.

Table with columns: NAME OF COMPANY, State, No. of shares, Last dividend, Last assessment, Prices. Lists companies like Amistad y Concordia, Guanajuato, etc.

* Official quotations Philadelphia Stock Exchange. †Holiday. Total sales, 21,692.

SALT LAKE CITY, UTAH. Week ending Jan. 4.

Table with columns: Name of Company, Par value, Bids, Asked, Actual selling price. Lists companies like Ajax, Alliance, Amer. Nat. Gas., etc.

* Special Report of James A. Pollock. † All the companies are located in Utah.

ASPEN, COLO. Week ending Dec. 20.

Table with columns: NAME OF COMPANY, Location, Par value, Bids, Asked, Sales, Price. Lists companies like Alta Argent., Argentinum-Juniata, etc.

* Special Report of Arkell, MacMillan & Stewart. Total sales, 161,696.

HELENA, MONT. Week ending Dec. 21.

Table with columns: NAME OF COMPANY, Location, Company's office, Par value, Bids, Asked, Shares sold, Price, Date. Lists companies like Am. Dev. & M. Co., Bald Butte, etc.

* Special Report of Samuel K. Davis. Total sales, 1,900.

DULUTH, MINN. Week ending Jan. 4.

Table with columns: NAME OF COMPANY, Location, Company's office, Par value, Bids, Ask., Price. Lists companies like Adams Iron, Bitwick M. Iron, etc.

* Official quotations Duluth Board of Trade.

VALPARAISO, CHILE. Week ending Nov. 23.

Table with columns: NAME OF COMPANY, Capital, Share value, Last dividend, Prices. Lists companies like Arturo P. et al., Caracoles, etc.

* Special Report of Jackson Bros. Values are in Chilean pesos or dollars.

SHANGHAI, CHINA. Dec. 6.

Table with columns: NAME OF COMPANY, Country, No. of shares, Par, Paid up, Last dividend, Price. Lists companies like Jiehn Mg. & Trad., Punjong Mg. Co., etc.

* Special Report of J. P. Blissett & Co. The prices quoted are in Shanghai taels.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES

Main table with columns: Name and Location of Company, Capital Stock, Shares, Dividends, Assessments, Name and Location of Company, Capital Stock, Shares, Assessments. Lists various mining companies and their financial details.

G. Gold, S. Silver, L. Lead, C. Copper, B. Borax. * Non-assessable. † The Deadwood previously paid \$275,000 in eleven dividends and the Terra \$75,000. Previous to the consolidation in August, 1884, the California had paid \$31,320,000 in dividends, and the Cons. Virginia \$42,390,000. ‡ Previous to the consolidation of the Copper Queen with the Atlanta, August, 1885, the Copper Queen had paid \$1,350,000 in dividends. § Previous to this company's acquiring Northern Belle, that mine paid 1,400,000 in dividends against \$425,000 in assessments.

POSITIONS VACANT.

FREE ADVERTISING

Inquiries from employers in want of Superintendents, Engineers, Metallurgists, Chemists, Mine or Furnace Foremen, or other assistance of this character, will be inserted in this column WITHOUT CHARGE, whether subscribers or not.

The labor and expense involved in ascertaining what positions are open, in gratuitously advertising them and in attending to the correspondence of applicants, are incurred in the interest and for the exclusive benefit of subscribers to the ENGINEERING AND MINING JOURNAL.

Applicants should incise the necessary postage to insure the forwarding of their letters.

1417 WANTED—CIVIL ENGINEER FOR A coal mine capable of taking charge of machinery; must be a good office man and draftsman. Address communications to "A," care ENGINEERING AND MINING JOURNAL.

1418 WANTED—A THOROUGHLY EXPERIENCED business manager for mining and milling property in Mexico. Address L., ENGINEERING AND MINING JOURNAL.

1419 WANTED—A FIRST-CLASS ASSAYER and experienced ore sampler, with thorough business education, as manager of branch office in Mexico, through which ores are purchased and mining supplies sold. Address, stating references, etc., T. B., ENGINEERING AND MINING JOURNAL.

1420 WANTED—FOR MEXICO, CHEMIST with experience in making charges for blast furnace matte smelting. State experience and salary expected. Address COPPER MATTE, ENGINEERING AND MINING JOURNAL.

1421 WANTED—A MAN TO TAKE charge of a developed silver mining property in Mexico. Must be a thorough business man, with sufficient experience in mining and metallurgy to exercise a general supervision over the superintendents in charge of those departments. The property is to be fully developed and the milling plant largely increased, and judicious business management is the most essential point. A knowledge of Spanish would be serviceable. ARGENTUM, ENGINEERING AND MINING JOURNAL.

1422 WANTED—FOR A LARGE MEXICAN city, a man who has had experience in assaying and analytical work in some Western lead or copper smelters; salary, \$150 (Mexican money) per month; steady work with chance of an increase in salary; applicants should state their age, experience and references. Address SAN LOUIS, ENGINEERING AND MINING JOURNAL.

1423 WANTED—EXPERIENCED FOREMAN for blast furnace copper-smelting plant in British Columbia. Climate good; all the accommodations of civilization. Salary \$125 per month. Applicant must be able to work himself, do sledging and tapping when required and be familiar with all the practical points in the running of furnaces. Must know how to handle men and to follow orders. Send applications, with testimonials and references, to FOREMAN, ENGINEERING AND MINING JOURNAL. Must be ready to come January 2d.

1424 WANTED.—A LARGE GOLD MINING company desires the services of a young single man for assaying and clerical work at its mine in South America. He must be a competent assayer and be capable of handling money, as he will have the paying of the employees and other expenses of company. A salary of \$125 per month will be paid. Address stating age, experience, etc., to J. H. B., ENGINEERING AND MINING JOURNAL.

1425 WANTED—A GENERAL MANAGER for an iron ore company making a large output. Familiarity with the Spanish language is desirable. Address with full particulars of experience and references, M. H. HERRERO, ENGINEERING AND MINING JOURNAL.

1426 WANTED — AN EXPERIENCED foreman capable of taking charge of the construction and operation of a lead refining plant of 20 tons daily capacity. Must have references from former employers. Address BULLION, ENGINEERING AND MINING JOURNAL.

1427 WANTED—A FIRST-CLASS ASSAYER and ore sampler, with a knowledge of the Spanish language, to take charge of an ore purchasing agency. References imperative. Address ORE BUYER, ENGINEERING AND MINING JOURNAL.

1428 WANTED—A BUSINESS MANAGER for a successful steel works; a live man who understands and has been successful in the business management of large works, and who can increase an already large trade in an article of very exceptional quality, can find here an excellent opportunity to make both fortune and reputation. Apply, stating experience, etc., FORTUNE, ENGINEERING AND MINING JOURNAL.

1429 WANTED—A MAN FAMILIAR with the refining of sulphur from its ores, by the most improved modern processes, and who can give estimates of cost of such plant. Address SULPHUR, ENGINEERING AND MINING JOURNAL.

1430 WANTED—A YOUNG MAN conversant with the Cyanide process and able to properly superintend the installation of plant. Moderate salary until ability is proven. Address, with references, TANKAGE, ENGINEERING AND MINING JOURNAL.

SITUATIONS WANTED.

Advertisements for SITUATIONS WANTED will be charged only 10 cents a line.

CHEMIST, PRACTICAL EXPERIENCE IN zinc, lead, silver and copper, desires position in laboratory or as assistant superintendent. Best of references. Address "ZINC" ENGINEERING AND MINING JOURNAL. No. 17,332, Jan. 18.

MINING ENGINEER AND METALLURGIST of long and successful experience as manager of mines and smelting works in the United States and Mexico desires position; has thorough business and technical knowledge and speaks Spanish. Highest references furnished. Address M. M., care ENGINEERING AND MINING JOURNAL. No. 17,335, Jan. 25.

METALLURGIST, 14 YEARS' EXPERIENCE, six as superintendent, wants location in the East; best of references. Address METALS, ENGINEERING AND MINING JOURNAL. No. 17,333 Jan. 18.

METALLURGIST AND MECHANICAL ENGINEER; specialties, erection of plants and treatment of gold and silver refractory ores. Thirty years experience; no objection to foreign countries. Open to engagement. Jan. 1. References, prominent mine owners. Address PACIFIC, ENGINEERING AND MINING JOURNAL. No. 17,329 Feb. 1.

AN ANALYTICAL CHEMIST AND ASSAYER of experience desires a position; experienced in all branches of work in the West, and also in the iron and steel business; young man; can furnish best of references. Address RELIABLE, ENGINEERING AND MINING JOURNAL, Denver office, 206 Boston Building, Denver, Colo. No. 17,327, Jan. 25.

GRADUATE MINING ENGINEER DESIRES position. Six years' practical experience. Successful assayer, bookkeeper and assistant superintendent. Can handle machinery. Best of references. Address N. J., ENGINEERING AND MINING JOURNAL. No. 17,333, Feb. 1.

AN ALL AROUND MECHANIC, MILLWRIGHT and machinist, wants position. Will go anywhere. Best of references. Address WILLIAM BONTRITE, 56 Mercy Street, Philadelphia, Pa. No. 17,336, Jan. 25.

COAL AND COKE SPECIALIST.—Graduate Mining engineer with four years' experience at mine and coke plants. Responsible references. Address COAL AND COKE, ENGINEERING AND MINING JOURNAL. No. 17,335, Jan. 18.

Contracts Open.

PUMPING STATION.—Sealed proposals will be received at the office of Office Board Commissioner, Orleans Levee District, Masonic Building, New Orleans, La., until February 11th, for the erection of a pumping station, including machinery, foundations, buildings, etc., in conformity with plans and specifications on file in the above office. Other information as to the location and character of work and terms of payment, as also blank forms of proposals may be obtained at the office of the board. FRANK MARQUEZ, Secretary.

CAST-IRON PIPE.—Sealed bids will be received by the Board of Trustees for the Water-Works and Improvement Bonds of the City of Jacksonville, Fla., until January 21, 1896, for furnishing 160,000 ft., more or less, of standard cast-iron water-pipe, varying in diameter from 4 to 20 in., and also 15,700 ft., more or less, of light cast-iron water-pipe for sewerage and drainage, varying in diameter from 8 to 24 in., with special castings. With the bid must be submitted a certified bank-check payable to the Chairman in the sum of \$2,500, acceptable to the Board. The price must be for delivery f. o. b. cars or vessels at foundry, and also f. o. b. cars or wharves or lighters at Jacksonville. The bid must be on the form supplied by this Board, inclosed in an envelope addressed to this Board, marked on the outside "Bid for Cast Iron Pipe," and may be sent by mail or delivered to the Chairman. Forms and specifications will be furnished on application. Informal bids will not be received, and the Board reserves the right to reject any and all bids. B. F. DILLON, Chairman.

TUNNEL.—Sealed proposals will be received at the office of the Metropolitan Water Board, No. 3 Mt. Vernon street, Boston, Mass., until February 11th, 1896, building sections 2 and 3 of the Nashua Aqueduct, consisting of about two miles of tunnel and 1,000 ft. of masonry aqueduct in open trench, in the towns of Clinton and Berlin, Mass. The tunnel excavation is to be about 13.5 ft. wide and 12 1/2 ft. high, and the masonry aqueduct 11.5 ft. wide and 10.5 ft. high. A pamphlet containing further information for bidders, a form of proposal and contract, specifications and plans, will be ready about January 15th, and will be mailed to contractors who apply to the Chief Engineer for the same, or may then be obtained at his office, 3 Mt. Vernon street Boston, Mass. Plans may be seen at the office of the Chief Engineer, or at the office of the Engineer of the Aqueduct Department of the Metropolitan Water Board in Clinton, Mass. The Board reserves the right to reject any or all proposals or to accept the proposal deemed best for the Commonwealth. HENRY H. SPRAGUE, Chairman; WILMOT R. BYANS, JOHN R. FREEMAN, Metropolitan Water Board; FREDERIC P. STEARNS, Chief Engineer; WILLIAM N. DAVENPORT, Secretary.

TREASURY DEPARTMENT, Office Supervising Architect, Washington, D. C., January 4th, 1896.—Sealed proposals will be received at this office until 2 o'clock p. m. on the 20th day of January, 1896, and opened immediately thereafter, for all the labor and materials required to erect complete two electric elevators in the temporary building for the U. S. Post Office at Chicago, Ill., in accordance with drawings and specification, copies of which may be had at this office or the office of the Superintendent at Chicago, Ill. Each bid must be accompanied by a certified check for the sum of one hundred and fifty dollars (\$150). The right is reserved to reject any or all bids and to waive any defect or informality in any bid should it be deemed in the interest of the Government to do so. All proposals received after the time stated for opening will be returned to the bidders. Proposals must be enclosed in envelopes, sealed and marked "Proposal for Two Elevators in the Temporary Building for the U. S. Post Office at Chicago, Ill.," and addressed to WM. MARTIN AIKEN, Supervising Architect. Orig.

CONSTRUCTION OF A SEWER.—Office of the Commissioners of the District of Columbia, Washington, D. C.—Sealed proposals will be received at this office until January 25th, 1896, for constructing a main intercepting sewer from near the intersection of P street and Florida avenue to near the intersection of Twenty fifth and Water streets northwest, with lateral branches on M and Twenty-seventh streets. Blank forms of proposals and specifications may be obtained at this office upon application therefor, together with all necessary information, and only bids upon these forms will be considered. The right is reserved to reject any and all bids or parts of bids. J. W. ROSS, GEORGE TRUESDELL, CHAS. F. POWELL, Commissioners, D. C.

PIPE.—Tenders will be received, by registered post only, addressed to the City Engineer, Toronto, the 15th of February, 1896, for the supply and delivery of 2,350 ft. of steel or cast-iron pipe, 6 ft. in diameter, with the necessary flexible joints. Specifications and plans may be seen at the office of the City Engineer, Toronto, on and after Wednesday, the 11th inst. A deposit in the form of a marked cheque, payable to the order of the City Treasurer for the sum of 2 1/2% on the value of the work tendered for, must accompany each and every tender, otherwise they will not be entertained. Tenders must bear the bona fide signatures of the contractor and his sureties or they will be ruled out as informal. Lowest or any tender not necessarily accepted. DANIEL LAMB, Chairman Committee on Works.

WATER-WORKS.—Office of the City Clerk, Pomona, Cal. Sealed proposals on a cash basis will be received by the Board of Trustees of the City of Pomona, Cal., until the 21st day of January, for furnishing the materials and constructing a system of water-works for said City of Pomona. There will be required approximately about 646 tons of 16 in. cast-iron pipe, 54 tons of 12-in. cast-iron pipe, 316 tons of 8-in. cast-iron pipe, 329 tons of 6-in. cast-iron pipe, 10 tons of special castings, 53 fire hydrants, and the following valves: One 16-in., one 12-in., 11 8-in., 24 6-in., 79 4-in.; 35,064 ft. of No. 16 4-in. single riveted steel pipe; 16 miles trenching and back filling; 1,000 ft. of 3-in. wrought iron pipe. Bids will be received for furnishing any or all of the above materials, or for constructing the works complete, or for any part of the work, all material to be delivered f. o. b. Pomona. Plans may be seen and specifications and form of contract and blank form of proposals procured from the City Clerk or City Engineer. All bids must be accompanied by a certified check payable to the order of the City Clerk for an amount equal to 5 per cent. of the amount of the bid. All bids must be endorsed "Proposals for water-works," and addressed to J. R. GARTHSIDE, City Clerk.

THE ENGINEERING AND MINING JOURNAL ADVERTISING RATES. (NONPAREIL MEASUREMENT.) Table with columns for Lines, Inches, Regular, One Month, Three Months, Six Months, Nine Months, Twelve Months and rates for 1/4 Column, 1/2 Column, 1/4 Page, 1/2 Page, 3/4 Page, Full Page.

LANDS AND MINES FOR SALE.

FOR SALE
A RICH PLACER GOLD MINE.

Quantity and value of gravel fully proven by extensive work with limited amount of water. Abundant supply of water easily obtained by extending existing ditches. Good Head and Tailings Dump. Purchase price can be cleared in one or two years' work. Everything first-class. Good reasons given for the sale. Property can earn dividends from the start. Address

AURUM,

Care ENGINEERING AND MINING JOURNAL.

IRON ORE PROPERTY FOR SALE.

LOCATED in Potts Valley, in Alleghany and Craig Counties, Virginia. The property extends along the valley for a distance of forty miles. The Ore is Brown Hematite, and it crops out on Potts and Peters Mountains at an average elevation of about 700 feet above water level. The ore passes under the valley, and appears to be almost continuous throughout the entire distance of forty miles. The ore runs from 10 to 40 ft. thick. There is limestone and timber in abundance all along the valley, and a large and ample supply of water. Climate unexceptional. The property lies along the summit of Potts and Peters Mountains, inclosing the valley. Railway grade will not exceed 3/4 per cent. The property lies right between the two great coal fields, the New River and the Flat Top regions, which produce the best fuel in the world. The average analysis of the ores shows Metallic Iron, 52 per cent.; Silica, 8 per cent.; Phosphorus, 1/2 per cent.; Manganese, 1/2 per cent., and Sulphur only a trace. There are two tracts, one of 47,000 acres, the other 18,000 acres, which may be sold separate or as a whole. The east end of the property lies within eight miles of the Chesapeake & Ohio Railway, and the west end eleven miles from the Norfolk & Western Railway. All things considered, it is the most desirable iron property in the South. Correspondence solicited.

POTTS VALLEY MINING & MANUFACTURING CO.

By **W. T. THAYER, President,**
Charleston, Kanawha County, West V.rginia, U. S. A.

FOR SALE.

Manufacturing Sites, New York Harbor—Large blocks with bulkhead water front, on Newtown Creek, accessible to seagoing vessels. S. H. SCHIEFFELIN, e. o. w. 958 Madison Avenue, N. Y.

GOLD MINES FOR SALE.

WE have some splendid propositions for you on dividend paying gold mines in Cripple Creek and Gilpin County districts. Investigate.

THE CLARK LAND & MINES CO.,
Room 10, Opera House Block, Denver, Colo.

GOLD MINES FOR SALE.

On Pacific Coast. Correspondence solicited.
J. F. CROSETT,
No. 628 Sacramento St., San Francisco, Cal.

GOLD MINES FOR SALE

For full particulars address
CHARLES D. POSTON, Phoenix, Arizona.

Nickel Mines or Ore for Sale

Some 2,000 acres, on which are ten of the largest known nickel deposits in the Sudbury District; enormous bodies of massive pyrrhotite in sight. These lands are held in fee simple and free from royalty or dues to crown. Correspondence solicited.

N. S. DUNLAP,
205 De Grassi St., Toronto, Canada.

TO LEASE.

A developed silver mine with large per cent. of gold in Idaho Springs district on good terms. Property patented. Address **THE MINNIE BROWN MINING CO.,** Bucyrus, O.

ORGANIZED APRIL 12, 1842.
THE MUTUAL LIFE INSURANCE CO. OF NEW YORK.
RICHARD A. McCURDY, President.
Insures every approved description of **Life and Endowment Policies** on terms as favorable as those of any other company.
Cash Assets, \$204,638,783.96.

DIVIDENDS.

GOLD COIN MINES COMPANY (CENTRAL CITY, Gilpin County, Colorado),
Office 53 Broadway, Room 31, New York, January 10, 1896. }
A dividend of **ONE AND ONE-HALF PER CENT.** has this day been declared upon the capital stock of this company, payable at their office, No. 53 Broadway, New York, on January 30th, 1896, to stockholder of record of January 17, 1896. The transfer books will be closed on the 17th inst. and reopened on the 31st.
J. A. EDWARDS, Secretary.

HOMESTAKE MINING COMPANY,
MILLS BUILDING, 15 Broad Street, New York, Jan. 15, 1896. }
DIVIDEND NO. 210.
The regular monthly dividend, **TWENTY-FIVE (25) CENTS PER SHARE,** has been declared for December, payable at the office of the company, San Francisco, or at the transfer agency in New York, on the 20th inst.
Transfer books close on the 20th inst.
LOUNSBERY & CO., Transfer Agents.

HIGHLAND MINING COMPANY,
MILLS BUILDING, 15 Broad Street, New York, Jan. 15, 1896. }
DIVIDEND NO. 19.
The regular monthly dividend, **TWENTY-FIVE (25) CENTS PER SHARE,** has been declared; payable at the office of the company, San Francisco, or at the transfer agency in New York, on the 20th inst.
LOUNSBERY & CO., Transfer Agents.

ONTARIO SILVER MINING COMPANY,
MILLS BUILDING, 15 Broad Street, New York, Jan. 17, 1896. }
DIVIDEND NO. 198.
A dividend of **TEN (10) CENTS PER SHARE** has been declared, payable at the office of the company, San Francisco, or at the transfer agency in New York, on the 31st inst.
Transfer books close on the 25th inst.
LOUNSBERY & CO., Transfer Agents.

QUINCY MINING COMPANY,
NEW YORK, Jan. 16, 1896.
DIVIDEND No. 55.
Four dollars per share will be payable February 17th next, to registered holders 21th inst. Stockholders residing in Massachusetts will be paid at the office of Mr. N. H. Daniels, 35 Congress street, Boston.
WM. R. TODD, Treasurer.

MACHINERY AND SUPPLIES FOR SALE.

FOR SALE.

The following selected second-hand steel T-rails:
500 tons 60-lb., Western New York delivery.
1,000 " " Eastern New York delivery
60 " " Baltimore delivery.

ROBINSON & ORR,
No. 419 Wood St., PITTSBURGH, PA.

MISCELLANEOUS WANTS.

WANTED.

Party with \$2,500 to invest in development work on a gold property giving every indication of great value. For this amount a controlling interest can be had. For particulars address

W. G. McNELLEY,
Dahlonega, Ga.

WANTED,

To purchase a second-hand Griffin Mill, in good order. Address, stating price, **J. F. CO., ENGINEERING AND MINING JOURNAL.**

WANTED—COPPER MATTE, 40 to 50 PER cent. copper. Give price in carload lots F. O. B. Philadelphia. **THOMAS G. HUNTER,** Venice branch, Philadelphia & Reading Railroad, Manayunk, Philadelphia, Pa.

CRIPPLE CREEK MINING STOCK,
When intelligently and carefully selected, are good investments. Full information free. **J. D. CAMPBELL,** Stock Broker, 213 Boston Building, Denver, Colo. Branch Offices: Colorado Springs and Cripple Creek.

CRIPPLE CREEK MINING STOCKS

Bought and sold on commission. Correspondence solicited. Member Consolidated Mining Stock Exchange.
F. M. KEETIT,
508 West Yampa St., Colorado Springs, Colo.

E. C. BRIDGMAN

PUBLISHER AND MOUNTER.

Drawn, Photo Lith'd, Engraved, Printed, Colored, Mounted. **MAPS**

Maps for Reports to Order.

84 WARREN ST., NEW YORK

Received Too Late for Classification.

1430 WANTED—STEEL CASTING AND Engineering firm, in good financial condition, and with works having about 200 tons weekly capacity, requires a general manager. Must have knowledge of this special business, have general mechanical and metallurgical ability, and be well acquainted with general commercial routine, reliable costing system and able to control workmen. Preference given to one who could extend and introduce business. A very liberal salary and share of profits would be offered to one of special ability. Applications will be treated in strict confidence. Address **SPECIAL STEEL CASTINGS, ENGINEERING AND MINING JOURNAL.**

WANTED—POSITION AS MANAGER OR Superintendent of Gold or Silver Mining and Milling Property. Thorough knowledge of every detail of the business, both as to construction and operating. Practical assayer, expert accountant. Specialty—Careful business management and close supervision of details. Best of references. Address **PRACTICAL,** P. O. Box 298, Prescott, Ariz. No 17,37, Feb. 8.

MINING ENGINEER AND METALLURGIST (Freiberg graduate), with many year's experience as business manager and technical superintendent of Western mining and smelting concerns, and whose specialty is blast-furnace treatment of silver, lead, zinc ores, with recovery of zinc, desires position after April 1st. References exchanged. Address **C. T., ENGINEERING AND MINING JOURNAL.** No. 17,34, Jan. 25.

HUNT & ROBERTSON
77 PINE ST., NEW YORK,
ANALYSTS & ASSAYERS,
MINING ENGINEERS.
Specialty Made of Copper Metallurgy.

STUDENTS

Instruction in Assaying, Chemistry and Mineralogy for Business Men.
SIMONDS & WAINWRIGHT,
CHEMICAL & MINING ENGINEERS & ANALYSTS.
Laboratories, 20 Platt St. (cor. of Gold), New York.
Assays, Analyses, Experimental Research and Consultation.

NICKEL

GRAIN—for Anodes, German-Silver and Steel.
Nickel-Oxide for Nickel Salts.

THE CANADIAN COPPER CO.,
201 Perry-Payne Bldg., Cleveland, O.

Advertising not only brings trade; it directs trade, it creates trade.

THE BRIDGEPORT COPPER CO.

BRIDGEPORT, CONN.
Refiners of Copper. . . .
Argentiferous Material treated on favorable terms.
Advances Made on Consignments . . .

THE AMERICAN METAL CO. LIMITED,

80 Wall Street (P. O. Box 957), NEW YORK.
Security Building, ST. LOUIS, MO.
COPPER, COPPER ORES AND MATTES, TIN, LEAD, SPELTER, ANTIMONY, NICKEL, ALUMINUM.
ADVANCES MADE ON CONSIGNMENTS.
Agents for Henry R. Merton & Co., London, Birmingham Manchester and Glasgow; Metallgesellschaft, Frankfurt-on-Main; Williams, Foster & Co., Ltd., Swansea, Eng.; Societe le Nickel, Paris, France; Balbach Smelting & Refining Co., Newark, N. J.

THE ORFORD COPPER CO. COPPER SMELTERS

Works at Constable's Hook, N. J., opposite New Brighton, Staten Island. Copper Ore, Mattes, or Bullion purchased. Advances made on consignments for refining and sale. Specialty made of Silver-Bearing Ores and Mattes.

SELL
INGOT AND CAKE COPPER.
President, **ROBERT M. THOMPSON,**
Office, 37 to 39 Wall Street, New York.

LAMBERT'S WHARFAGE CO.,

Prince of Wales Dock, SWANSEA.
Ores, Mattes, Regulus and Bars Received and Prepared for Market.
Copper, Lead, Tin, Spelter and Pig Iron Received Weighed and Sampled and Warrants issued against same.
N. B.—Warrants are on the Accepted List of the London Metal Exchange.
Regular lines of Steamers from America, Europe, etc.
Consign Goods to Lambert's Cranes,
Prince of Wales Dock, Swansea.

LEDOUX & CO., Assayers and Engineers.

9 Cliff Street, New York.
ORES, BARS, BULLION AND ALL FURNACE PRODUCTS SAMPLED AND ASSAYED.
Public Ore Yards and Sampling Works.
ADVANCES OBTAINED ON CONSIGNMENTS. PRINCIPAL BANKS AND METAL BUYERS ACCEPT OUR CERTIFICATES AS FINAL.
ASSAYERS BY APPOINTMENT TO NEW YORK METAL EXCHANGE.

RIGGETTS & BANKS,

104 John St., New York.
ORES TESTED!

Complete Ore Milling and Testing Works for making practical working tests of ores to determine the Best Method of Treatment. Milling, Metallurgical and Chemical Processes investigated.

Assays and Analyses!
CIRCULARS AND TERMS ON APPLICATION.

JAMES & SHAKSPEARE, ENGLAND.

1 Metal Exchange Buildings, London, E. C.,
AND
17 Irwell Chambers West, Liverpool, Eng.

METALS, MATTES AND MINERALS.

Cable Address, METALLURGY, LONDON.
Use A B C Code, 4th Edition.

HENRY BATH & SON London, Liverpool and Swansea, BROKERS.

All Description of
Metals, Mattes, Etc.
Warehouses, Liverpool and Swansea.
Warrants Issued under their Special Act of Parliament.

NITRATE OF SODA.
Cable Address: - BATHOTA, LONDON.

VIVIAN, YOUNGER & BOND,

117 Leadenhall St., London, E. C.

Copper, Tin, Lead, Spelter, Antimony, Silver Bullion and all kinds of metals.
Best terms for Copper Mattes, Lead and Silver Ores, Silver-Lead Bullion, Etc., Etc.
Tinplates, Galvanized Iron, Railway Material, Etc., Etc.

Cable Address: "BOND," London.
Telegraph Codes Used: Bedford McNeill's A B C 4th Edition, Moreing & Neal's.

BALTIMORE COPPER SMELTING AND ROLLING COMPANY (The Baltimore Copper Works),

Office: KEYSER BUILDING,
BALTIMORE, MD.
Ingot Copper. Sheet Copper.

Direct Communication with South Africa.

The easiest and best way to get immediate communication is by using the Best Mining Code.
McNeill's General Telegraphic and Mining Code is used by mining men and others all over the world. Contains over 45,000 code words used in connection with Mining.

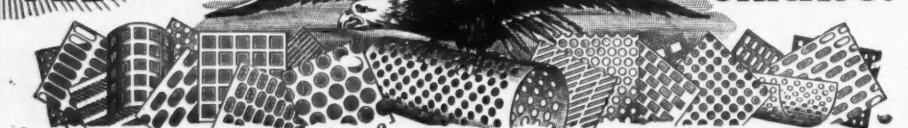
Price per Copy, \$7.50.
THE SCIENTIFIC PUBLISHING CO.

NEW YORK, CHICAGO, DENVER, LONDON, ENG.,
253 Broadway. 737 Moradnock. 206 Boston Bldg. 20 Bucklersbury.

LEWISOHN BROTHERS,

P. O. Box 1247. 81 and 83 FULTON STREET, NEW YORK.
Advances made on Copper, Matte and Ores.
Agents for the following Mining Companies: Boston & Montana C. C. & S. Mining Co.; Tamarack Mining Co.; Butte & Boston Mining Co.; Osceola Consolidated Mining Co.; Arizona Copper Co., Ltd.; Kearsarge Mining Co.

THE HARRINGTON & KING PERFORATING CO. CHICAGO.



**METALS PERFORATED AS REQUIRED.
FOR MINING SCREENS OF ALL KINDS.**

FOR USE IN
MILLING AND MINING MACHINERY, STONE, COAL AND ORE SCREENS,
REDUCTION AND CONCENTRATING WORKS, STAMP BATTERY SCREENS,
WOOLEN, COTTON, PAPER AND PULP MILLS, BRICK AND TILE WORKS, FILTERS,
RICE, FLOUR AND COTTONSEED OIL MILLS, SPARK ARRESTERS, GAS AND WATER WORKS,
SUGAR AND MALT HOUSES, OIL, GAS AND VAPOR STOVES,
DISTILLERIES, FILTER PRESSES, COFFEE MACHINERY, ETC., ETC.

STANDARD SIZES PERFORATED TIN AND BRASS ALWAYS IN STOCK.
Main Office and Works, 222 to 240 N. Union St., Chicago, Ill., U. S. A.
Eastern Office, No. 284 Pearl St., New York.

Diamond Pointed Core Drills

Take out SOLID core to any required depth. Unequaled for Accuracy, Durability, Efficiency and Economy. For twenty-six years these drills have led all competitors, and embody many new and VALUABLE improvements not possessed by other drills.

They are the ONLY MACHINES that will indicate INSTANTLY and ACCURATELY the EXACT THICKNESS of EACH and EVERY STRATUM OF ROCK while the drill is running, thus enabling the operator to save a much GREATER PERCENTAGE OF CORE than can be saved by any other drill. They are the only machines capable of giving a RELIABLE record of the THICKNESS of EVERY STRATUM PASSED through in boring. We carry IN STOCK Drills of VARIOUS SIZES capable of boring holes from 200 to 5,000 FEET in depth. Before contracting or purchasing send for catalogue and terms for drilling holes by contract. We also build a large line of Mining, Hoisting and Underground Haulage Machinery.

Write for what you want to

THE M. C. BULLOCK MAN'F'G CO., 1170 Lake St., CHICAGO, J. S. A.