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RICHARD P. ROTHWELL, C. E., M. E., Editor
 ROSSITER W. RAYMOND Ph. D. M. E., Special Contributor
 SOPHIA BRAEUNLICH Business Manager.
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AMERICAN INSTITUTE OF MINING ENGINEERS.

The following programme for the Bridgeport meeting has been issued by Dr. R. W. Raymond, secretary:

Tuesday evening, October 2d.—Opening session. Addresses and illustrated paper.

Wednesday, October 3d.—Sessions morning and afternoon. Evening reception at Seaside Club, Bridgeport.

Thursday, October 4th.—Excursion through Naugatuck Valley and visit to Waterbury, where brass and copper rolling mills, etc., will be inspected. Session in the evening.

Friday, October 5th.—Visits to metal works, etc., in and around Bridgeport, concluding in the late afternoon and early evening with a New England dinner at Dr. Warner's farm, "Grassmere."

Hotel headquarters will be at the George Hotel, Black Rock. The train on the New York, New Haven & Hartford Railroad leaving the Grand Central station in New York on Tuesday at 4:02 P. M. will be met at Fairfield station at 5:22 P. M. by stages and baggage wagons for the hotel. Probably one other express train will stop on that afternoon at Fairfield station. Members taking trains which stop only at Bridgeport will have a longer trip to the hotel.

The revival of business and increasing prosperity are noticeable in nearly every part of the country. Some of the proofs of this improved condition are given in our usual "Notes of the Week" in our gold and silver column on another page.

New York has not been blessed with profitable gold or silver mines, but as a compensation it has been comparatively free from the mining swindles that have cursed some more inaccessible though richer States. We have recently had brought to our attention the Surprise Mining Company, which owns a quarry at Pompton, N. J., and has built a gold stamp mill at Woodside, N. J., which, from the evidence before us, would seem to be the victim of a clumsy piece of salting. Dr. J. Lanson Wills, a competent and reliable expert, who was engaged at the works, sampled the mine, and assayed 8 of his 10 samples without finding any appreciable amount of the precious metals, while an employee in the mill assayed the other two samples and found them rich in gold and silver. Dr. Wills naturally became suspicious and set a trap for this employee, and actually saw him salting the sample with "sweeps" or jewelers' filings. The lame defense offered by the representatives of the company is that no motive is shown for salting; that only a few persons are interested in the enterprise and they are not offering stock for sale; which, however, leaves open the question as to what might be done if the salting had been successfully accomplished. We asked the manager of the company, Mr. Madley, to give whatever "other side" he had to this story, and after a somewhat prolonged interview we were obliged to say that his evidence did not really contradict the statement of Dr. Wills and other experts, or remove the impression they had made.

The president of the company is Mr. Thomas Benfield. The evidence we have received fully justifies the opinion that the property does not contain paying ore; that salting of the samples has been practiced, but it does not prove who instigated this. It is quite evident that the whole enterprise is a good one to leave alone. Those who have already expended between \$50,000 and \$100,000 in it will probably lose their investment.

The shareholders of the Poorman Consolidated Mining Company of Idaho are in a position to appreciate the warning the "Engineering and Mining Journal" gave them when the manipulators were "booming" the stock in London and filling the complaisant London papers with glowing reports of the richness of the mine. At that time the shares sold above 6s.; now they are offered below 2s. The French shareholders wisely and promptly sent Mr. Louis Pelaton, the well-known French mining engineer, to examine the mine and investigate the suspicious and disgraceful circumstances connected with the past management of this property. He had scarcely landed in New York when he learned that the mill had burned down. No report has yet been made public of the results of the clean-up which had just been made before the fire occurred. Every one suspects, however, that the clean-up was very disappointing, and no one was surprised that the mill, in sheer disgust, should take fire. The "Engineering and Mining Journal" had requested the well-known expert, Capt. John Plummer, to examine the mine and report its condition for publication in the "Engineering and Mining Journal," but, as already stated in these columns, he was refused admittance. It was then quite clear that the mine was not what was claimed, and the disappointment of the subsequent clean-up might have been anticipated.

It is now said that the mine has, in some mysterious though not unexpected manner, run up a large indebtedness. If the stockholders continue to allow the present Van Ee-Brotherton "combine" to expend their money and should rich ore be found in the mine—for it does not now show

much good ore—it would not astound many who have followed the records of the past, should the property be sold out for the indebtedness. Such experiences are familiar to London shareholders.

The "Engineering and Mining Journal" has already called attention to the fraudulent (we use the word advisedly) transactions of the old Poor-man management, and there are not lacking those who see little difference between the new management and the old. We have suggested that a perusal of the list of shareholdings before and after the deal, which was based in 1892-1893 on false returns, would show who had unloaded the stock and who was in a position to know, and should have known, that the returns on which that "boom" was based were in fact fraudulent. The "Engineering and Mining Journal" has these lists of the shareholdings and commends this point to the victims in London and Paris.

No doubt the shareholders will be well advised by Mr. Pelaton, whose report has not yet been made public or come to our knowledge, but it requires no expert report to know that the shareholders can never expect any satisfactory returns, whatever value the mine may have, while its management is under the control of those who engineered the deal of 1892-93.

LOCATION WITHOUT DISCOVERY.

The letter of Mr. Francis T. Freeland, published in another column, is an admirable piece of condensed good sense. Mr. Freeland's suggestions are based upon a long and varied experience as a mine surveyor and manager, which has guided him to an acute recognition of the weakest features of our present United States mining law. I concur heartily in all his recommendations, except the limitation of claims to ten acres as a maximum. The present maximum (1,500 × 600 ft.) is something over 20 acres and I do not understand why a claim without extra-lateral lode rights should be limited to less than half that area. It must be remembered that this is only the maximum, and that State, Territorial or district regulations might be permitted, under a new law as under the present one, to reduce the size of claims, wherever local conditions rendered such a measure wise or popular.

I desire to express more particularly my assent to Mr. Freeland's first proposal, "location without discovery." This would not be practicable under the present statute, which lays so much weight upon the apex, and its course with reference to the end-lines. But if the extralateral right could be got rid of, there would be no reason left for insisting upon a discovery. The inherent absurdity of the requirement is obvious. The United States separates certain land as "mineral," without knowing positively whether it is so or not. A citizen appears, desiring to acquire a tract of such mineral land at \$5 per acre; but the government insists upon sworn testimony that he has discovered a valuable lode upon it, before it will allow him to buy it at four times the price of non-mineral land, or twice the price of mineral land not containing a "known lode." Did ever a seller take such pains to defeat a sale? What would be the harm if the United States should sell all its so-called "mineral land" in small lots at \$5 per acre? It is reasonable enough that an application for agricultural land should be subject to the inquiry, whether the desired tract be not more valuable for mining purposes, since, in that case, the price would be larger; but there is no conceivable reason for refusing and worrying an applicant for fear he may be willing to pay too much.

Moreover, as everybody knows, the requirement of a discovery is satisfied in the most slipshod manner. To say nothing of flat perjury, anything may be a "discovery" to which the discoverer is willing to swear as a prospectively valuable deposit. After a patent has been issued it cannot be attacked by any party except the United States on the ground that the alleged discovery preceding location was a fraud or mistake. By the laws of some of the States, a later discovery within the location validates the location, though there had been no true discovery when the record was made. The instances in which proceedings have been instituted on the part of the United States to cancel a patent on the ground of "no discovery" are exceedingly rare; and I think they will never occur except as incidental to a private contest, in which one of the parties tries to use the government for the accomplishment of its own victory. On the whole, we may fairly say that the requirement of discovery, as practically enforced, is not only a "dead letter," but a tolerably decayed and offensive one.

Yet it cannot be got rid of, so long as the extra-lateral right continues; for in disputes between adjacent claims it is necessary that some one lode should be distinguished as the particular lode discovered and located, in order that the end-lines of the claim may be ascertained, for the definition of its extra-lateral right. This question does not involve the validity of the United States patent: it is merely an inquiry into the extent of the property conveyed thereby. A mining patent, upon a location made without a true discovery, is perfectly valid as against everybody but the United States; and the abolition of the requirement of discovery would make little practical difference, if the end-lines and side-lines were once restored to their true and only significance as ultimate boundaries of all ownership.

The introduction of such a reform as Mr. Freeland advocates would greatly diminish the gains of lawyers and experts of the next generation; but those who are now living would find enough to do in fighting over "vested interests" created by the obscurities and absurdities of the existing system. Even self-interest, therefore, might well abstain from opposing a change so thoroughly desirable for the mining industry.

R. W. RAYMOND.

BIMETALLISM VS. SILVER MONOMETALLISM.

During a recent extended visit to Colorado the editor of the "Engineering and Mining Journal" sought, on every occasion, to familiarize himself with the views and arguments of the advocates of free silver coinage and the opinions of those most prominently connected with mining in Colorado on the outlook for the industry, and particularly the probable future of gold and silver mining in the Western States. We shall refer in the columns of this journal on many occasions to these opinions, and now repeat our often expressed request, that the representatives of the industry place before our readers, fairly and clearly, their views, whether these be in accord with those of our editorial columns or not. The "Engineering and Mining Journal" has always been open to those who have reasons to present which may aid us and our readers in arriving at correct conclusions as to the policy which will best promote the interests and advance the prosperity of the mineral industry.

On another page will be found a letter addressed by the Editor of the "Engineering and Mining Journal" to the Denver "Times-Sun," in reply to one of its correspondents. This letter summarizes the chief arguments advanced by the Colorado advocates of free silver coinage by the United States alone, and states a few of the objections we see to such a policy. Assuredly the subject is in the highest degree important, for the injury which this policy, if it is really based upon erroneous premises, would inflict upon the country, should make every one anxious to ascertain the truth, whether it accord with or contradict pre-existing impressions or beliefs. If the adoption and even the advocacy of free silver coinage by this country alone would bring upon it the dangers and disasters which are pointed out in this letter, and would tend to defer or defeat the attainment of actual universal bimetallicism—which is the avowed aim of the great majority of our people—then the advocates of free silver coinage who desire only the good of the country would modify their opinions. On the other hand, if they can successfully refute the arguments advanced against free coinage, the "Engineering and Mining Journal" is always open to conviction and is worth converting. It may be necessary to remind some of the too energetic and thoughtless advocates of free coinage, like the Durango "Democrat" and the "Daily Record," Denver, who mistake virulent denunciation and vulgar personal abuse for argument, that such answers only tend to convince intelligent readers that the cause which resorts to them is in the wrong and has no rational arguments to support it.

WANTS TO KNOW.

To the Editor of the Times-Sun:

Editor Rothwell, the dyed-in-the-wool gold-bug editor of the "Engineering and Mining Journal," is quoted by a contemporary as asserting that "the United States is not strong enough to maintain alone the free coinage of silver, but that bimetallicism can be secured through co-operation of England if the subject is properly presented to the British mind."

As Mr. Rothwell, in his assertions and theories, "hits us where we live" —wherein all the people of Colorado and the other gold and silver-producing States are vitally interested—would the "Times-Sun" be kind enough to offer to Mr. Rothwell the use of his columns for a full explanation of his views and reasons why the United States is not of sufficient strength to maintain alone the free coinage of silver? Not as a free "ad" for Mr. Rothwell and his "Mining and Engineering Journal," but for the purpose of enlightening the heathens of the wild and woolly West who, as miners, producers and consumers of minerals and metals, make it possible for such class journals as Mr. Rothwell publishes to flourish. It is a well-known fact that the gold-bug organ, which the gentleman represents, was one, and perhaps is now, of the most virulent and potent enemies of the silver industry. We Western people know that a writer living in the gold-bug atmosphere of New York City and the New England States naturally imbibes an antipathy to silver. The silver miner naturally believes in the supremacy of silver, though he, on the other hand, has no prejudice against gold. We do not ask that Mr. Rothwell adopt at once our views as regards silver, but now that he is here will he not be good enough to look at the situation through our spectacles?

But, first of all, let the gentleman tell us now why Lombard street must be consulted when we wish to consult a financial system of our own in this country? Let him tell us frankly and without reservation all that is in his mind as between friends. We want to know. J. J. GUENTHERODT.
DENVER, Aug. 10.

BIMETALLISM VS. SILVER MONOMETALLISM.

Editor Denver Times-Sun:

Sir: Your correspondent, Mr. J. J. Guentherodt, in a recent issue (August 12th) of your paper, asks me to state frankly my views on the silver question, and to look at the situation through his spectacles. With your permission I will do this.

It is not necessary to notice your correspondent's erroneous assertion that I am a "dyed-in-the-wool gold-bug," assuming that he means by this that I favor gold monometallism. The steadfast advocacy by the "Engineering and Mining Journal" of the only bimetallicism which can keep both metals in circulation at the same time is a sufficient answer to this misstatement.

There are many now calling themselves "bimetallists" who want either silver monometallism or still cheaper paper, fiat, money. What I

mean by bimetalism is the actual use, circulation and interchangeability at some fixed ratio (let it be 16 to 1 if that can be adopted) of gold and silver money. The "Engineering and Mining Journal" has always opposed both fiat paper money and monometallism, whether of gold or silver.

Many so-called bimetalists seem to think that the enactment of a law by the United States providing for the free coinage of full legal-tender silver and gold is all that is necessary to give us practical bimetalism with both metals circulating together. The example of all free-coinage countries to-day, not one of which has any gold in circulation, flatly contradicts this assumption and, added to our own experience with legal-tender paper money, convinces me that the enactment of free silver coinage by the United States alone would give us silver monometallism and not bimetalism.

Looking, as requested, through the spectacles of your free-coinage advocates, I see their arguments as follows:

1st. The United States is so rich and enterprising it should adopt a monetary policy for itself without regard to other nations, whom it can force to follow its lead.

2d. There are many different theories among free-coinage advocates as to what would happen if this country would alone (without international co-operation) adopt the free coinage of silver.

a. A very few believe our gold and silver would still circulate together, silver of course advancing at once to its coinage value of \$1.29 an ounce all over the world.

b. A very much larger number admit that gold would at once go to a premium and would disappear from circulation, being hoarded, or taken by those who, lacking the unlimited faith of some of the free-coinage advocates, would sell us their silver and our bonds, mortgages and other securities, and that consequently this country would at once go onto silver monometallism, like Mexico, Japan and India, and with our sole money depreciated, as theirs is, to its bullion value in the markets of the world. These advocates maintain that this would be to our advantage because, as they claim, it would enable this country to capture all the trade of the silver-basis countries now monopolized by European gold-basis countries. They claim further that when the European nations discovered that we were taking this trade they would open their mints to free silver coinage, and thereafter all the world would have practical bimetalism. Of course, our advantage in being alone able to supply the silver-basis countries with manufactures would then cease, and we would have to reduce our costs of manufacturing or return to our present condition of foreign trade.

c. Others, accepting as certain the disappearance of our gold, believe that this would be but temporary, and that after a certain number of years our production of gold and the excess of our export trade with gold countries would bring us so much gold that it would find its way into circulation, the price of silver having advanced to its coinage ratio throughout the world; then, again, the whole world would have a practical bimetalism and would adopt free coinage also.

d. Still another class of free-coinage advocates assert that the adoption of free coinage here would be to drive gold out; to give us silver monometallism and advance wages and every product in silver dollars. Though this supposition precludes the idea of our making foreign markets for our goods, its advocates maintain we would still have prosperous times as when "greenbacks" were plenty and worth 40 or 50 cents in gold for a dollar, because every one would be getting more dollars—such as they would be—for everything. The cheaper and more abundant money would become the better according to these advocates, the logical limit of prosperity in this direction would be when either greenbacks or "flat" money was manufactured in unlimited quantity and issued through extravagant expenditures of the government, which is the only way to put such money in circulation. These advocates of free coinage, though calling themselves bimetalists, use silver only as a stepping-stone to a still cheaper money in which to pay their debts. They are not bimetalists.

If your correspondent will put on my spectacles he will perceive the following practical objections to these views of the advocates of free silver coinage by this country alone:

First.—No one questions the fact that this is the greatest, richest and most resourceful nation in the world. It is not pretended, however, that it or any particular part of it has yet attained infallibility in its decisions on political questions, nor infinite wisdom in its treatment of financial matters. It is not long since the greenback craze almost carried over President Grant's veto a bill which to-day could scarcely receive half a dozen votes if it were introduced in Congress, and already many of those who voted for the Bland and Sherman "makeshifts" now condemn both as mischievous measures which have retarded universal bimetalism. The "monetary policy" of free silver coinage which your correspondent thinks this country should adopt, without regard to the rest of the world, is stoutly opposed by the great majority of our own people who believe (for it is with the greater number on each side simply a question of blind faith) that it would be in the highest degree injurious to them, and would retard real bimetalism, which nearly all desire. The question is not at all whether this country "is strong enough" (to use an expression erroneously attributed to me) to adopt free coinage alone; the question is whether it would be desirable or otherwise for this country to have it if it could, without international agreement for bimetalism. As to this my earnest study of the matter from the standpoint of the silver producers and from that of the interests of the whole country, leaves no shadow of doubt in my mind. It is not a question of strength, but of wisdom and enlightened self-interest.

Second.—The United States holds some \$600,000,000 of gold (of which the government holds free about \$50,000,000), an equal amount of silver and about \$400,000,000 of uncovered paper. The whole world is estimated by our mint authorities to hold some \$3,700,000,000 gold and \$4,000,000,000 silver (speaking from recollection, for I am without the mint reports) and \$2,600,000,000 of uncovered paper. If we should ever seriously discuss the adoption of free silver coinage the rest of the world, having already abundantly shown that it does not believe in the possibility of re-establishing the value of the white metal, would certainly commence unloading our securities on us while gold could be obtained for them; and this would again, as it did last year, precipitate a panic on us. Should we actually adopt free coinage, gold would at once go to a premium, or in other words our silver coinage would go to its bullion value

in gold—just as silver is in Mexico and Japan—and we would suddenly lose nearly half of our money, while Heaven only knows what would become of the remainder, for every business would be revolutionized and collections for a time would be impossible with so large a part of our money out of circulation. The amount of gold held by the government would not suffice to maintain the parity of gold and silver for a single day, and we would therefore at once go to silver monometallism. All foreign articles would increase in price. If wages and the products of labor did not increase in price we could hope to capture some of Europe's export trade, but our workmen, with wages no higher in silver than they had been in gold, would, of course, be heavy losers; while if, on the other hand, wages and the products of labor advanced in price proportionately with the premium on gold, we could not gain any foreign trade. If it be claimed that wages would advance, but not so much as gold had advanced as compared with silver, and that we would capture a portion of the trade of other silver countries now held by Europe, then, through the sacrifice of our workmen, our foreign trade would have gained something, and as soon as European nations appreciated their loss they would adopt bimetalism, and we would lose the trade we had gained at such frightful cost, else wages would at once have to come down from the high rate to a lower point than they are now at.

The internal trade of this country is suffering in almost every department from over-production, for our capacity to produce exceeds our home consumption and we must open wider markets for our surplus. Prices everywhere are depressed, in part because gold, which measures the value of everything, is appreciating in value owing to the increasing demand for it which the general demonetization of silver has created. The incalculable disaster which threatens the whole world through the decline in the value of everything measured by appreciating gold is so real and so near that it calls for the most earnest efforts of statesmen and political economists everywhere. To me it seems that the quickest, easiest, and probably the only way to prevent these impending misfortunes is the adoption by the chief commercial nations of actual bimetalism and free coinage of both metals.

It is not difficult to show from the statistics of investment and trade that it is to the interest of all countries, and far above all others to that of Great Britain, that all the nations, her debtors, be made solvent and prosperous, and thus enabled to pay their debts and to buy and borrow more largely. The attainment of this prosperity can be secured by the establishment of universal bimetalism when all the silver and gold in the world not required in the arts would be used as money and would thus increase the prices of everything by making the measuring standard safe and abundant.

Few people appreciate how small an amount of gold would have to be expended by the gold-basis nations either in purchasing silver of the silver-basis nations, or in buying their bonds, to put all the nations of the world on the bimetallic basis. The purchase of \$150,000,000 of silver (or less than the United States purchased in three years under the Sherman Act) would suffice to put the whole world on bimetalism under an international agreement. Without such agreement it would require many times as much gold to establish, and it would be impossible to maintain, universal bimetalism.

Not only does the proposition to have this country establish bimetalism by alone adopting free coinage, appear impracticable and injurious, but none of the European nations who desire bimetalism is willing to undertake the smaller risk of uniting with us in the effort unless Great Britain will also join. On the other hand, a study of her investments and trade statistics shows how infinitely the interest of Great Britain in establishing through universal bimetalism the credit and prosperity of her debtors and markets outweigh any advantage she could gain from an appreciating gold standard and cheap breadstuffs produced with low wages paid in depreciated silver. And I therefore believe the quickest, easiest and least costly way to attain bimetalism is to work directly for an international agreement for it.

There is not so wide a difference between the views of the "Engineering and Mining Journal" and your Colorado bimetalist as some appear to think. We all desire the full use of gold and silver in actual circulation as money throughout the world. I believe that an international agreement is the only safe and practical means of attaining this end, and that free silver coinage by the United States alone would retard the attainment of universal bimetalism, and would result at first in an enormous contraction in our money in circulation, and would quickly put us on silver monometallism and disturb and jeopardize all industry, trade and commerce of this country, without the possibility of any permanent advantage. I believe that universal bimetalism through international agreement can be attained more quickly than free silver coinage could be secured in this country, even if it had any ultimate advantages, and every one admits that nothing but international agreement for universal bimetalism would secure a permanent solution of the problem. I therefore oppose the adoption of free silver coinage by the United States alone as a rash and dangerous experiment to attain an end more easily attained in a safe way.

Rico, Colo., August, 1894.

R. P. ROTHWELL,
Editor "Engineering and Mining Journal."

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.

Great Britain, Board of Trade: Report on Profit-Sharing; 1894. By D. F. Schloss. London, Eng.: H. M. Stationery Office. Pages 198.

Electric Lighting Plants; Their Cost and Operation. By W. J. Buckley. Chicago, Ill.; Wm. Johnston Printing Company. Pages 275; illustrated. Price \$2.

Journal of the Iron and Steel Institute, Vol. XLV., 1894. Edited by Bennett H. Brough, Secretary. London, Eng., and New York: E. & F. N. Spon. Pages 671; with diagrams.

Italy: Review of the Mineral Industry for 1893. Prepared by the Ministry of Agriculture, Industry and Commerce. Rome, Italy: National Printing Office. Pages 50; with diagrams.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

SUPREME COURT OF ILLINOIS.

The Supreme Court of Illinois holds that where a miner who was directed to move a coal-car along a dark, narrow passage in mine, with which he was not familiar, went in front of the car when it was stuck on a down grade, and pulled it toward him, whereupon the car ran rapidly down grade and injured him. It was held that his failure to know that the car was on a down grade when he pulled it did not show want of ordinary care. Where the evidence shows that when he was injured he was working in a coal mine belonging to defendant, and there is evidence that he was employed by and working under the direction of a foreman who was superintending the operation of the mine, the question whether he was defendant's servant is for the jury.—Consolidated Coal Company, of St. Louis v. Bruce 37 N. E. Rep., 912.

The Supreme Court of Illinois holds that a coal mining lease which provided that the lessee should pay a royalty of three-eighths of a cent per bushel, and should guarantee a yearly royalty of not less than \$1,200, and declares that if no coal shall be mined, and the lessee should pay the monthly installments of \$100 on its guaranty of \$1,200 a year, such payments should be considered as advanced royalties to be credited on mining thereafter done. It was held that the guaranteed royalty was payable monthly, and not annually.—Consolidated Coal Co. v. Peers 57 N. E. Rep., 937.

Rights of Widow in Mining Lease.

Where a widow is assigned dower in land, subject to a mining lease given by her husband and herself, which provides that the lessee shall pay annually one dollar per acre until it opens mines on the land, and shall then pay a certain royalty, the widow is entitled to all payments falling due after her dower is assigned, although the mines have not been opened at that time.—Priddy v. Griffith, 37 N. E. Rep., 999.

SUPREME COURT OF UTAH.

Where Fixtures are Part of Mining Claim.

Under the statutes providing that "mining claims" are not taxable, an engine and boiler built into a brick foundation, and firmly affixed by bolts leaded down and used in working a mine, are part of a mining claim and not taxable.—Mammoth Mining Co. v. Juab County, 37 Pac. Rep., 348.

CIRCUIT COURT OF APPEALS (THIRD CIRCUIT).

Apportionment of Deliveries not Required.

A contract for the sale of the entire output of certain coal mines at prices payable in monthly installments, for the coal at the mines, the buyer agreeing to ship and pay for at least a certain quantity per annum, provided so much is furnished him, cannot be construed because of circumstances existing when it was made, to require him to take the coal monthly, in such quantities as to keep the seller's works and workmen reasonably employed, as they had customarily been and were at the time of the contract, thus imposing on him a distinct and unexpressed obligation.—Shipman v. Salsburgh Coal Company, 62 Fed. Rep., 145.

CIRCUIT COURT OF APPEALS (SECOND CIRCUIT).

Damages for Breach of Contract, Subject to Further Agreement.

A contract for the sale of the entire output of a colliery for more than 20 years provided that the price should be agreed upon from month to month by the parties. It was held that, on a refusal to deliver such output, in the absence of any further agreement as to price or of any means of determining what price the contract required, the damages from such refusal could not be ascertained and nominal damages were only recoverable.—Watts v. Weston, 62 Fed. Rep., 136.

CURVATURE OF DIAMOND DRILL HOLES.*

By J. Parke Channing.

In the winter of 1892-3 I was doing some exploring on one of the Michigan iron ranges in which the ore formation was so deeply covered with drift of a wet and sandy nature that test pitting was out of the question.

On the hanging wall side was quartzite, and as the formation stood nearly upright it was determined to sink at various intervals sand shafts to this quartzite, about 250 ft. beyond the line of contact of the quartzite and the formation; and then, by a series of fan holes, test this formation. From the first pit that we ledged at some 30 ft. and sunk in the ledge 17 ft. we drilled nine holes, testing the formation for a length of over 500 ft. and to a considerable depth.

Knowing the strike of the formation and its approximate dip, I was considerably surprised, when drilling hole No. 3, to find that the stratification of the quartzite cores did not agree with the supposed strike, dip and angle of the hole.

Concluding that the hole must have changed its angle, I determined to test it, and knowing that hydrofluoric acid had been used for that purpose, I procured a bottle of a 20% solution of that acid, and getting some pieces of $\frac{3}{4}$ -in. combustion tubing, made some test tubes 5 in. long. In one of these I poured 2 in. of the hydrofluoric acid, put in a rubber cork, and having blocked the bit with a plug of wood, I introduced the corked tube in the core shell, screwed the core shell on the core barrel and lowered the rods to the bottom of the hole.

This hole had been started at an angle of 45° and was then down 531 ft. 6 in. The time occupied in lowering was 30 minutes. The rods were left in the hole 90 minutes and it took 45 minutes to pull the rods out. The hydraulic pressure at the bottom of the hole had forced the rubber cork down in the tube, compressing the air, and inside was a very mixed up mass of a milky liquid.

Examination showed, however, a well defined elliptical ring of adherent crystals which, when holding the tube in the proper position, coincided with the water level. This ring was not, however, continuous, because of the cork having been forced down so deep in the tube.

Laying the tube on one edge of a geological clinometer and tilting the clinometer and tube till the water and crystal line were coincident, 30° was easily read, showing that the hole had flattened 15° in the 531.5 ft.

I was so encouraged by the results of this test that I sent to Eimer & Amend and had made a dozen special tubes 1 in. in diameter, 5 in. long, with ground glass stoppers.

Hole No. 4 was now down 175 ft., having been started at an angle of 45°. I sent down one of the new tubes, having taken the precaution to drive a wooden plug in the core barrel so that the water in the rods would not have a tendency to force the tube out while pulling up. We lowered in 15 minutes, left the rods down two hours, pulled up, and found the tube filled with liquid, whereas I had only put in about 2 in. of mixed acid and water. The hydraulic pressure had worked in through the ground-glass joint and diluted and filled the tube, and we had no test.

I tried it again, this time blocking the core barrel and the bit each with a dry wooden plug, and making small gaskets for the joints between the bit, the shell and the barrel. I had the same results, however, the water had worked its way through the fibers of the wooden plugs and my test was again spoiled. After trying a couple of the old style rubber combustion tubes and getting only fair results, I took one of the special tubes and, before putting in the acid, heated it and at the same time dipped the stopper in melted paraffine. The acid was then put in, the stopper with its film of melted paraffine quickly pressed in and the tube inserted in the core shell. This tube gave me the first clear and distinct test. It showed 35° at a depth of 175 ft.

From that time on the use of the tube became very simple. I found that ample time could be taken to pour in the acid, affix the stopper and insert the apparatus in the core shell. My foreman had no difficulty in making the tests.

The final method of work was as follows: A blank tube was put in the combined bit and core shell from the top end until the lower end rested on the spring. Holding this in position it was laid beside the core barrel so that the length of thread was allowed for, and a file mark made on the core barrel just even with the top of the glass stopper. A dry wooden plug was made to fit the core barrel and driven in till it just cleared a point corresponding to the file mark. The core barrel was now clamped in a vise in a nearly vertical position.

The stopper of the tube was held in a tin spoon with a little paraffine over a candle flame and the upper end of the tube warmed. An inch of 20% hydrofluoric acid was carefully poured in the tube, then an inch of water, and the stopper taken from the melted spoon of wax, smartly wrapped to throw off any excess of paraffine, and quickly put in the tube. The acid immediately heated up the tube, but no ill effects were felt from this. Wrapping a thread or two of lampwicking around the neck of the tube, it was put in the core shell and still holding it in an upright position the upper end was introduced into the core barrel and the thread between the shell and the barrel screwed up. Carrying the barrel in an upright position it was put down the hole and no special pains taken in lowering down the rods, save to touch the bottom of the hole carefully.

I made several experiments in regard to the time necessary to leave the tube in the hole, and found that two hours was as good as 24. One hour did not give very good results.

The churning up that the acid had in going down the hole did not in the least affect the test, and the results was generally clear.

When the tube came out of the hole I tried it before taking the stopper out, making the liquid coincide with the line of crystals. Then I removed the stopper, cleaned out the crystals and putting in fresh water tried the angle again, using for a guide that portion of the glass which had been etched by the acid.

In order to see if the rods would really turn when bent at angles as shown by the above record, I connected together 50 ft. of Sullivan E rods whose external diameter is 1.315 in., being made of double thick pipe. Curving this so that the depth of the arc was 6 ft., I had no difficulty in "tonging" the rods with a pipe wrench. This curvature was much greater than that found in the holes.

There is one point, however, which I failed to determine, and that is the amount of lateral deviation of the holes, if any. If the country I had been working in had been totally free from local attraction, there would have been no difficulty in sending down in the core shell a small compass mounted on a universal bearing with a tripping arrangement to set it when the bottom of the hole was reached and the needle quiet. As it is, I am left in the dark on that point. After we got started the dip of the hole was tested every 100 ft., and thus we kept a fair idea of where we were. On some of the deep holes the point was 50 ft. higher up and 50 ft. further away from the collar of the hole than if it had gone straight.

In looking about to discover why the holes flattened, I remembered that about the last part of hole No. 2 we put in a new core barrel. These core barrels when new are $1\frac{1}{2}$ in. in diameter, but after use wear down to $1\frac{1}{4}$ in. at the upper end. The bits I used were $1\frac{1}{2}$ in., and the clearance of the stone $\frac{1}{4}$ in. on each side, so that the gauge of a new bit was $1\frac{1}{2} + \frac{1}{4} = 1\frac{3}{4}$. It is quite evident that with an old core barrel $1\frac{1}{2}$ in. diameter at its upper end and a bit $1\frac{3}{4}$ at its lower end, and this bit constantly kept up to gauge, we have a 10 ft. tapered boring tool. The weight of the rods and their pressure produce a tendency for the upper end of this tool to rest on the bottom of the hole, and thus in a distance of 10 ft. we have the line of tool $\frac{1}{2}$ in. out from the line of the hole in which the tool rests.

Hole number nine at the first pit mentioned was also drilled by Mr. R. H. Channing, and I believe he succeeded in keeping it straight by using $1\frac{1}{2}$ in. blank bits with but little clearance and a new core barrel. The work of the nine fan holes was done with an "S" drill of the Sullivan Machinery Company, and the hole near Amasa by an "E" drill of the same make. Although somewhat foreign to the subject, I give the cost of drilling the first 2,091 ft. at the fan-hole pit. This cost includes everything, from the time the pit was left in shape for the drill to go down.

Labor on drills.....	\$666
Firemen.....	76
Fuel.....	182
Camp account.....	722
Repairs on drills, bits, core barrels, etc.....	175
Repairs on boilers and machinery, and sundry supplies.....	57
Carbons.....	239
Superintendence.....	196
	\$3,374

This includes running a No. 7 pump to keep the water out.

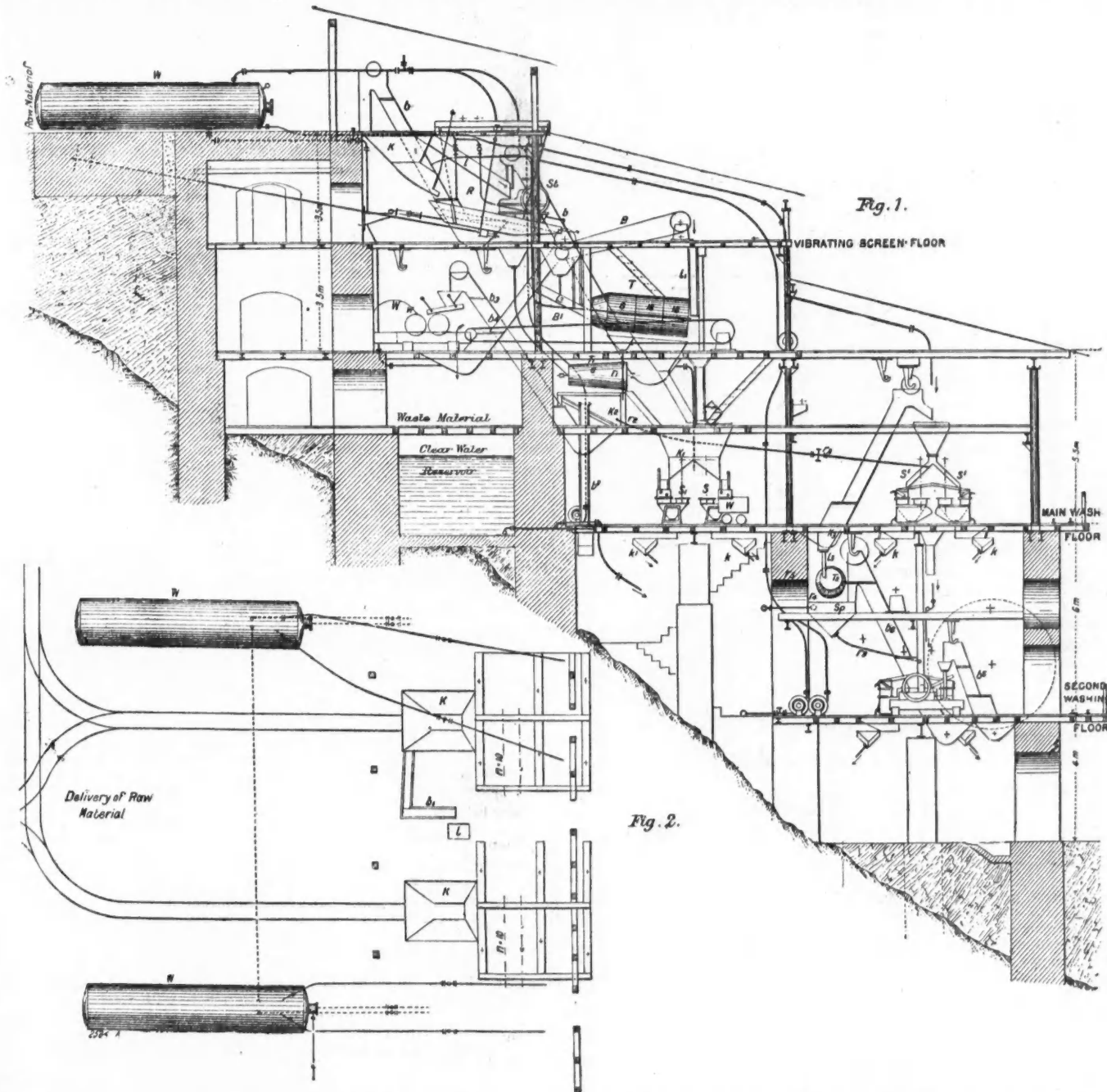
* Abstract of an article in the Transactions of the Lake Superior Mining Institute.

ZINC ORE SEPARATING PLANT AT MONTEPONI, SARDINIA.*

The zinc mines of Monteponi, in Sardinia, have been known for more than a century, and were worked unsuccessfully as government property until 1851. They were afterward rented by a private company, which purchased them outright in 1881. Until 1867 work was limited to extracting lead, the abundant, but poor, zinc being left on one side until an economical means of separation should be found and cheap transport be provided, so that a commercial value could be insured for the products. The extraction of these ores was carried on continuously, and during 20 years about 150,000 tons were raised. Only the richer ores, however, were treated, as it was not found profitable to deal with the poorer qualities; from this there resulted a very large accumulation which could not be worked. In the year 1886 it was considered that the time had arrived when an effort should be made to treat the stocks of low grade ore, and a special plant was constructed and set in operation in January, 1887.

This plant is of considerable interest, because it is the largest of its kind

in Italy; it was, moreover, the first constructed in that country. The installation was designed with the special object of treating the following low-grade ores:



cific weight of which varies greatly according to the quantity of iron that they contain. The extent of hand separation is determined by the price of the ores, but it appears that mineral poorer than 40% did not pay for treatment. The range of operations comprised the separating of ores containing lead and having more than 25% of zinc from the poorer ones; and the storage of the lowest grades for use at a future time, when some new process should be devised for dealing with them profitably.

- The products of the separation processes are:
1. Zinc ores containing 34.5% of zinc; such ores, when separated, are calcined and ground to extract the carbonic acid and drive off moisture, which, in diminishing the weight by 25%, increases the quantity of zinc to nearly 46%. This percentage represents the average of zinc containing 25% in the raw ore.
 2. Granulated carbonate of lead containing 60% of lead and some silver.
 3. Sulphurate of lead containing 70% of lead and 50 oz. of silver per ton. These, when separated, are ready for direct reduction.

in Italy; it was, moreover, the first constructed in that country. The installation was designed with the special object of treating the following low-grade ores:

1. About 200,000 tons containing some 13% of zinc and 1/2% of lead.
2. 100,000 tons containing about 18% of zinc.
3. 500,000 tons of rock containing about 13% of zinc and 1% of lead.

The metallurgical minerals contained in these mines are as follows: Carbonate of zinc, silicate of zinc, sulphurate of lead, carbonate of lead and sulphate of zinc. The non-commercial rocks and ores are: Chalk, iron ores containing more or less zinc, felspar, clay and carbonate of iron. The specific gravities range from 2.5 to 7.5, and the zinc ores are intimately mixed with iron and chalk, which render the separation more difficult. The method adopted is to separate the paying zinc and lead ores from the remainder; this is easy in the case of the latter on account of its superior weight, but difficulty is experienced with the zinc ores, the spe-

4. Ferruginous ore containing 26% of zinc and 40% of oxide of iron; these are accumulated for subsequent treatment by magnetic extraction of a portion of the iron.
5. Sand and gravel containing 13% of zinc, oxide of iron, chalk, etc.
6. Clay containing 8.5% of zinc, which is thrown aside.
7. The final refuse, containing 2% of zinc.

The cost of the works, including permanent way and wagons for bringing ores between the mines and the separators and furnaces, was about £16,000, and the working expenses per day are on an average £22, including transports and treatment of ore, and maintenance of material. Some 250 tons are treated daily, and yield 13% or 33 tons, of calcinated concentrates. The stock of ore in sight being 825,000 tons, there is work at the present rate of reduction for 11 years.

The ore is first roughly divided into two sizes. The first size, which consists of pieces about 1 in. in diameter, after having been cleaned and washed, is carefully hand-picked, and the higher grades are then directly separated; the lower grades and the mixed ores are further reduced in

* London "Engineering."

stone crushers. The second class consists of pieces smaller than 1 in. in diameter, and includes the crushed ores of the first class just referred to; this is afterward subdivided into other classes, which are treated by the specific gravity separators. By this means concentrates are obtained, the refuse separated, and a proportion is taken back to the crushers. The arrangement of classification and concentration is such that the success of the second part of the process depends on the thorough subdivision, and the smaller the difference in the specific weights of the minerals to be separated, the more minute must be the classification.

The mill is built against the side of a slope, at the top of which the ore is delivered. The height of the building is about 72 ft., and this is divided into several stories, as shown in the section, Fig. 1. The length is 100 ft., and the width 92 ft.

The ore, broken as already described, is brought to the top of the mill in small wagons holding about half a ton; as will be seen from the illustrations, a track branches at some distance from the back of the mill, and each branch is extended as far as the hoppers K, K. Into these hoppers the wagons are unloaded, their contents falling upon the vibrating screens R, R beneath. The hoppers are covered by netting of about a 4-in. mesh; this retains the larger stones, which are picked by hand and thrown into the trunk I, which leads them to the breaker S, in which they are crushed. At the back of the mill at the highest level are two large drums W, W, which are kept filled with water by centrifugal pumps placed in the lower part of the mill. One of these tanks receives the clean water pumped from the mine; the other is for water that has been already used for washing minerals, and which has been allowed to clear by settlement in a tank placed for that purpose on a lower floor (Fig. 1). From these cisterns the water is distributed by pipes throughout the mill; the section, Fig. 1, indicates the direction of the pipes. The details of the

the illustration. Large jets of water are projected against the material in the upper tray of the shaking table, for the purpose of washing out the clay. Pieces of more than 1.18-in. gauge pass over the perforation on the plain part of the screen A, and thence to a crusher. Pieces falling through the upper on to the lower tray are again separated; those more than 0.31 in. gauge falling into the hopper B, and thence to rotating screens beneath, while all the smaller portion that has passed through falls into the hopper C, and goes direct to the concentrating apparatus T.

Traveling endless bands pass in front of each vibrating screen, and on these fall the pieces that are too large to go through the upper tray; the bands are made of woven wire, and they carry the fragments to the stone breaker S T; after being reduced they are carried by elevators b (Fig. 1) back to the hopper K, and the process is repeated.

Careful hand-picking is made use of in this part of the process, the paying ore thus obtained being passed into the revolving cylindrical iron screens T, by which they are separated into two classes, varying from 0.31 in. to 0.63 in., and from 0.63 in. to 1.18 in.

The ore concentrators in the zinc separating plant at Monteponi are placed on a lower floor of the works; they consist of four washing apparatus, and the sand washers S (see Fig. 1); they are fed from the overhead hoppers into which the screenings obtained as already described are delivered.

(To be Continued.)

ELECTROLYSIS OF ALKALINE CHLORIDES FOR THE PREPARATION OF CAUSTIC AND CHLORINE.

By H. Y. Castner.

The success or failure of the attempts heretofore made to electrolyze alkaline chlorides for the preparation of caustic and chlorine has been determined in almost all cases by the particular means employed for preventing the recombination of the products of the electrolysis. It is, in fact, upon this point that the greater part of the difficulties of the whole problem center. With all these processes it may be possible with certain arrangements of the parts composing the apparatus, effectively to separate the electrolytic solution containing chlorine from the caustic produced; but there still remains the question of the electric power necessary to overcome resistance, for unless a current of large volume can be passed through such a cell with low potential difference the process could never be an economical one. It is the opinion of many experts that the main difficulty in a successful process for the electrolysis of this class of substances lies in the positive electrodes. From this opinion I dissent. It may be one of the causes of economical failure, but it is not the prime cause. If a solution of an alkaline chloride could be electrolyzed by any of the methods or apparatus heretofore proposed, whereby the products of the electrolysis would be prevented from intermingling except possibly to a very slight degree, in a coil which would take a current of large volume with a low electromotive force, then the ordinary retort carbon electrode would stand fairly well, and the item of expense due to disintegration and wear of the anode would not seriously affect the economical result.

The wear of the carbon electrodes is to a very great extent due to the presence of hypochlorite in the electrolytic solution. The quantity of hypochlorite present is, to a degree, a measure of how effective may have been the means employed to prevent recombination of the chlorine and caustic, since this compound is only formed by the chemical combination of these two substances.

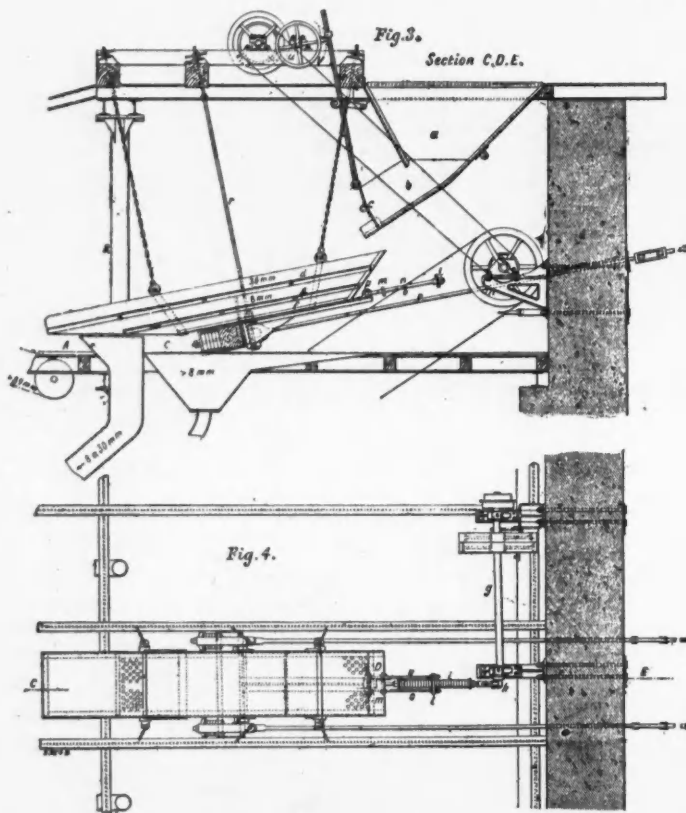
In all processes which have hitherto been proposed hypochlorite is formed and accumulates more or less in the electrolytic solution. The presence of hypochlorite in chloride solutions during electrolysis, besides meaning a reduction of current efficiency, yields by electrical action a proportion of oxygen together with chlorine, and it is due to the combined action of these two elements that the wear of the electrodes is mainly due.

It necessarily follows that the greater the amount of hypochlorite present in the chloride solution the greater the decrease in electric efficiency and the greater the proportionate wear of the carbon electrode. In any process wherein the chlorine and caustic may and do recombine to form hypochlorite, the degree or amount of such recombination not only determines the current efficiency but also determines to a still greater extent the wear of electrodes; and unless the current decomposes the hypochlorite as fast as it may be formed the quantity gradually increases in the electrolytic solution, so constantly diminishing the current efficiency and increasing the relative disintegration of the carbons. As it is a practical necessity with all processes that the chloride solution be in continuous use, being charged from time to time or continuously with fresh quantities of the electrolyte, it becomes requisite, when using a process wherein hypochlorite is formed, to so treat the solution at intervals as to destroy the hypochlorite and prevent accumulation, or else discard such a solution after a certain length of time.

As to the possibility of employing some other material than carbon for the positive electrode which shall be a fair conductor I can hardly imagine any substance which would fulfill this required condition and also withstand the action of both chlorine and oxygen in aqueous solution. The carbons forming the electrodes may, however, be so treated as to make them more permanent under this disintegrating action, as will be seen later on.

The means which have been suggested in the various proposed processes to prevent recombination of the electrolytic products have consisted in the use either of specially made porous diaphragms or of impervious substances so placed as to keep apart the resulting products; supplemented by mechanical devices or by taking advantage of the gravity of the two solutions or products. According to both varieties of processes it might be possible to prevent almost completely any recombination of chlorine and caustic, but in so doing the all important question of electrical power must be considered, as determined by the quantity of current employed and the electromotive force necessary.

With the first class of processes the construction of a diaphragm which will withstand the action of both chlorine and caustic is a matter of great



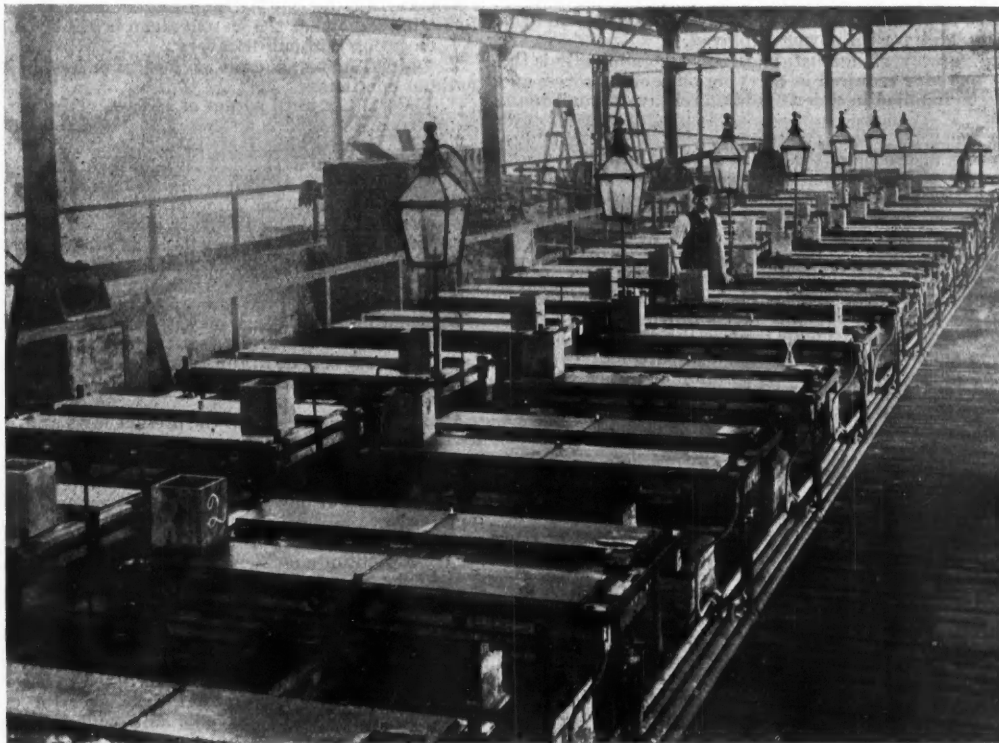
vibrating screen are shown in Figs. 3 and 4. They are arranged for separating the ore into three classes—gravel, stones, and sand. At the bottom of the upper hopper is a projecting mouth b that can be closed by the shutter c. The manner in which this is effected is clearly shown in the figures. On a stage above the hopper are mounted geared wheels driven by belting; on the wheel u is a tooth v that raises the finger on the stem at each revolution. This causes the shutter to lift and release a certain quantity of ore; after the tooth v has cleared, the shutter closes the hopper exit by a balance weight. The lifting of the shutter can be regulated by adjusting the bent lever shown; and with this adjustment the quantity of mineral that falls on the screen can also be varied. The screen is of the form shown in Figs. 3 and 4; it is open at the top, and is about 15 ft. long, 31 in. wide, and about 24 in. deep; it is suspended by four chains to the beams of the top floor. As will be seen from the section, Fig. 3, the screen has a solid bottom and two upper perforated trays, the top one with a 1.18-in. mesh, and the lower with a 0.31-in. mesh. The shaking mechanism is peculiar, and is illustrated by the figures. Underneath the screen is a timber block S held securely in stirrups, between which and the underside of the block coiled springs are introduced, the tension of which can be adjusted by screws and nuts, as shown. The stirrups are connected with rods p, which extend back into the masonry, where they are held by anchor plates (see Fig. 1). The underframe of the screen terminates with a face normal to that of the block S. At the upper end an attachment is provided for the connecting rods n, o. These rods take hold of a crosshead l on each side of the rod i, which is surrounded by coiled springs that hold the crosshead l up to its work; while at the same time they absorb the shock produced by the frame striking the block S, and so prevent its transmission to the crank h and the shaft on which the pulley is mounted, and which gives motion to the shaking mechanism as well as to the hopper discharge, as is seen on

difficulty. It must be sufficiently porous to interpose but slight resistance to the passage of the current, and contrarywise not so porous as will allow the two solutions to intermingle to any extent.

The second class of processes have this advantage over the diaphragm processes, if they may be so called, that they do away with any electrical

chlorites, which destroy the electrodes, render the solution unfit for continuous use, and further gradually decrease the electrical efficiency.

The second feature, which is almost equally important is the large decomposition per watt per cell, being equivalent to the quantity of chloride decomposed per cell per indicated horse power.

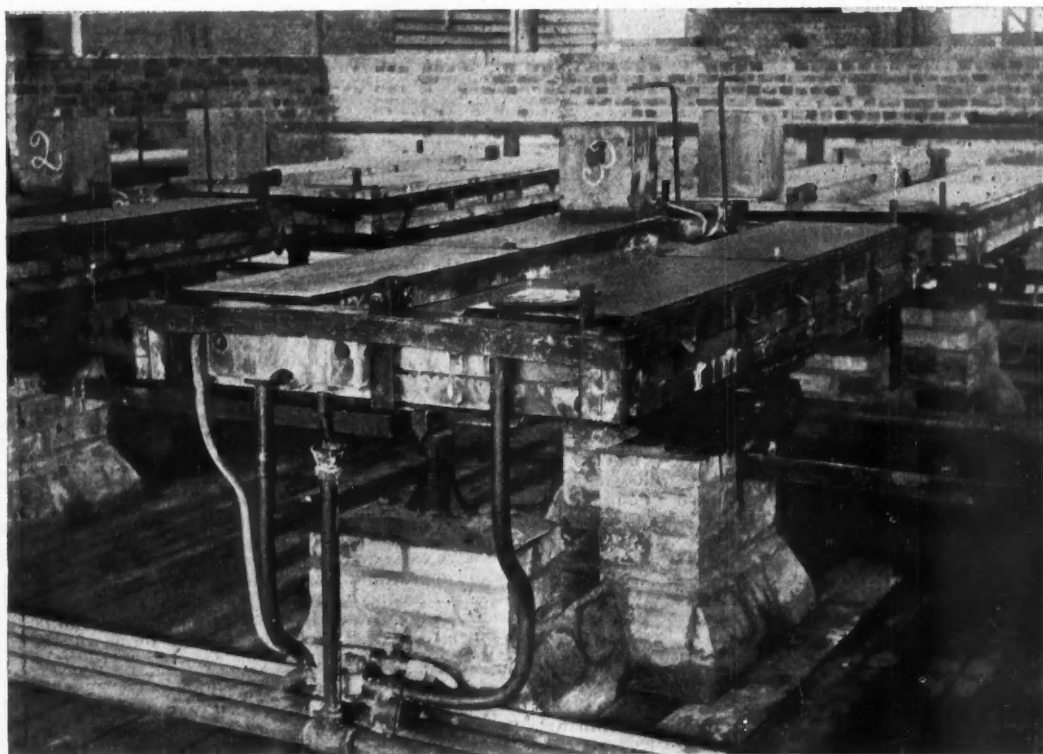


CASTNER ELECTROLYTIC SODA AND CHORINE PLANT.

resistance which may be caused by the interposed diaphragm; but with these processes the chemical separation of the products is not so effectual. In both cases, however, the electrodes must necessarily be some little distance apart and the chemical separation of the products is only effected to a degree. Any attempt to produce concentrated solutions of caustic only increases the amount of, and tendency to, re-combination. The solutions

The third requisite is the strength of the caustic solutions and their purity. Fourth, the apparatus must be of comparatively simple construction with little liability to wear or require repair, and need but little attention in operation.

A process may be successful, regarded from a scientific point of view, if it fulfils any one of these conditions and also successful economically



CASTNER ELECTROLYTIC CELL.

actually produced are more or less dilute and contain a large proportion of chloride, so that they require treatment besides an excessive concentration before obtaining the solid caustic.

Thus the first and most important feature of a good process in the absence of any re-combination of the electrical products giving rise to hypo-

to a certain extent; but to be a really good process from both standpoints it must fulfil all these conditions.

As to other processes heretofore proposed which could not be classified under the headings of the two varieties here mentioned these are:

- 1st. The employment of a fused electrolyte, and

2d. The use of mercury as a cathode only and the subsequent treatment with water to oxidise and remove the sodium in the form of caustic. The first method, owing to the low efficiency, the high electrical resistance and large wear and tear of apparatus, presents so many difficulties as to render any success in this direction almost impossible.

The use of mercury as a cathode is a very old idea, but has not hitherto met with any success. From a scientific standpoint, the plan seems a good one, as it would yield pure caustic, little or no hypochlorite, and the product would be fairly large for the power employed.

The great difficulty, however, against its success economically is the enormous quantity of mercury required in carrying on such a process and the great quantities to be handled in order to obtain relatively small quantities of caustic.

Radically differing from all other processes having the same end in view is the process now in operation at the works of the Aluminium Company, Limited, Oldbury, near Birmingham, England, of which the accompanying illustrations will convey a fair idea. The essential features of this process are the employment of a moving body of mercury which completely separates the products of electrolysis, and by its movement takes the place of a diaphragm, the amalgam formed by the electric action being decomposed electrically as rapidly as it is so formed. The cell, which is divided into three compartments, is capable of being continuously rocked or tilted, so as to give to the contained mercury a flowing motion from side to side. The two outside compartments contain the alkaline chloride solution, and the carbon anodes, while the middle compartment contains an iron cathode and the caustic solution. The solution of salt or chloride is continuously circulating through the outside compartments, wherein it is being electrolyzed, and then returns to saturators where it is recharged with salt. The electric current traversing the salt solution, liberates chlorine and also forms sodium amalgam. The chlorine escapes from each cell through an aperture provided into one large collecting main, while the sodium amalgam, by the continuous back and forward tilting of the cell, passes to the centre compartment, where it acts as an anode during the passage of the current to the cathode, the sodium being liberated and going in solution as caustic. The chloride energy stored in the sodium amalgam is thus made use of electrically to aid in carrying on the process. A regulated quantity of water is admitted hourly to the centre compartment of each cell, causing the pure solution of caustic to overflow through a discharge pipe into a large collecting pipe connected with all the cells. Thus each and all cells are connected with four mains, for the supply of saturated brine, for the return of the electrolytic solution to be re-saturated, for collecting the chlorine and for collecting the caustic. The cells are also electrically connected in series and are capable of being cut out or put in operation at will. The large plant here illustrated has been in operation several weeks. The process is, of course, continuous and has demonstrated on a large scale the following results:

1st. The electrical efficiency is 88 to 90 per cent.

This high efficiency is due to the particular features of the process and also to the fact that the sodium is removed from the mercury electrolytically as rapidly as it is formed, so that actually the mercury in circulation rarely contains more than .02% of sodium.

2d. No hypochlorites are produced.

The small loss of efficiency below the theoretical is not represented by chlorine combining with caustic, but by chlorine and sodium re-combining to form salt.

3d. The solution forming and carrying the electrolyte is in continuous use.

4th. The wear of carbon anodes is so small as not to be of importance to the commercial result.

In addition to the advantage the carbons possess in this process, owing to the absence of hypochlorites, they are previously treated by a special process which enables them to withstand the electrical action. So treated, it has been found possible to employ the ordinary pressed carbon instead of retort carbon.

5th. The electromotive force required for each cell is 4 volts for a current of 550 amperes.

This low electromotive force is accounted for by the peculiar features of the process, the non-accumulation of sodium in the mercury, and particularly to the fact that the electrodes, cathode and anode, are brought almost into contact.

6th. Each cell, which is 6 ft. long, 3 ft. wide and 6 in. deep, decomposes 56½ lbs. of salt daily, producing 38½ lbs. of caustic and 34½ lbs. of chlorine in 24 hours, for an expenditure of ¾ I. H. P.

7th. The caustic solutions produced contain 20% of caustic soda, and produce by direct evaporation a solid caustic of 99½% purity.

8th. The chlorine gas is of 95 to 97% purity, the balance being hydrogen.

9th. The cells in operation are particularly automatic and require little or no attention. They are so simple in construction that a cell in full operation may be stopped, emptied, taken completely apart, put together again and started in less than two hours by the labor of two men.

A cell in operation running at an efficiency of 88% gives the following actual results:

Per hour decomposes..	1,058 grms. of salt	Salt decomposed per amp. ho'r	192 grms.
" produces...	724 " caustic	" " " wait "	48 "
" " " "	642 " chlorine	" " " K.W. "	1'06 lbs.
day decomposes..	56½ lbs. of salt	" " " I.H.P. "	295 grms.
" produces.....	38½ " caustic	Caustic produced " "	209 "
" " " "	34½ " chlorine	Chlorine " " "	183 "
Actual E. H. P. per cell.....	3	Salt decomposed " "	day 16'00 lbs.
I. H. P. " " " " " "	3½	Caustic produced " "	" " 11'00 "
		Chlorine " " "	" " 9'80 "

The present plant, which has been erected by the Aluminium Company, Limited, to demonstrate on a large scale the commercial success of this process, consists of 30 cells, and has a daily output of 1,200 lbs. of pure caustic soda and 1,000 lbs. of chlorine, with an expenditure of 110 I. H. P.

The process has been made the subject of several patents both here and abroad, all of which are owned by the Aluminium Company, Limited. The original patent covers the main features of the process and apparatus. A second patent covers broadly a mechanically moved cell by means of which the mercury is kept in motion and a third patent relates to a special process for the treatment of carbon for use as electrodes.

THE PREVENTION OF MINE LITIGATION.

Specially written for the Engineering and Mining Journal by Francis T. Freeland.

Senator Stewart has recently introduced a bill into Congress changing the date for the completion of assessment work, and the amount for the short year. If the intention be to propose a bill which would be of some real benefit to the mining industry, let the entire system be altered to one following somewhat the last Mexican law. Thus, in brief:

1. Location without discovery.
2. Official survey in plots of 10 acres or less, in one piece of any shape without conflicts.

3. Federal tax until patent of \$50 per claim per year in lieu of assessment work, the recorded receipt of the Land Office to carry title, and a failure to pay working forfeiture.

4. Vertical boundaries and no lateral rights.

1. Discovery.—Most mining claims, especially in Leadville, Aspen and Cripple Creek, have no mineral in place of any commercial value for mining purposes in the discovery shafts. Yet when one buys the oldest location in such a case, the title is liable to fail when brought to a trial. The laws and decisions in the various states and territories are not in accord as to whether a discovery in the discovery shaft is required.

2. Survey.—An official survey would make precise the position of the claim, and insure compliance with all the requirements of location.

3. Assessment Work.—It is extremely rare for the assessment work to be of any real benefit in the development of a claim; it is usually wasted labor. The tax would prevent the holding of large blocks of claims by one person.

4. Lateral Rights.—With the present laws and decisions it is impossible to determine the ownership and rights of a piece of mining property under the Federal and State laws. If vigorously pushed the number of trials, appeals and rehearings are nearly interminable. Most suits end on the exhaustion of one party, by an agreement defining their rights without reference to the supposed law, or by a buying out of the weaker party. After 22 years of litigation it is not known what are the lateral rights of a claim where the apex crosses a side and an end line, or where it bows out across one side-line! The curious doctrine of cross lodes enunciated by the Colorado courts does not obtain elsewhere and has not been passed upon by the courts of final resort. Yet it must be worked under at present, when it is almost certain to be reversed. The effect of dykes, faults and a lode or contact without ore, upon the continuity of the vein has not been authoritatively fixed. The relations of lode claims to placers and tunnel sites are in the greatest confusion. Town sites, agricultural, railroad and school lands and grants give much trouble to the miners.

The patenting could proceed about as now on payment of \$500 per claim additional. On this plan the tedious and perplexing procedures in the Land Office, hearings, adverses and protests would be much abbreviated and the delay and expense lessened.

While no such law could be made retroactive, the tendency of the courts and juries, after it had been passed, would probably be to give much importance to the earlier location, even when not showing a strong pay vein, and to make it difficult, if not impossible, to win an apex case. The latter will be in most cases unimportant, if the broad inference drawn from the recent Amy decision by some competent attorneys be finally held to be good law.

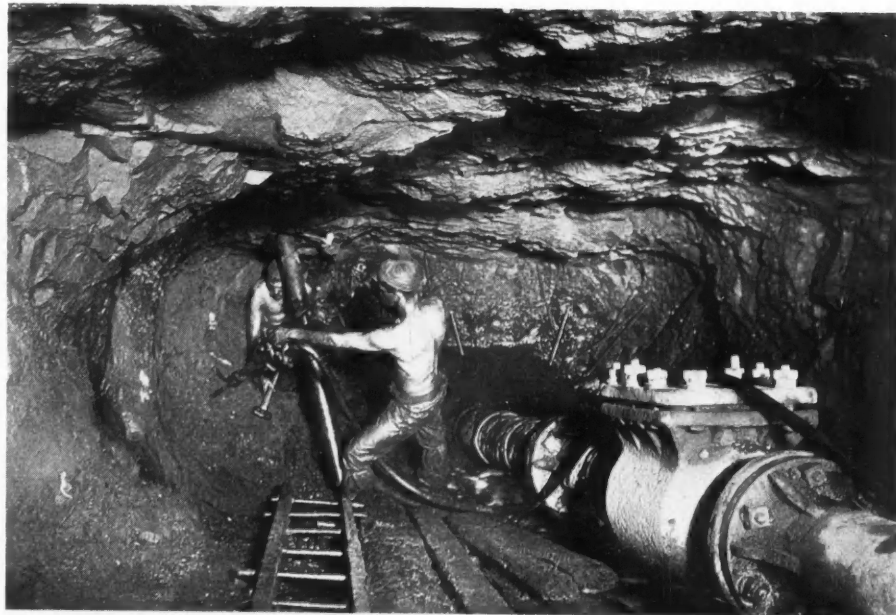
Such a law would stop 90% of the litigation affecting the industry in the west, and with its enormous cost and paralyzing delay, resulting in bitter hatreds and unneighborly conduct in regard to drainage, ventilation and exchange of valuable information. With diminishing prices for the products of mining and increasing difficulties on account of depth, low grade and refractory ore, scarcity of timber and available water, etc., every unnecessary expense must be cut off if the industry shall continue, and the towns and farms dependent upon it regain some measure of their former prosperity. And litigation is the most unnecessary expense of all. The title would not then be dependent upon the longest purse, tentative decisions of the courts, the testimony of expert witness advocates, the vagaries of socialistic juries, or the crude impressions of their hasty trip to the locality when unskilled in the art of mining.

The present law is tainted with geology, giving rise to great difference of opinions in the course of a trial, and has been the cause of bringing the profession of mining engineering into disrepute among the general public. With a law as suggested, a joint survey would settle the boundary, and a reference to the records, the ownership, in most cases, without a suit. With a secure title one could sell at a fair price, and when buying, he would know what he had bought; again, the miner, if so inclined, would have but little difficulty in raising money for development and equipment, where the technical conditions justified the venture. The absence of apex rights would tend to distribute valuable territory among many different owners.

The miners have hitherto been opposed to such a law, but it is believed that a great change has taken place in their sentiments. They can hardly expect attorneys to agitate for it, and legislators must be pressed. The expert witness is probably indifferent to the matter. If such revision of the laws were made, the increased amount of mining would afford them ample opportunity for the exercise of all their learning and ingenuity. The East has no interest in it generally, except from investments in mines and mining stocks. If the miners wish it, it can be done. The details of a law so different from the one in force, and untried here, should be thoroughly discussed.

Asbestos in South Africa.—At a recent meeting of the Philosophical Society at Cape Town, South Africa, an interesting paper was read by Professor Marloch on this subject. The asbestos mountains were, he stated, in the western part of Griqualand West, about 90 miles from Kimberley, and in reaching them eight different geological formations were passed over. The formation at the mouth of the Orange was gneiss and at Namaqualand schist. Overlying the former came sandstone, which was in turn overlaid by shales and quartzites. Next came a peculiar rock, the conglomerate in which the bed of the Vaal River was situated. The lecturer stated that in the Asbestos Mountains, sometimes called the Jasper Hills, were to be found silver, gold, jasper, asbestos, saltpetre and crocidolite.

SUPPLEMENT TO
THE ENGINEERING AND MINING JOURNAL, SEPTEMBER 22, 1894.



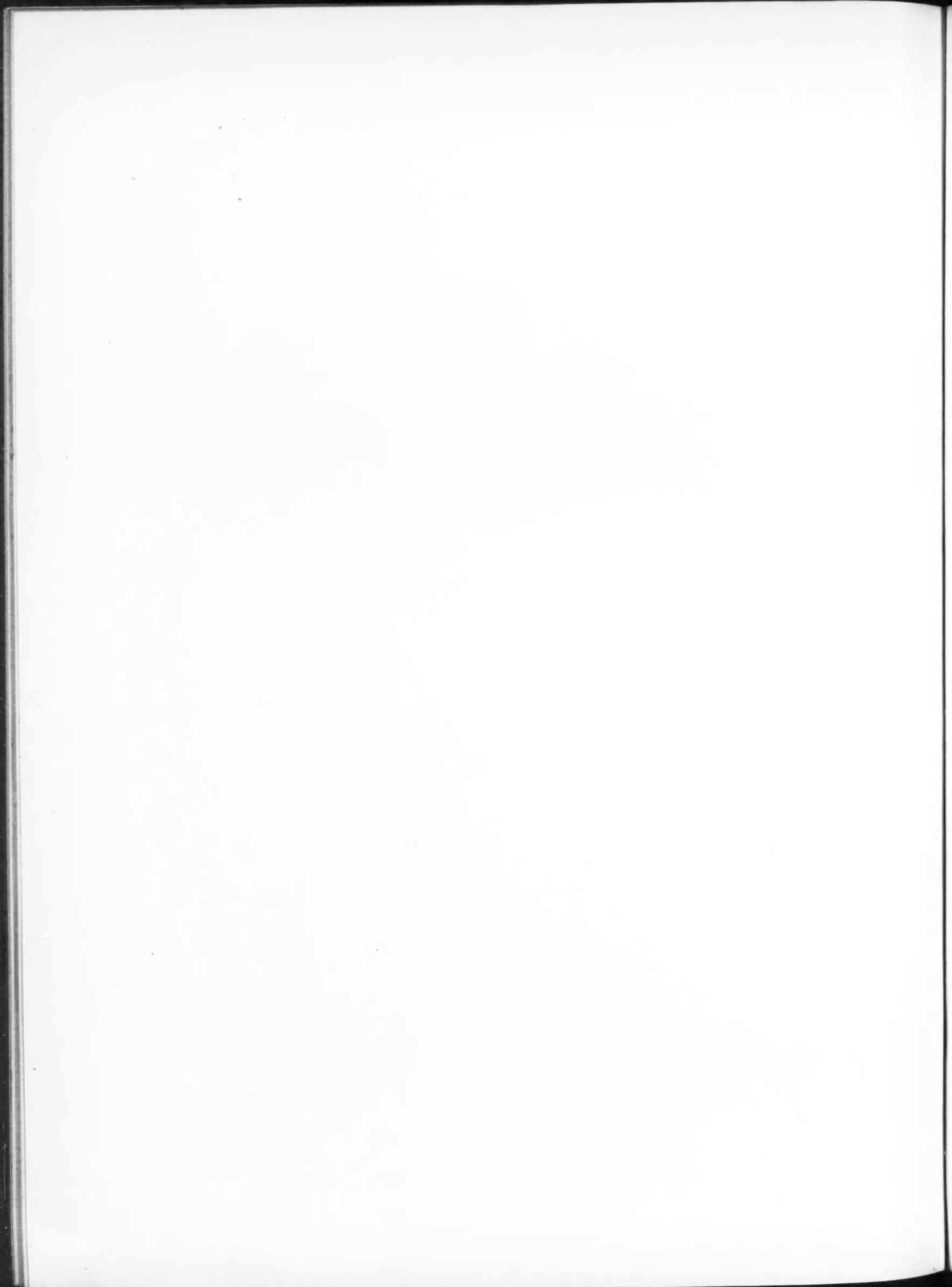
16. BOTTOM OF COOK'S KITCHEN ENGINE SHAFT.



17. ENGINE SHAFT AT THE 406, COOK'S KITCHEN MINE.

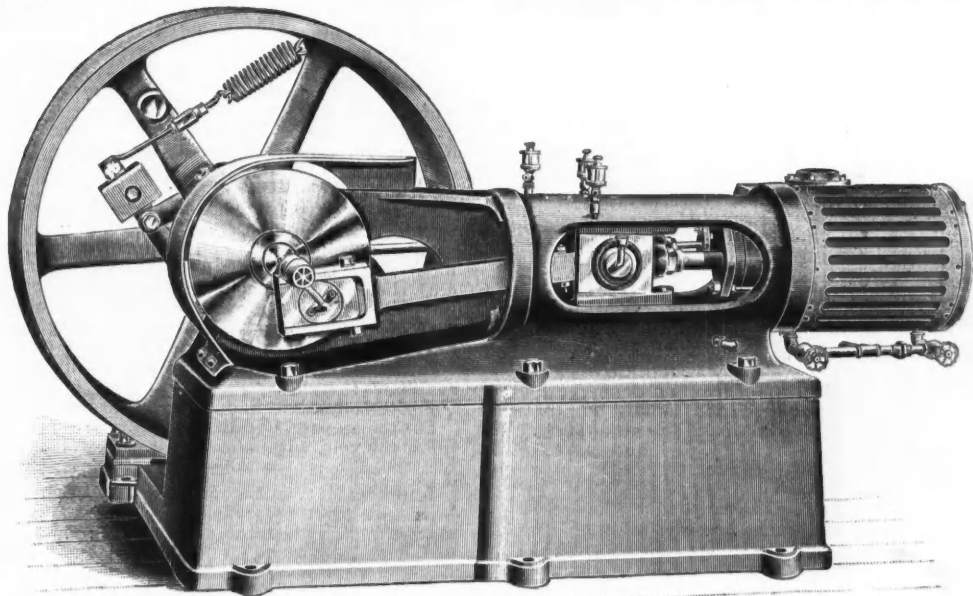
CORNISH TIN MINING IN PHOTOGRAPH.

Copyright, 1894, by The Scientific Publishing Company.



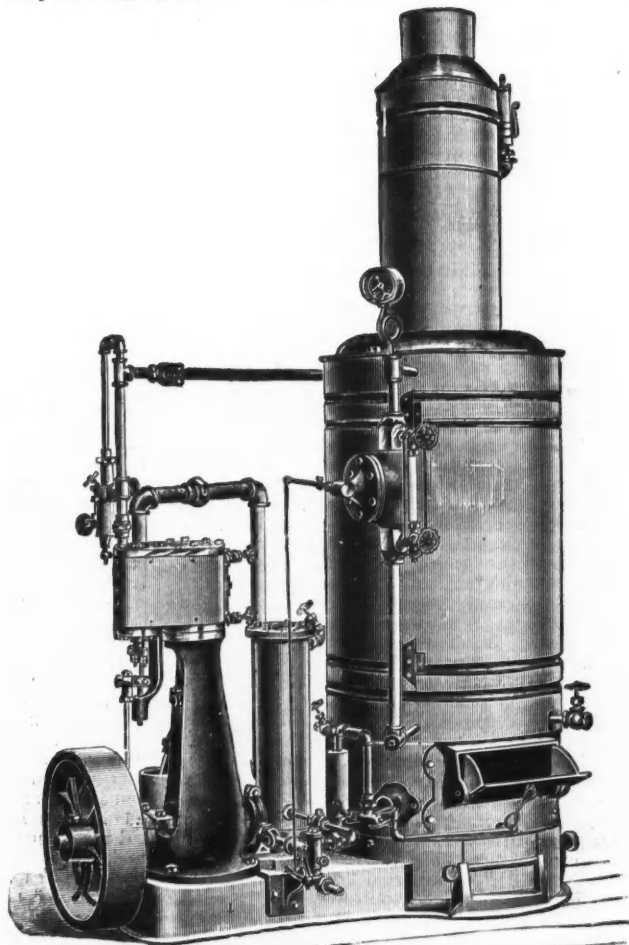
RACINE ENGINE AND BOILER.

The illustration presented below shows one of the horizontal type of automatic engines which have been placed on the market by the Racine Hardware Company. This engine has been made because of the growing demand for machinery which requires little head room, but embodies the same general design of parts which are in the vertical engines hitherto made by the same company.



RACINE HORIZONTAL AUTOMATIC ENGINE.

The machine is simple and compact, and at the same time automatic in action and giving high speed. A noticeable feature is the outer support for the power wheel which, the company claims, saves cost in setting and also keeps the shaft true.



RACINE ENGINE AND BOILER OUTFIT.

The governor is a combination of weights, levers and springs, which together can be adjusted to cover a wide range of speed and so built and so simple as to be easily kept in order. Tests have demonstrated that it will govern within 2% when the engine is carrying full load or when engine is running light, the speed remaining constant and uniform. All parts are made to standard gauges and are interchangeable. The valve

is of the hollow piston type, perfectly balanced and fitted with rings which keep joints tight and take up the wear as the surface wears down. The valve is set for $\frac{1}{4}$ cut-off, using the steam expansively for the balance of the stroke. Asbestos cement is packed outside of cylinder to lessen condensation as much as possible. The engine is fitted with improved crosshead, the shoes being made with large bearing surfaces, either one of which can be adjusted independently of the other. The pin is steel, case hardened and fitted to the crosshead with tapering joints, which

may be drawn tight to take up wear. The brasses on crosshead pin are taken up by means of a wedge provided with double nuts. A steel key extending full length of lower half of brass box is held in place by a steel pin which has a bearing on the steel wedge. This makes a positive adjustment and is easily accessible. The connecting rod is made from a forging and provided with ample means to take up wear at both ends.

A cut is also shown of the Racine automatic engine and boiler outfit, which is a complete power plant in itself, manufactured from 1 to 6 H.P.; it includes the Racine automatic quick generating safety boiler with combination firebox for burning wood, coke, coal, etc., in connection with oil or gas. The boiler is of the porcupine type, safe under high pressure, owing to the use of only small tubes, and is a quick steam maker. It is especially designed to fill places where requirements necessitate lightness and small floor space. The body is of heavy hydraulic pipe, with ends welded in, and as the quills are threaded into the body, there are no riveted seams to cause leakage. The engine is of the Racine vertical automatic type with all latest improvements. The valve, connecting rod, governor, etc., are the same as described in the horizontal engine. The outfit has feed water heater, air pump, fuel atomizer, automatic feed regulator, water pump, etc., with all connections to make it complete. The outfit is well adapted for users of small power as it is inexpensive to operate and requires little attention. W. F. Parish, Home Insurance Building, Chicago, is the general sales manager.

Manchester Ship Canal Company.—The report of the directors for the half-year ending 30th June states that the capital powers of the company amount to £15,412,000. The expenditure on capital account for the half-year, after deducting proceeds of sales of plant and land, was £301,518, making a total expenditure of £14,649,410. The receipts from the ship canal traffic, which amount to £40,123 15s. 6d., have been derived from 261,000 tons of seagoing and 109,000 tons of barge traffic. The directors report that the protracted negotiations with the railway companies for the working of the railway traffic to and from the ship canal have resulted in arrangements which, though not yet complete in all details, will ere long, it is believed, give the port of Manchester the full benefit of its geographical position. All that has been asked for is fair and equal treatment compared with other ports, and this seems likely to be obtained without recourse to the Railway Commissioners. The revenue for the half-year from the Bridgewater undertaking was £20,523, of which £500 has been reserved to cover risks on craft, leaving £20,024 to be transferred to net revenue account.

The Creusot Works.—The report of M. Castel, Inspector General of Mines, states that these works contain 4 coke-fired blast furnaces, 38 puddling furnaces, 47 heating furnaces, 2 Bessemer pits, 7 Siemens-Martin furnaces, 28 heating furnaces for steel, 20 steam hammers, 34 roll trains, 5 hydraulic engines of 260 H. P. and 183 steam engines of 15,102 H. P. In 1891 the works consumed 123,000 tons of coke and 2,750 tons of coal for smelting the indigenous ores, those of Germany and Mazenay, and a certain quantity of Spanish ores, while also using 185,600 tons of puddle-cinder. The out-turn of pig iron, which was reduced in 1885 to 55,000 tons, on account of the introduction of the basic process for dephosphorizing, rose constantly from 1888 until, in 1892, it attained the figure of 92,338 tons. The pig turned out is almost entirely of the forge variety; and about 40,000 tons of forge pig in addition, purchased in the Lougwy district, are worked up at Le Creusot. The number of workmen and employees is now nearly 10,000, about 500 being engaged about the blast furnaces and nearly 900 at the forge. Compared with the total production of pig iron in France, the out-turn of Le Creusot is 6%, but of finished iron 8.5% and that of finished steel 10.3%.

INFLUENCE OF ALUMINIUM ON CARBON IN FERRO-CARBON ALLOYS.*

By T. W. Hogg.

The question whether aluminum is capable of producing a change in the condition of carbon in ferro-carbon alloys is one of considerable interest, as it appears to be generally accepted that the addition of this metal to white iron causes the carbon to assume the graphitic state.

In order to demonstrate this a series of alloys were made containing aluminium in different proportions, and with silicon and manganese kept as low as possible. Two kinds of pure Swedish pig iron were used, one a highly saturated gray pig, and the other a white variety showing a little gray toward the center of the pigs. The composition of each is shown in the following table:

TABLE I.

	Gray.	White.		Gray.	White.
Iron (by difference)....	91.707	95.665	Silicon.....	0.70	0.48
Manganese.....	0.22	0.11	Sulphur.....	0.05	0.01
Carbon (graphitic)....	3.75	0.40	Phosphorus.....	0.038	0.065
Carbon (combined)....	0.58	3.27			
Carbon (total).....	4.33	3.67		100.000	100.000

The several alloys were prepared by fusing the iron in clay pots, and with the exception of the one containing 1% aluminium, this metal was separately melted and the iron poured into it; the mixture was then again poured back into the pot, and this operation was repeated twice. The alloy was next poured into two moulds, one of iron and the other of green sand, in order that one portion should be cooled rapidly and the other slowly, and this was done without the addition of any aluminium. The alloys were prepared in quantities of about 60 lbs. each and cast into 3 in. square moulds. The quantity of graphite, carbon and silicon determined in each case were given in a tabular form.

The most effectual primary change in the condition of the carbon was obtained by the addition of 1% of aluminium, and each addition after this caused more and more of the carbon to pass into the combined state, until practically the whole of it was in this condition in the 12% alloy. In all cases the rapidly cooled alloys showed a remarkable excess of graphitic carbon over that contained in those slowly cooled. This is the most decided in the case of the alloy with gray pig iron containing 4% aluminium. As there are so many examples of this, it would be interesting to have a satisfactory explanation, as the phenomena is quite unique. Possibly the aluminium has actually caused a precipitation of carbon in the molten alloy, and the more slowly cooled portions have partially taken up the carbon again by cementation? The total carbon in the case of the white pig alloys is not diminished, any more than that produced by admixture of an element not containing carbon; but in the case of the gray pig, high percentage alloy there is a decided loss. The addition of 12% aluminium to pig iron containing 4.33% carbon should cause this element to be reduced to 3.80%, whereas only 3.44% was found.

The general effect of the more rapid cooling upon the fractures was to produce a much closer grain, and here an interesting fact is well illustrated. In the case of the higher percentage alloys there was an evolution of large quantities of gas on solidification, and although the lower portions of the ingots were perfectly sound, the top portions, even on the outside, showed numerous honeycombs, completely filled with minute glistening flakes of graphite; in this respect the high aluminium alloys resemble the high silicon alloys. This phenomena is not a case of actual separation of graphite from the alloy, but decomposition of the issuing carbonic oxide.

Hadfield has described an interesting experiment wherein aluminium was added to speigeleisen, with the result that the condition of the carbon and appearance of the fracture was greatly altered, but as it is well known that prolonged fusion of speigeleisen itself may produce an alloy which is often more or less graphitic in its nature, and in addition to this the quantity of silicon present in his alloys seemed high in proportion to the aluminium, it is of interest to ascertain the effect of remelting a 4% aluminium alloy alone, and also with the addition of a considerable quantity of manganese; in each case two ingots were cast to determine the difference between rapid and slow cooling, as in the other alloys.

There is three times as much graphitic carbon present in the more rapidly cooled portion of the alloy; the slowly cooled alloy is unsound, and the general appearance of the fracture would lead one to expect to find it the reverse of what is actually the case.

To ascertain the influence of aluminium upon a high silicon alloy, ferro-silicon was fused and mixed with 4% aluminium also previously fused; two ingots were prepared as in the other alloys to determine the difference, if any, between rapid and slow cooling. Beyond showing a great change in the grain of the alloy, the result did not give any further important information. The slowly cooled portion was much honeycombed, the cavities being lined with graphite. The rapidly cooled portion appears to be perfectly free from any unsoundness, and the change from the original appearance of the alloy was most marked.

In conclusion, it is shown that in the purer classes of pig iron all tendency for carbon to be retained in the combined state is prevented by the addition of 1% of aluminium, and that every increase upon this quantity tends to reverse this effect, until, with a large proportion of aluminium, the carbon in white pig iron is retained in its original condition, and the graphite carbon present in grey pig is entirely changed to the combined state.

In discussing this paper Mr. Snelus stated that he considered it remarkable that an increase of aluminium above 1% should neutralize the effect produced up to that percentage. Prof. H. M. Howe said that under certain conditions aluminium did no doubt favor the separation of graphite, and it was used on a commercial scale in the United States on certain classes of castings for that purpose, but he did not think the result of sudden cooling, considered by Mr. Hogg to be quite unique, was really so. The idea that sudden cooling reduced segregation was little more than a theory. There was no doubt that in some forms of pig iron slow cooling and segregation went together, but that was, so far, exceptional.

ENGLISH STANDARD OF ELECTRICAL MEASUREMENT.

The Board of Trade of London has received a report on the standard of electrical measurements and has recommended the following:

A standard of electrical resistance denominated one ohm, being the resistance between the copper terminals of the instrument marked "Board of Trade ohm standard, verified 1894," to the passage of an unvarying electrical current when the coil of insulated wire forming part of the aforesaid instrument, and connected to the aforesaid terminals, is in all parts at a temperature of 15.4 C.

A standard of electrical current denominated one ampere, being the current which is passing in and through the coils of wire forming part of the instrument marked "Board of Trade ampere standard, verified 1894," when on reversing the current in the fixed coils the changes in the forces acting upon the suspended coil in its sighted position is exactly balanced by the force exerted by gravity in Westminster upon the iridio-platinum marked A and forming part of the said instrument.

A standard of electrical pressure denominated one volt, being one hundredth part of the pressure which when applied between the terminals forming part of the instrument marked "Board of Trade volt standard, verified 1894," causes that rotation of the suspended portion of the instrument which is exactly measured by the coincidence of the sighting wire with the image of the fiducial marked A before and after application of the pressure, and with that of the fiducial marked B during the application of the pressure, these images being produced by the suspended mirror and observed by means of the eye piece.

In the use of the above standards the limits of accuracy attainable are as follows:

- For the ohm, within one-hundredth part of 1%.
- For the ampere, within one-tenth part of 1%.
- For the volt, within one-tenth part of 1%.

Improvement in the Manufacture of Briquettes.—Some experiments have been made in a quiet way at a Cumberland, Eng., colliery with a view of making coal briquettes without admixture of pitch or lime. Part of the bind is a waste product, and the remainder costs on an average from £1 to £1 8s. per ton, according to yield and demand. From 4½ to 5% of the bind is added to the coal, and a briquette is obtained which neither cracks nor crumbles, but which burns freely in an ordinary fire or under steam boilers, either with or without forced draught, leaving no slag or clinker. The tenacity of the bind is stated to be such that it permits the molding of briquettes 4 in. by 2½ in. by 1½ in., a size which will doubtless prove very convenient for domestic purposes.

Colliery Disasters in Germany.—From official statistics just published, it appears that during 1893 there were in the Prussian collieries 88 explosions of firedamp. Of these, 21 were fatal, 64 resulted in nothing more serious than injury to the men, and three caused neither death nor injury. The number of the killed reached 127; that of the severely wounded, 30; and that of the slightly wounded, 119; a total of 276, as compared with 198 in the previous year. Considering the extent of the Prussian coal industry, the loss of life seems comparatively small; but, in the absence of figures showing the total quantity of minerals raised, it is impossible to speak decidedly on this point. It is worthy of note that three fatal explosions, involving the loss of 67 lives and the injury of 17 persons, are set down as coal-dust explosions. With respect to the causes of the accidents, they are attributed in nine cases to the use of naked lights, and one to the use of a tobacco pipe, in 10 to the unauthorized opening of a safety-lamp, in nine to damage sustained by lamps in working, in 22 to careless handling of lamps, and in two to blasting operations.

Mining Industries of North Portugal.—There are good lodes of anti-mony running from northwest to southeast, about eight miles from Oporto; the principal mines are Montalto, Godomar, Tapada and Vallongo. The British Consul, Hay Newton, says that these have been worked for some years with more or less success, large dividends having been paid on some of them, but as a rule they have been mismanaged. The antimony is found in the quartz reefs which intersect the silurian schists, but in the same quartz veins gold appears, sometimes in considerable quantities, but whether in paying proportion is still a problem to be solved by mining engineers. During the last eight or ten years attention has been attracted to the extraction of gold. Quartz, principally from the mines referred to above, has been sent to Germany, and also, it is stated, to England, and the percentage of gold extracted appears to be favorable, but the expense of shipping the quartz for extraction was so great that attention was turned to effecting that process on the spot. Great secrecy has been maintained with regard to results, therefore no opinion can be formed as to whether the undertakings have been profitable or otherwise. In Portugal there are three distinct coal deposits. In the north, near Oporto, the coal is anthracite, of good quality, but often so mixed with shale as to render the working difficult. The principal mines are St. Pedro da Cora, Passal de Baisco, Covello, and Midoes and Pejao. The coal extracted from these mines is used in Oporto for cooking ranges and stoves, and the soft coal is made into briquettes, or patent fuel, for the same purpose. Near Basaco, at Santa Catharina, there are some coal beds of a semi-bituminous coal, but these mines are not now being worked. The principal silver and lead mines are Bracal, Coimbra, and Gondarem, but the later mine is not now working. A small amount of manganese is extracted and shipped abroad from a mine near Anadia. Iron is found distributed generally all over northern Portugal, in larger or smaller degrees. The only large deposit is at Moncorvo, about 80 miles up the River Douro. This iron is magnetic, and the supply is very large, but the distance from a seaport renders it valueless, until a railway or other means of communication enables it to be shipped at a small expense. A small amount of gold washing is done, but only in summer. There are several very good slate and marble quarries in northern Portugal. The latter, although the marble is of very fine quality, either from bad management or some other cause, do not seem to be worked with success. Slate, however, is worked in some districts most successfully. One quarry, near Vallongo, belonging to an English company, exports slabs, beds for billiard tables, and slates for roofing, both to England and Brazil. One slab, 17 ft. long, from this quarry, was recently taken out.

* Abstract of a paper read before the Iron and Steel Institute at Brussels.

CORNISH TIN MINING IN PHOTOGRAPH.

WITH SUPPLEMENT.

This week we show in Fig. 16 of our illustrated supplement a view in the bottom of the engine shaft in Cook's Kitchen Mine in Cornwall. Mr. Thomas gives the following description of the manner in which the photograph was taken and of the shaft itself: To obtain the view the camera was fixed on the foot-wall at an angle of about 45°, the average underlie of the shaft. One has to imagine that he is looking down at this angle on the men in the bottom to appreciate the picture. The castings show the bottom of the bucket left in the water at the bottom of the shaft. The flexible hose connects the air main shown in Fig. 17 to one of Holmans Bros. "Cornish" rock drills, by means of which the shaft has been sunk. The drill, as is customary in Cornwall, is fixed on a stretcher bar and is a 3½-in. machine.

Fig. 17 shows the 406-fathom level in the same mine. When the photograph was taken the shaft was being sunk below this level and has since reached the 420-fathom level, where crosscuts are being driven east. The pumps and iron pipe conveying compressed air to the rock-drill at the bottom show the angle at which the slope is being driven. In the low left corner of the illustration is shown a portion of the skip road. In the background is seen an air-winch working over a crane to raise the bucket from the bottom of the shaft shown on the right side.

THE ANTWERP EXHIBITION.

Specially Prepared for the Engineering and Mining Journal, by S. H. North.

The scientific visitor at any exhibition scarcely expects to see anything novel or which has not come under his cognizance before he entered its doors. Scientific societies, technical papers, as well as the patent offices of different countries, are among the media through which are introduced to the public or to those interested, innovations in design and process which through an industrial life in this actively competitive century. To say that there is little that is new at the Antwerp exhibition is merely to designate that which is common to all exhibitions of late times. In the Machinery Hall all the stands are worthy of the firms they represent. This is more especially the case with those from countries contiguous to Belgium, Germany and France. Belgium, as is the rule with the host, excels in her machinery display, such firms as the Societe Anonyme John Cockerill, of Seraing; Societe des Ateliers de Instruction de la Meuse, Liege; Societe de Marimelle et Couille; De Naeger & Co.; Societe Julien Dulait, etc. The exhibits of the first named of these two firms, the Societe John Cockerill, were broken up into two sections, consisting of machinery in motion. Following the exhibit of this firm in the left row of stands, was one by the Societe de Constructions Mecaniques. Other exhibits of this celebrated firm were specimens of iron and steel castings, a locomotive and tender made for the Russian railways, a relief plan of the Cockerill establishment at Liege. De Naeger & Co., of Aillebroek, had at work in the side avenue a refrigerating machine, also an extensive group of paper-making machines, showing the process of the manufacture from the raw material. More interesting to engineers, perhaps, were the exhibits of the Societe Anonyme de Marinelle et Couillet. The arrangement of their stand was of a high-class character, according with the exhibits themselves, which comprised two pyramidal standards of projectiles for guns, castings of various descriptions, a six-wheeled locomotive of 44 tons, the valve-box being at the side of the cylinders, and dynamos. In the opposite avenue was an extensive arrangement of dynamo carbons, electric stone-cutter (system Dulait), several standards with incandescent electric lamps of the Societe Anonyme Electricite et Hydraulique. Other electrical exhibitions were the Compagnie Internationale d'Electricite, whose show was very good. It was this company which obtained the concession for the illumination of the gardens. The exhibit consisted of several large dynamos in motion during the day, machines for the drainage of mines and other subterranean works, and also of accessories for public and private lighting. Accumulators, dynamos, distributing apparatus, carbons, cables and other electrical accessories were displayed by Joseph Jaspas, J. H. A. Jaspas, of Liege; Societe des Acieries de Charleroi, the Bell Telephone Manufacturing Company, the Antwerp Telephone and Electrical Works, etc.

Among other Belgian machinery exhibits, Messrs. Belliard & Fletcher had two marine boilers, one 7 ft. 10½ in. diam., the other 8 ft. 2½ in. diam. Messrs. Nyssens Freres, of Antwerp, who held the contract for the water supply to the exhibition, had a show of gas and petroleum engines, etc. The Societe des Forges Usines et Fonderies de Gilly exhibit briquette making machines. The Societe du Phoenix showed samples of pumps. Mr. Jules Joly exhibits a somewhat remarkable machine. The inventor is Mr. Pierrez. It is a single-cylinder horizontal engine, the cylinder sliding on the bed-plate to prevent a disturbance of the foundations. The engine is 35 H. P., 12-in. diam. cylinder, 100 revolutions per minute. On the crank-shaft there are three elbows, the center one being at 180 deg. to the others. The center bend of this crank is united to the piston by a short connecting rod. The pipe connecting the steam valve with the valve chest is fitted with an expanding joint.

The German section of the Machinery Hall was not characterized by anything novel. Gilbenberg & Company, of Cologne, had a new joint-cutting press. Habersang & Zinzen, of Dusseldorf, show a multiple drilling machine, with six tools operated by the same shaft. Erhardt, of Brunswick, exhibits a device for the extraction of oil.

Heine Bros., of Varsin, show a new method of driving centrifugal machines. Messrs. Grub, of Leipzig, have several petroleum engines, one of which was seen at the Agricultural Show at Mecaux, near Paris, last year—a 6 H. P. portable. Among the exhibits of Messrs. Fleck & Sons is an automatic grinder for sharpening the knives of a planing machine, hand saws and different descriptions of wood-working machinery. There were also many specimens of gas and petroleum engines. Valves, radiators, pulsometers, etc., are among their other exhibits. Messrs. Reinecker have a collection of milling machines of both the horizontal and vertical type. They also contribute a measuring machine which will, it is stated, show differences of 1-10,000th of a millimeter.

As giving some indication of the comparative extent of the exhibits

made by the various countries represented, the space occupied in the general catalogue may be stated: Belgium, 245 pages; France, 178 pages; Germany, 46 pages; United Kingdom, 36 pages; United States, 22 pages.

This shows, to a certain extent, the regard in which the Antwerp Exposition was held by the countries named. This depreciation may be due to the prevailing depression; but, undoubtedly, it shows that the modern character of this class of advertising is not deemed to be an exceedingly good paying one.

The machinery exhibits of France were neither large nor of special quality. E. Wauquier & Son have a collection of centrifugal pumps, some of which are for direct action with a dynamo. Sculfort et Foelledey, of Maubeuge, have a stand of various machine tools for metal work, as also have the Societe Dauday-Maillard, of Maubenge. The firm of Albaret & Lefebvre were represented by several agricultural machines. Fabius Henriou, of electrical notoriety, had also a show of machines and appliances. In the railway department the Compagnie des Chemins de Fer de Paris a Lyon et la Mediterranee, exhibited one of its locomotives, with two carriages attached; the Societe des Hauts Fourneaux de Denain et Auzin have samples of rails and springs, etc., for carriages. Achille Legrand, of Raismes, Nord, sent models of specimens of rolling material, also patented metallic sleepers, which are in use in most of the large coal mines in France.

In the electrical section Benard & Thibeye were represented by electrical appliances, as also is Fabius Henriou; other exhibitors show accumulators and various instruments in use for measurement and distribution.

Other companies, such as the Societe des Acieries de Longroy, the Societe Metallurgique d'Esperance Longroy, Liege, have also specimens of primary manufactured products. To the left of the central avenue in a transept was a gathering of Belgian mining exhibits, illustrating the methods and conditions of coal mining in that country. Also a good sectional model of a mine and several special appliances for raising and lowering coal. Among others there were represented the Societe des Charbonages-Unis de l'Ouest de Mons, the Compagnie Charbolage d'Arsimant, the Societe des Agglomerés de Houille de Chatelieu, Gustave Havarte and others. In the French and German sections there were also exhibits in the metallurgical department from some of the leading firms. The representation in this division by the United States was very insignificant as a whole.

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, SEPTEMBER 11TH, 1894.

- 525,727. Dumping Car. Edward A. Trapp, New York, N. Y. The car-body is pivoted, and the dumping is done by a piston rod, the piston being actuated by compressed air.
- 525,728. Pump for Oil Wells. Shoubel C. Turner, Oakdale, Pa. Combination with tubes of internal coupling, carrying packing for the pump rod.
- 525,731. Automatic Hydraulic Pump. Theodore A. Walther, Chicago, Ill. Assignor to Charles Turner Brown, same place. Combination of motor cylinder and pump cylinder with valves controlled by the movement of the piston.
- 525,732. Electrolytic Apparatus. Emile Andreoli, London, England. Combination of tanks, each divided into a number of anode and cathode compartments, and a system of circulating pipes.
- 525,741. Dumping Car. George T. Morris, Guttenberg, N. J. Combination of divided pivoted car box with center sill, a pair of central supporting shafts, and with arms supporting the fore end of the box.
- 525,773. Process of and Furnace for Smelting Copper. Alfred O. Vicuna, Valparaiso, Chile. Compound smelting furnace; fully described in the "Engineering and Mining Journal" for June 9th, 1894, page 533.
- 525,795. Means for Making Borings at Bottom of Deep Waters and in Tideways. Alfred W. Palmer, New York, N. Y., Assignor to Charles H. Thompson, same place. Messed column, provided with footplate to rest on the bottom. The column carries and directs the drill.
- 525,826. Process of Making White Lead. Elwyn Waller and Charles A. Sniffin, New York, N. Y., Assignors to the Amorphous White Lead Company, of New Jersey. The process consists in preparing an aqueous solution of basic lead acetate and a solution of carbon dioxide in water under pressure, and then forcing one of those solutions into the other, causing the white lead to be precipitated.
- 525,905. Roaster. Neils H. Jensen, Philadelphia, Pa. A revolving spherical roaster, with internal furnace.
- 525,969. Process of Desulphurizing Mineral Oils. Adolph Sommer, Berkeley, Cal. This process consists in digesting the oils with dry sulphate of copper.
- 525,970. Method of and Apparatus for Dissolving Leaching and Filtering. John Storer, Sydney, N. S. W., and Benjamin T. Lacy, San Francisco, Cal. The method consists in admitting steam or vapor under pressure into a closed vessel, the vapor forcing the fluid placed in the vessel through the substance to be treated.
- 525,984. Amalgamator. James Jett, Walla Walla, Wash. Circular casing with helical sides or recesses, a peripheral feed and central discharge.
- 526,005. Dredge. Erastus S. Bennett, Denver, Colo. Dredge of the bucket type, with winding down carried on the hinge-pin, or shaft, of the boom.

Great Britain.

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

WEEK ENDING SEPTEMBER 1ST, 1894.

- 525,582. Mill. Charles Bonnefond, Paris, France., Assignor to La Compagnie Francaise de Materiel de Chemin de Fer, same place. Grinding faces and a sieve on plane of action of faces.
- 525,614. Steam Boiler. Augustin Normand, Havre, France. Combination of upper and lower chambers, with curved pipes.
- 525,622. Amalgamating Apparatus. Samuel L. Prieststone, Ward, Colo., Assignor of one-half of Thomas J. Thompson, same place. Horizontal features in a casing, with removable amalgamated plates and revolving wheel.
- 525,651. Gas Engine. William W. Grant, Brooklyn, N. Y. A cylinder with the piston to be moved simultaneously from and toward each other.
- 525,662. Apparatus for Extracting Oil. James Melkie, Jr., Glasgow, Scotland. Assignor to the Buchill Chemical Company, Limited, London, England. Extracting oil by volatile solvents and driving the latter away by heat.
- 18,634 of 1893. W. E. Kochs, Cardiff. Improvement in the form of conveying belts on machinery for sorting and picking coal.
- 18,713 of 1893. W. Skilling, Wishaw, Scotland. Improvements in hand power rock drills.
- 19,084 of 1893. J. T. Blackett, Guisborough, Yorkshire. Improvements in hand power rock drills.
- 19,235 of 1893. R. Brown, Southampton. Treating gold and silver ores with chlorine cyanide or other solvent in a vacuum.
- 23,043 of 1893. S. T. Crossdell and B. J. Hall, Workington. Pig iron breakers; services for feeding and gripping the pigs.

PERSONALS.

Mr. Wyndham Vaughn, of London, England, a director of the Atlanta Gold Mines Company, has been visiting the company's mines in Idaho.

Mr. F. H. Pettingell has been elected secretary of the Victor Consolidated Gold Mining Company, of Denver, Colo., in place of F. F. Rogers, resigned.

Mr. J. S. Doe, formerly connected with the Jeffrey Manufacturing Company, has been appointed manager of the Morris Coal Company's plant at Jobs, O.

Mr. G. S. Payton, mining engineer, recently returned to his home at Salt Lake, Utah, from Mexico, where he has been employed for some time past.

Mr. E. B. Leisenring, president of the Lehigh Coal and Navigation Company, has been dangerously ill at Hombourg, Germany, but recent dispatches report him much improved.

Mr. Sampson Jeffries, of Lead, has been appointed State Mine Inspector of South Dakota, in place of W. S. O'Brien, resigned. Mr. Jeffries is a practical miner of long experience; he is vice-president of the Miners' Union of Lead.

Mr. Howard W. Huffington, a graduate, 1892, of the United States Naval Academy, has just been elected professor of Mechanical and Electrical Engineering in Delaware College. Mr. Huffington after graduation taught one year in the University of Pennsylvania.

Professor Penrose has been at Cripple Creek, Colo., for three weeks, making a thorough study of the economic geology of the camp, and is examining the underground workings of all the leading mines. Dr. Whitman Cross is also at Cripple Creek in the interest of rock classification and nomenclature.

Mr. J. C. McCall has resigned as superintendent of the West Harmony Gravel Mine, California, and has been succeeded by A. D. Gassaway, formerly of the Ruby Mine, Sierra County. Mr. McCall was greatly esteemed by all the men who worked under him. He will probably take up his residence at Forest Hill, in Placer County.

Mr. Robert A. Hadfield, president of the Hadfield Steel Foundry Company, of Sheffield, England, and well known among iron men for his researches on manganese steel, was married in Philadelphia, September 19th, to Miss Frances Belt Wickersham, a daughter of the late Col. S. M. Wickersham, for many years a prominent steelmaker of Pittsburg.

Mr. Louis Janin, Jr., mining engineer, and at one time a member of the staff of the "Engineering and Mining Journal," has accepted a professional engagement in Australia and is now on his way to the colony of Victoria, where he will make his headquarters either at the mining camp of Ballarat or Bendigo. Mr. Janin, on behalf of his clients, who are connected with the MacArthur-Forrest Cyanide Company, will make a complete survey of the mining districts there, with special reference to the milling processes now in vogue. It is believed that the introduction of modern American methods, replacing the somewhat antiquated Australian processes, will result in a material saving, and perhaps permit the working of properties which are now not remunerative. Mr. Janin has had many years of experience in North, South and Central America, during which time he has become acquainted with the difficulties to be met with in the treatment of rebellious ores. Some of the improvements which have resulted from his researches in the metallurgy of gold and silver have been described in the columns of the "Engineering and Mining Journal." His varied professional experience, coupled with his familiarity with American practice, will, we hope, result in the more general introduction of American appliances and methods in Australia, with results alike gratifying to Americans and satisfactory to Australians. Mr. Janin, before returning to this country, may visit the South African goldfields.

OBITUARY.

Benjamin W. How, who died in Brooklyn, N. Y., September 18th, was for many years engaged in the white-lead business and established a large factory. He retired some years ago.

Trouillis Stephens, one of the firm of Bell & Stephens, of Pinos Altos, Grant County, N. M., died on September 8th. Mr. Stephens was well known throughout New Mexico, where he had been engaged for 20 years in mining operations.

Major Thomas Turtle, Corps of Engineers, U. S. A., died in Washington, September 18th, from congestion of the liver. He was stationed in the office of the Chief of Engineers in the War Department at the time of his death, and had been ill a few days only. Major Turtle was the minor officer of his grade. He was born in Ireland, was appointed to the Military Academy from Massachusetts in 1863, and became a major in May, 1893.

SOCIETIES AND TECHNICAL SCHOOLS.

American Society of Civil Engineers.—At the regular meeting in New York, September 19th, the paper of the evening was on the "Improvement of

Gray's Harbor, Washington," by Mr. B. W. De Courcy. A short discussion followed.

Engineers' Club of Cincinnati.—The regular monthly meeting was held in the rooms of the Literary Club, 24W. Fourth street, Cincinnati, O., on Thursday, September 20th. Mr. Geo. T. Waite presented a paper on "Notes on the Progress of Electric Traction," which was discussed by the members present.

South Dakota School of Mines.—This school, at Rapid City, has just opened for the new year. The term began on Thursday, September 20th, and will continue, with a short intermission or vacation during the Christmas holidays, until the middle of June, 1895. The school opens with an attendance of 35 students from all over the country. Following are the officers and faculty: Dr. V. T. McGillicuddy, president; Frank C. Smith, professor of geology, metallurgy and mining engineering; Arthur J. Morse, professor of chemistry; Earle R. Hare, professor of mathematics and languages; W. Tindall, instructor in assaying.

Western Foundrymen's Association.—The next meeting will, upon the invitation of Messrs. Pickards, Brown & Company on behalf of the Illinois Steel Company, be held Wednesday, September 26th, in the afternoon, at the South Chicago works of the Illinois Steel Company. The members and their guests will take the 2 p. m. train on the Illinois Central from Randolph street station. The afternoon will be spent in inspecting the blast furnaces and mills of the Illinois Steel Company; and the members will come up from South Chicago in time to attend a dinner which will be held at the Palmer House at 7:00 p. m. After dinner a short business meeting will be held, at which Mr. E. C. Potter will read a very interesting paper on "The Blast Furnace." All foundrymen, whether members of the Association or not, are invited to go on this trip to South Chicago and to the dinner.

Federated Institute of Mining Engineers.—The annual general meeting was held at Newcastle-on-Tyne, England, September 5th and 6th. The sittings only occupied about two hours on the 5th, and the remainder of that day and the whole of the following day was devoted to excursions to collieries and other engineering works in the neighborhood. Six papers in all were read, and of these three were contributed by American members. These were: "The Stetefeldt Furnace," by Mr. C. A. Stetefeldt; "Explosions in Nova Scotia Coal Mines," by Mr. Edwin Gilpin, Jr.; "The Shaw Gas Tester for Detecting the Presence and Percentage of Firedamp and Chokedamp in Coal Mines," by Mr. Joseph R. Wilson, of Philadelphia. The last named paper provoked some discussion, most speakers considering the apparatus too cumbersome for practical use. The other three papers were: "Walling and Sinking Simultaneously with the Galloway Scaffold," by Mr. John Morison; "Timber Bridge and Viaducts," by Mr. M. W. Davis, and a short geological note of local interest by Professor Hull.

INDUSTRIAL NOTES.

The Eagle furnace of the Eagle Iron Company, at Spring Valley, Wis., has resumed operations.

The Heine Safety Boiler Company, of St. Louis, has recently secured an order from the city of Chicago for boilers of 1,500 H. P.

No. 2 furnace of the E. & G. Brooke Iron Company, of Birdsboro, Pa., is being relined and repaired, and will soon resume blast.

Hamilton furnace, of Means, Kyle & Company, Hanging Rock, O., is ready for blast, but may not resume operations for a few weeks.

Arrangements have been practically concluded for the erection of a large tinplate plant in Youngstown, O. The new concern will employ 500 men.

At the works of the McConway-Torley Company, in Pittsburg, the hammer shop, foundry and machine shop have been put on full time, double turn.

The puddling mills of the Old Dominion Iron and Steel Works, at Richmond, Va., have been put in operation, and a large portion of the plant is now at work.

The Colorado Fuel and Iron Company on August 16th with its two 5-ton converters, turned out 315 tons of steel ingots in 24 hours, surpassing the record for any previous day in that plant.

Repairs to one of the Swede furnaces of R. Heckscher & Sons, at Swedeland, Pa., have been completed, and the furnace is kept in readiness for blowing in at the first opportunity.

The Wacuna Mining and Milling Company has been incorporated at East St. Louis, Ill., with a capital of \$140,000. The incorporators are J. S. Rusche, Frank Watkins, L. B. Giugnon and R. F. Morton.

The Buckeye Manufacturing Company, Union City, Ind., is making arrangements to move to Anderson, Ind., where it will be able to turn out four or five times the number of engines possible under present facilities.

The city architect of Chicago is preparing plans for the new municipal lighting plant on South Halsted street, which will cost \$25,000. Contracts for

the necessary machinery have been let by the Commissioner of Public Works.

The Central Railroad Company of New Jersey is about to let contracts for 3,500 hopper-bottom gondola cars of 60,000 lbs. capacity each. The new cars will take the place of a large number of the old four-wheel coal jumpers now in use.

The Roanoke (Va.) Rolling Mill Company has recently received large orders from Richmond, Va., and Chicago, for muck bar, and in consequence the mill is working a full force of hands both night and day in order to meet the demand for the iron.

The Martin Hardscog Manufacturing Company has established a plant for the manufacture of drilling machinery, bits, picks and other coal mining appliances at South and Allegheny avenues, Pittsburg, under patents obtained by Mr. Hardscog.

The New Process Twist Drill Company, of Taunton, Mass., is enlarging its plant by the addition of 10,000 ft. of floor space which will be used in extending the manufacture of its well known drills. New machinery will be added and facilities increased.

The plant of the Youngstown Steel Roofing Company, Youngstown, O., has been completed and the machinery started in operation. The concern is located near the mills of Andrews Bros. & Co., which will furnish the steel sheets for the company.

At Youngstown, O., no further action has been taken by the blast furnace employees on the wage question, and the sentiment among the men is now that by reason of prevailing low prices it would be unwise for them to insist upon a restoration of the 10% in wages.

The property of the Crane Iron Company will be sold at public auction October 10th, by the Providence Life and Trust Company, of Philadelphia, trustee under the mortgage dated May 1st, 1876, interest upon the bonds secured by the mortgage not having been paid.

The Portage Iron Company, of Duncansville, Pa.: has its puddle mills running single turn at present, as there is only a limited demand for finished iron at very low figures. The company put the finishing mills at work this week. The hoop mills have been running all summer on cotton ties and will be for some little time.

The Homestead Works of the Carnegie Steel Company resumed operations in full in all departments September 17th. The 35 in. mill, which was on single turn last week, resumed on double turn. Great difficulty is experienced on account of a shortage of gas in several of the departments. Coal may be used during the winter under the boilers.

Furnace A of the Monongahela Furnace Company, at McKeesport, which has been off since the 1st of May, was blown in on the 14th. During the shutdown the furnace was relined. The starting up of the furnace was considerably delayed on account of the inability to secure a sufficient supply of coke, owing to the strike.

The Shaw Electric Crane Company, Muskegon, Mich., is preparing for shipment to the Watervliet Arsenal at West Troy, N. Y., a 67 ton crane. The company has also recently received orders for a 20-ton crane to go to Vienna, Austria; a two-ton hand rail crane for Nekeosa, Wis.; and for three of 5, 10 and 40 tons capacity, respectively, traveling cranes for the St. Louis Stamping Company, St. Louis.

Messrs. Riter & Conley, Pittsburg, have secured the contract for a steel stack 225 ft. high by 13 ft. in diameter from the Cleveland, O., Electric Illuminating Company. It is stated that this will be the tallest steel stack in America. The same firm is also building two stacks 200 x 12 ft., one to go to Newark, N. J., and the other to the Westinghouse Electric and Manufacturing Company at Brinton Station.

A dispatch to the Baltimore "Manufacturers' Record" states that the Standard Oil Company has purchased the great sulphur deposits near Lake Charles, La. These deposits are of great extent, and several attempts have been made to work them, but for various causes they have failed. The price paid by the Standard is reported to be \$175,000. Orders for part of the machinery needed for development have been given.

Recently 30 puddling furnaces at Jones & Laughlin's mill, Pittsburg, have been abandoned, and 60 puddlers employed by the firm have received notice that their services will be no longer required. The furnaces will be dismantled and the space used for a battery of boilers to furnish additional power to run the steel department. Not long ago the firm abandoned a similar number of puddling furnaces. This is only an indication of a prevailing tendency.

The American Fuel Economizer and Engineering Company, 136 Liberty street, New York, has published a catalogue which contains some interesting data regarding its appliances as used for heating and purifying feedwater for steam boilers, by utilizing the heat in flue gases. The book contains sectional drawings of parts of the economizer and shows plans where they have been installed. The company designs and constructs entire power plants, furnishing all materials.

At the East New York coaling station of the Brooklyn Elevated railroad, 125 tons of coal are delivered

daily to the locomotives. The coal is received from dump cars, delivered to a storage, elevated and delivered to the pockets above the track, from which it is spouted through measuring chutes to the locomotives. To accomplish this work it is only necessary to run the C. W. Hunt's Company's conveyor two hours. It requires only two men, one an engineer and the other a laborer, to operate the machinery.

Messrs. Goldsmith and Loewenberg, of Portland, Ore., and Temple Court, New York, have awarded the contract for a four-mill tin plant to the Frank-Kneeland Machine Company, of Pittsburg, Pa. The equipment consists of four 24 x 32 in. hot mills, four 22 x 32-in. cold mills, four doubling shears and engine, one squaring shears, one 22 in. sheet bar mill, bar shear with table and conveyor for cooling the bars, also a 36 in. roll lathe. The equipment throughout is designed to make the mill, when erected, the most advanced in that class.

The Ohio Steel Company has increased its capital stock to \$1,250,000, and the increase will be largely taken by the present stockholders. When the company started the project of building an extensive steel plant it was believed that \$750,000 would be sufficient. Later it was found necessary to increase the stock to \$1,000,000 by reason of the extensive improvements. Since then another increase has been found necessary, as the stockholders have decided to make it the finest steel plant in the country. Although a large force of men is engaged, it is not expected the concern will be ready to turn out steel until the opening of the new year.

An interesting lawsuit, involving about \$30,000, was begun in the Circuit Court recently. It is that of Mills & Fairfax vs. The Norfolk & Western Railroad Company for the amount alleged to be due for the construction of the Flat Top Tunnel in Mercer County, W. Va. The plaintiffs claim that they were not allowed enough money by the engineer in charge, while the Norfolk & Western claim the estimates of the engineer were correct. This suit came before the Circuit Court some time ago and was taken to the Court of Appeals on a demurrer, which was resolved, and the case now comes up again for trial.

Messrs. Wm. Jessop & Sons, Limited, New York, and Sheffield, England, the prominent steel manufacturers, have lately made some important additions to the equipment of their large plant at Sheffield, in the way of improved machinery, principally for heavy marine work. The following description of the new tools appears in a recent issue of the Sheffield "Daily Telegraph": "Among the machinery just placed in position is a powerful 69-in. crank lathe, with four rests and a 50-ft. bed, constructed on the most modern lines. This lathe is capable of dealing with the largest class of marine and other cranks. Another improved tool is a lathe with a 60-ft. bed, intended for straight shafting and other plain work. It is provided with four saddles and two fast headstocks, one of them having powerful treble gear, and in it either one long shaft or two shorter ones may be turned simultaneously. It is so constructed as to deal easily with the heaviest class of propeller and thrust shafting likely to be required. Messrs. Wm. Jessop & Sons, Limited, have also added a horizontal boring and drilling machine, by means of which a great variety of work can be executed.

In Philadelphia, September 14th, Judge Green filed the decision of the United States Circuit Court of Appeals in favor of William Walter Scranton and Walter Scranton, in the litigation growing out of the organization of the Lackawanna Iron and Steel Company, of Scranton, Pa. A number of stockholders of the former Scranton Steel Company charged that \$350,000 in bonds of the new company, paid to William Walter Scranton, the president of the old company, and to Walter Scranton, its vice-president, under an agreement that the two Scrantons, who are brothers, should not re-engage in the business in competition with the new company, should not have been paid to them, but to the old company itself. The Scrantons claimed that the \$350,000 in bonds was a bonus to them personally, the object being to prevent their skill and knowledge from being used to compete with the new company. The matter was originally heard by Judge Acheson in the Circuit Court at Pittsburg, and resulted in the bonds being awarded to the Messrs. Scranton. The dissatisfied stockholders of the old company took an appeal from the finding, and the case was argued last March before Judges Dallas, Butler and Green. This probably concludes the case in favor of the Scrantons, as it is not likely another appeal will be taken.

The Maryland Trust Company, Mr. J. Willcox Brown, president, has been selected as trustee for a general mortgage of \$2,500,000 executed by the Elyton Company of Birmingham, Ala. The Elyton Company is the successor of the Elyton Land Company, which owns most of the land on which the city of Birmingham is built. The general mortgage is to cover all the property owned by the Elyton Land Company, and which has been conveyed to the Elyton Company, which in turn agrees to execute and deliver the property to the Maryland Trust Company as trustee, to be held as security for the general mortgage bonds to be issued.

The new issue of \$2,500,000 in bonds is to be used for retiring \$1,736,000 of dividend trust bonds issued by the old Elyton Land Company. These trust bonds were issued by the old company, which had no State privileges, but was operated as a private

enterprise, with the property, holdings and earnings of the company as security for the payment of the interest and principal of the bonds. The new company has been incorporated by act of the Legislature of Alabama, and the general mortgage is in conformity with this general incorporation act. The new bonds not used in retiring the old dividend trust bonds are to be held in reserve by the trustee, and can only be used for the payment of coupons, if the Elyton company should for any cause fail to pay interest at maturity; to pay taxes on the property and to cancel for a sinking fund.

The dividend trust bonds are to be deposited with the trustee for exchange for new bonds, which will be ready for distribution about October 1st. The new bonds are to run for 30 years and to bear interest at 5%. Under the terms of the general mortgage three-quarters of the proceeds of all sales of lands made by the Elyton Company and three-quarters of the proceeds of all adjustments and settlements of indebtedness shall be deposited with the trustee for the payment of interest semi-annually on the general mortgage bonds. The holders of the dividend trust bonds who deposit them with the Maryland Trust Company will receive receipts therefor. The trust bonds are to be exchanged for the new mortgage bonds at par and the receipts will be accepted in exchange when the new bonds are ready for delivery.

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.

Pima County.

Rosemont Camp.—At this camp, says the Tucson "Citizen," work is under way on a road across country to Sonoita station, on the New Mexico & Arizona road, over which machinery will be hauled to the camp. Hauling will be begun on the completion of the road. The distance to the railroad by the new road is 17 miles. The excavating for the new smelter will be completed in three days. Fine ore bodies, of high grade rock, are being developed in the mines of the company. Eleven American miners are working there, in addition to Mexicans employed. Many men formerly at Globe are at Rosemont. The outlook for the camp is very bright.

CALIFORNIA.

Lake County.

Merrimac.—This mine, near Glenbrook, will be started up soon by L. P. Goldstone, who now owns it. It has been worked with varying success by different parties in the past.

Mono County.

Bodie Consolidated Mining Company.—The latest weekly official letter says: During the past week we have hoisted to the surface 52 tons of ore, 47 tons from the stope above the north drift from No. 1 crosscut, and five tons from the north drift from No. 1 winze, 40 ft. below the 300 level. The ore hoisted during the past week is about the same grade as what we have been milling this last week. The ore stope above the 300 level is looking well. Have stopped work on the north drift from No. 1 winze, 40 ft. below the 300 level and started a south drift from the same point. Commenced crushing ore in the Bodie mill on August 27th and crushed 118 tons. Average battery sample assay, \$98.38 per ton; tailings, \$5.47 per ton. The mill has been kept running steadily since starting up.

Shasta County.

The following recent notes are from the Redding "Free Press":

Balaklava.—The grading and improvements preparatory to putting up a mill are in progress under the management of Colonel Ellis.

Iron Mountain.—A New York company has had an expert examining this property. Deeds have been placed in escrow with a short option. There is a large amount of copper ore in sight, carrying also gold and silver.

Minnesota.—This mine on Spring Creek is now milling ore from the 300-ft. level. They have an up-rise with a 10 in. streak of rich ore and 2 ft. more that mills well.

Old Spanish.—Jas. Sallee has a shaft down 80 ft. on this mine on Deakin's ranch. He has purchased a 10-stamp mill of the Gladstone Mining Company which will be erected on Middle Creek before the rains commence.

Texas.—Rich ore full of free gold is on exhibition at the Bank of Shasta County from this mine. This ore was taken from the 900-ft. level.

COLORADO.

Mineral surveys approved by the United States Surveyor-General for Colorado during the week ending September 8th, 1894: 9,015, Pueblo, Savage and Roman lodes; 9,034, Leadville, Kennebec; 9,035, Pueblo, Lone Pine and Success lodes; 9,037, Pueblo, Finn; 9,028, Durango, Harrison; 9,036, Pueblo, Annie Rooney; 9,056, Pueblo, creek bottom; 8,881, Leadville, Omega; 8,989, Del Norte, Lafe Pence No. 2; 7,521, Gunnison, Clinton; 7,925, Gunnison, Hawk-eye; 8,944, Pueblo, Oro Cache placer; 9,018, Pueblo, Findley; 8,799, Pueblo, Keystone; 9,020, Pueblo, Maggie.

Chaffee County.

Belle of Granite.—The new concentrator is now ready for work. There is a large amount of concentrating ore on hand, which, it is believed, will pay well for the treatment. The ore is from a drift which is now 90 ft. long and 36 ft. below the surface only at the lowest point.

Clear Creek County.

There were shipped from Georgetown during the month of August 60 cars of ore, 1,638,603 lbs. Twenty-four cars went to Pueblo, 32 to Denver, and 4 to Argo. This shows an increase over the same month last year of six cars.

Empire shipped during the same period eight cars, containing 243,000 lbs. of ore. This was about the same shipment as was made in July.

Crown Point & Virginia Mining Company.—This company is preparing to put in an 80 H. P. boiler and engine. This will necessitate an addition of 30 ft. to the shafthouse. The ore taken out at present is good, both in quantity and quality, says the Idaho Springs "News."

Lamartine Mining Company.—This company has placed boilers at the mouth of the Oneida tunnel and moved up a large air compressor. The company will run the Oneida tunnel until it reaches the Lamartine vein, which will be cut fully 1,000 ft. deep. It is also having a large number of claims surveyed between the Lamartine and on the line of the tunnel.

World's Fair Mining and Milling Company.—This company will erect a stamp mill in East Argentine for the treatment of ores from its group of mines. The necessary machinery has been purchased in Denver and work on the building commenced.

Custer County.

Geysers Mining Company.—This company, at Silver Cliff, has ordered an assessment of 10c. per share. In the mine the force has been increased and over 60 men are now employed.

El Paso County.—Cripple Creek.

(From our Special Correspondent.)

Anna Lee.—This mine, owned by the Portland Company, ships from 30 to 40 tons of ore per day. The vein is from 18 to 24 ft. wide and the deposit about 60 ft. in length. The management is developing the property to find another such shoot of ore.

C. O. D.—This property, situated in Poverty Gulch, and owned by private individuals, is making increased shipments. A contract has been let to sink the working shaft 100 ft. As depth is attained the free gold disappears or is replaced by native tellurium, associated with fluorspar, both amorphous and crystalline on every seam.

Moose Mining Company.—This company's mine, on Little Bull, shows steady improvement. The shaft has been sunk to a depth of 40 ft. below the 300-ft. or fifth level. The vein at the fifth level, north, is the best ever seen in any part of the mine. Another shoot of ore has been exposed at the third and fourth levels south.

Independence.—This mine, on Battle Mountain, will soon commence shipments on a larger scale as the new hoist is now in running order. This plant is the most complete in the camp, equipped with compressor and dynamo for illuminating purposes, there being two arc-lights in the shafthouse, etc. The lessees on the north end of the Independence have placed their hoist and in a few days will commence shipment.

Snodgrass Washer.—This machine, at work on the placers directly west of town, treats about eight tons of gravel an hour, with the machine making 150 revolutions a minute. The results, as far as can be learned, are satisfactory.

Washington.—This mine, directly south of the Independence, is being worked under lease by Mr. Charles Moore. Two shipments have been made of good ore. As the vein approaches the porphyry dyke, it becomes richer and the pay streak larger.

Lake County.

(From our Special Correspondent.)

The past week has been quite an important one in mining circles, for the reason that several new enterprises have been started, while others are projected and will be under way in the near future.

Bimetallic Smelter.—Two stacks are in operation. The dust chamber is being enlarged. No other improvements will be made at present.

Big Six Mining Company.—The extent of the strike of rich ore in the Nettie Morgan shaft has not yet been fully determined, but enough is known to assure the lessees that it is a good one. A drift 40 ft. below the present workings has been started, and will be pushed into the ore body, after which shipments will be commenced.

Chemung.—A leasing company is pushing down the shaft steadily, and has already reached a depth

of 400 ft. Indications are good for encountering the ore body at an early day.

Commercial Mining Company.—It is the intention to sink the clipper shaft a further depth in order to open up the second contact as it has been fully demonstrated that an extension of the Elk fault exists between the Clipper shaft and Wolcott workings. A portion of the ground has been leased to Mr. Warren Page and both the lessee and Manager Carleton will prosecute work vigorously, with the likelihood of opening up at an early day the ore body uncovered in the Wolcott.

DoubleDecker.—Mr. C. N. Riddy and others have leased this property and will sink a shaft to the contact, the work to be commenced at once. This mine is located in Stray Horse Gulch and the first ore body was encountered at a depth of 185 ft. and over \$100,000 was taken out. The ore runs well in gold. The diamond drill shows the existence of other ore bodies and it is the intention of the new company to get at them.

Gazelle Mining Company.—This company has begun the preparatory work for sinking a deep shaft, which is to be pushed down at once, in that territory known as the city limits. The enterprise is an important one, and the company was organized in May, 1893, for the purpose of sinking the shaft, but work was stopped when the crash came. There are 32 acres of ground controlled by the Gazelle people, which includes the Millon, the O. Z., west half of the Niles-Augusta and all of the Morning and Evening Stars west of the carbonate fault. The new shaft to be sunk will be 800 ft. deep, and will thoroughly explore the great second contact west of the Pendery fault. The new shaft is to be located at the head of East Fifth street, between the Elk and Sixth street shafts. Leading mining men are at the head of the company, which is capitalized at \$100,000, and the work will open up the rich ore bodies of the Elk and Niles-Augusta.

Hulda Mining Company.—In the work of sinking the Garbutt shaft small bodies of ore carrying silver and lead are being encountered. The shaft is still going down, while drifts are being run with very good indications of success.

Minnehaha Placer.—This tract of land, containing over 70 acres and lying near the Silver Standard group, is to be the scene of very important work. A strong syndicate has obtained a lease on this ground and a deep shaft is to go down at once. In addition to disclosing the great gold ore chute on its southwesterly extension, this new shaft will also uncover the rich chutes of the Rock & Dome, Mayer, Crown Point, and Nisi Prius properties. It is hoped to catch the contact at a depth of 400 ft.

M. M. Fraction.—Lessees have taken hold of this piece of ground, lying near the Little Vinnie, and a shaft is being sent down 350 ft., where it is expected the rich ore chute of the Vinnie will be encountered.

Nevada.—The old workings on this property have been thoroughly cleaned out, and while doing this work a small streak of good ore has been disclosed. It runs 37% lead and 0.14 oz. gold. It is thought this find of gold is a feeder to the gold ore chute, and work will be prosecuted vigorously.

Silver Standard Group.—A large syndicate this week secured a lease on these properties comprising 56 acres of ground and lying in Iowa gulch. Preparations are already under way for the sinking of a new shaft which, it is believed, will open up the rich ore chutes of Rock Hill, as found in the Nisi Prius, and other mines, and the explorations will, doubtless, at the same time open up the great gold ore chute in that section. Mr. J. A. Shinn, one of the principal owners, will have charge of the work.

Smuggler.—A small amount of ore is being shipped from the upper contact. The shaft is down 400 ft., and is following a streak of mineral.

La Plata County.

Baker Contact.—The Denver parties who lately secured an option on this property have organized a company with a capital stock of \$1,000,000, with D. H. Moffat, president; S. H. Baker, vice-president; Charles McLeod, Ebe Smith and Cohen, directors. The company has bought four of the Baker claims, the consideration being a sum in cash, the erection of a 10 stamp mill at the foot of Tubercio Gulch, a wagon road to the mines, and a share of the stock of the company. The machinery for the mill will be in working order inside of 60 days.

Ouray County.

Crown Point.—Last week, says the Ridgway "Herald," there was completed what promises to be a big mining sale of Goose Creek properties owned entirely by Ridgway parties. The property is the Crown Point, group of mines, situated in or near Poverty gulch, a short distance west of Dubois and consists of the Crown Point, Savage, Justice, Dexter, and Albany lodes. Consideration \$30,000. The owners are: S. J. Couchman, Geo. Carlow, C. W. Walters, A. D. McPhee, J. Sharp, Kenneth McDonald, J. W. Sowers and J. C. Boles. A small cash payment was made at the time of signing the papers and an additional payment sufficient to absolutely insure the sale of the property is to be made on October 4th, 1894. Denver and Eastern capitalists are the purchasers.

Pitkin County.

Homestake.—In Denver, Colo., last week, Charles Burns filed a suit in the District Court against the Deep Mining and Drainage Company, David H.

Moffat, Walter S. Cheesman, David R. C. Brown, Jerome B. Wheeler, Eben Smith, Fred G. Bulkley, the Franklin Mining Company, the Aspen Mining and Smelting Company, the Security Safety Deposit & Trust Company, of Denver, L. H. Eicholtz and Charles J. Hughes, Jr. The suit asks for a restraining order, which was granted by Judge Rising, preventing the sale of the property pending further proceedings. Burns claims that the stockholders have fraudulently conspired to obtain his interest in the Homestake lode in the Roaring Fork mining district. Some of the parties also owned the Big Chief and the Little Chief claims and others contiguous to the Homestake. It is claimed that it was proposed to sink a shaft on the Homestake 1,500 ft. and pay \$125,000 and receive the capital stock of 250,000 shares, of which 80,789 shares went to Burns. Burns says the property was not developed as agreed and he now brings suit under a \$50,000 deed of trust.

(From our Special Correspondent.)

Accident Fraction.—This mine, adjoining the Smuggler property, has been leased and is being worked vigorously by the lessees. The hanging wall of the vein has been reached by a short crosscut from the Cowenhoven tunnel, and a small shaft is now being sunk to cut the contact in which the ore is supposed to lie.

Bushwhacker Incline.—This incline has been sunk another 50 ft., and preparations are being made for cutting out a station and opening up a new level. This level will be 122 ft. below that of the Cowenhoven tunnel.

Colorado Midland Railway.—This company is building a spur from its main land to the mouth of the Cowenhoven tunnel to compete with the Denver & Rio Grande Railway, for the business of transporting the ore now being produced by the mines operated through this tunnel.

From the frequent reference made to the Cowenhoven tunnel and the mines working through it, it will be seen that this is the chief center of activity in the camp at the present time. There is, however, a great deal of good work being done outside of these mines.

Ingersoll.—This property has been leased. The lessees will reopen the mine at once and operate it through the Percy incline.

San Juan County.

(From our Special Correspondent.)

Nevada Mine.—Mr. J. H. Clark has sold this mine at Silverton to Mr. Ed. B. Stoiber. This mine will hereafter be a part of the Silver Lake group.

Silverton Smelting and Mining Company.—This company's furnace closed down September 2d, owing to a shortage of silicious ores, but blew in again September 8th.

Summit County.

Doubtless Mining Company.—This company is building a tramway from the lower Jumbo dump to the mill. This will avoid the use of wagons in getting the ore from the mine to the mill, reducing the cost in handling ore.

GEORGIA.

Paulding County.

Yorkville Gold Mines.—W. M. Curtis, trustee for these mines, has written as follows regarding progress made: In regard to the development already made at the Yorkville mines, August 15th, 1894, Mr. R. E. Cranson, mining engineer, writes: "The more I see of the mine the more pleased I am with it. I believe the samples we bring with us will show that a good deal of the ore is all that could be wished for. August 19th, Stuart A. Courtis, student at the Boston School of Technology, helping engineers, writes: "We have taken three average samples Saturday that we have crushed, quartered down and panned, and every one has carried gold, two of them being rich. The one at White's Tunnel weighed about 120 lbs., the others about 80 lbs. I do not think you will say anything more about a strike after you get your new tunnel completed, as, with very rich ore at one end and White's Tunnel at the other, it cannot fail to produce all you want. Since we have taken samples and see what an immense amount of gold panning rock you have already in sight, and what splendid prospects you have, we have all been very enthusiastic over the mine just as it is." August 26th, Mr. Cranson writes: "North drift No. 2 has been panning gold at every blast for the last week or so. Also by panning down a portion of the average sample of the whole drift I obtained a fine showing. This vein is 25 ft. wide, and extends indefinitely to the north and south—No. 1 tunnel being in the hanging. If your assays show as well as my panning, and I believe that they will, I can have no doubt but that the mine will prove itself equal to our most sanguine expectations; at least it will fully demonstrate its ability to repay the development fund in full."

IDAHO.

Lemhi County.

Yellow Jacket Mining Company.—The work of rebuilding the mill, which was burned down last spring, is nearly completed, and it will be ready for work this fall.

Yellow Jacket Placer Company.—This company is building a 7-ft. flume 1,500 ft. in length. At latest accounts over 1,100 ft. had been completed.

Owyhee County.

The following report we take from the London "Financial Times" of September 7th: An informal

meeting of the shareholders of the Poorman Consolidated Mines, Limited, was held at Winchester House, having been convened by certain shareholders anxious to discuss the present state of affairs, Mr. C. Chester, who presided, said that a short time ago the English shareholders were in receipt of telegrams leading them to suppose that the June output would show about \$35,000 profit, but just when they should have heard that that profit had "come to pocket," news was received that the mill had been burned down. Holding a large number of shares, he sent to the secretary for particulars as to the cost of the mill, whether it was insured, and whether steps were being taken to put the mill up again, because, as they knew, unless prompt steps were taken, the whole season would be lost. Obtaining no information from the secretary, he wrote to the directors in America, but sufficient time had not elapsed to receive an answer. All that had come from the directors was an elaborately printed report, containing everything except a statement of what the mine was costing, and what it had produced. With that came a proposition that the shareholders should subscribe for 48,000 new shares, in order to raise \$12,000, which would put up the mill. It was hardly likely, however, that shareholders would subscribe at par for what they could buy in the market at 2s. Mr. Arthur Young and others interested had suggested an issue of debentures, the subscribers to which should have the option of exchanging them for shares at any time within a year. That proposal was telegraphed to America, but no favorable answer had been received. He then suggested to the secretary that he should call a meeting of the shareholders, but that official had not seen fit to do so, and they had therefore been informally called together by advertisement. In his opinion it ought not to be difficult to raise \$12,000, if there were any truth in the statements that had been made concerning the property. Mr. Young, together with some of his friends, had engaged an engineer over there, Mr. Grothe, to report upon the present position of the property. He hoped that report would bear out those they had received from the directors. Mr. Young suggested that another meeting should be called upon the receipt of Mr. Grothe's report, and conditionally upon that report being favorable, he invited the shareholders to guarantee the taking up of sufficient debentures to realize \$12,000, bearing 10% interest, redeemable in two years at 105, with the option of taking shares at par at any time within 12 months. After some discussion, it was resolved that a committee of shareholders, consisting of Mr. Arthur Young, Mr. William Newall, Mr. Hugh Limebeer (representing the French shareholders), Mr. John Varley, and another gentleman to be selected, be appointed a committee to receive and consider Mr. Grothe's report, and to communicate with the French shareholders. Mr. Young said the appointment of this committee, backed up by promises to subscribe for debentures, would enable them to see that the property was not "jumped." After the meeting, several shareholders offered to take up any debentures that might be issued, and it had been previously mentioned that \$2,000 or \$3,000 had been promised.

Black Jack Mining Company.—Contracts have been let to H. Beary, J. Bruce and Blake Brothers to extend the Black Jack tunnel 1,000 ft. The contract price is said to be \$6.50 per foot, the company furnishing compressed air. Rand drills will be used.

Tip Top Mine.—Arrangements have been made to work the ore from this mine in the Lincoln Mill at Silver City. At present 10 stamps are at work, and the other 10 will be started as soon as the Frue van-ners are in place to take the ore as it comes from the stamps.

ILLINOIS.

Fulton County.

The coal miners at Cuba are again out on a strike. The operators reduced the scale of wages from 50c. to 45c. a ton for mining, which is the same price paid by the Whitebreast Company to the negro miners at Dunfermline. The miners accepted the cut, but struck when the operators refused to make a reduction of 10% in the price of powder and oil purchased of it by the miners, as they were paying the operators 10% more for their supplies than the Dunfermline miners.

Macoupin County.

Green Ridge Coal Company.—This company was organized some months ago, and bought or leased about 1,000 acres of coal land near Girard, on which a good mining plant has been erected. The shaft has now reached the main vein, which is reported to be 7 ft. thick.

IOWA.

Marion County.

Hamilton Coal Company.—This company has been organized by N. Brand, R. Dieleman and others to work the coalbeds near Pella. Prospecting has been going on for some time on the property, with encouraging results.

Polk County.

Carr Coal Mine.—This mine, near Mitchellville, which has been idle for some time, is to be reopened. A new pump has been put in, and operations will be started as soon as the shaft is clear of water.

MAINE.

Kennebec County.

Young Quarries.—At these quarries on Church Hill, near Augusta, work has been resumed, and a

force is at work getting out granite for paving blocks, to fill a heavy contract.

Hancock County.

Chase Granite Company.—This company has been organized to work quarries at Blue Hill. The capital stock is \$100,000. The officers are N. B. Stover, president; George H. Stover, of New York, treasurer.

MICHIGAN.

Copper.

Quincy Mining Company.—The new rockhouse at No. 2 shaft is now being inclosed, says the "Native Copper Times," and some of the machinery is already on the ground. The crushers and steam hammers will be put in before the snow flies, but the shaft house will not be put up till next spring, on account of the timbering being done in the shaft. The new engine house is about ready to receive the large engine being built by the Allis Company, Milwaukee. The engine has cylinders 54 x 84; the drum is 26 ft. in diameter, with 15 ft. steel face, and when in shape will hoist at the rate of 2,500 ft. per minute.

Tamarack Mining Company.—The present situation is described as follows in a letter from Superintendent W. L. Parnell to Thomas Nelson, treasurer of the mine: In the No. 3 shaft we have got through the lode in the east end, and find it full 19 ft. in width. As we are the proper depth for plat, we are now cutting the usual plat on the north side and a smaller one on the south side. I find this better in this instance than confining ourselves to one plat. At present depth the foot wall of the lode is out about in the center of the shaft, so that when we sink again below the plats we shall have 9 or 10 ft. of a lode more to sink through in the western end, and if it continues to improve in that end as it has done since we first had it at that end, the lode will be good enough. The piece we have squared down in the western end about 7 ft. is rich from the hanging as far down as we have gone.

MONTANA.

Cascade County.

According to the local papers, Mr. Marcus Daly has, in an interview, confirmed the report that this company will build a large copper refining plant at Great Falls, and that work on this plant will begin very soon. The arrangements will be completed this week probably, when Mr. J. B. Haggin was expected to return from New York. The plant will be on a large scale, and will employ a large number of men. It is the intention, according to Mr. Daly, to concentrate the work at Great Falls as much as possible.

Deer Lodge County.

Montana Mining Company, Limited.—The total output for August was: Gold, 2,840 oz; silver, 31,190 oz. The estimated realizable value of the same is \$74,900. The tonnage of ore milled during the month was 6,350 tons, 110 stamps having been in operation. The expenditure was as follows: Working expenses on revenue account, \$38,100; outlay on developments, \$8,600; extraneous expenses, including insurance, \$960; permanent improvements account, \$100; total expenditure, \$47,760. The revenue was therefore \$27,140 in excess of expenses for the month.

NEVADA.

Lincoln County.

The recent discovery of gold bearing veins, reported to be rich, on Sheep Mountain, at the lower end of the Pahranaagat Valley, has caused much excitement, and many prospectors are reported on their way to the new district.

Storey County—Cimstock Lode.

The following are from the latest weekly letters of the mine superintendents:

Alpha.—During the week have cleaned out and retimbered 10 ft. of the shaft below the 220 level, total depth of shaft cleaned out and retimbered, 335 ft.

Andes.—420 level.—We have been easing timber in the main north drift, and in the west drift from the shaft station.

Belcher.—On the 850 level the northeast winze has been sunk 51 ft. The bottom shows clay and quartz. On the 1,000 level the main north lateral drift has been cleaned out and repaired for a distance of 428 ft. from the incline station. We have hoisted during the week 11 tons of fair grade ore.

Best & Belcher.—750 level.—East crosscut No. 1 started from upraise No. 1 from 800 level, has been extended 18 ft. through hard quartz and porphyry; total length 78 ft. Work has been discontinued in this crosscut. Two hundred level.—The south crosscut started from the incline upraise, 50 ft. from 200 level, has been extended 26 ft., passing through porphyry, clay and quartz; total length 35 ft.

Bullion.—The west drift from the Ward shaft, 820 level, has been extended 18 ft. during the week; total length 1,054 ft.; face in porphyry and seams of clay.

Chollar.—The west crosscut No. 2, 75 ft. south of north line, on the 100 level, has been advanced 30 ft.; total length 452 ft.; face is in soft porphyry. We have completed cleaning and repairing the north drift, 450 level, and started a west crosscut 30 ft. south of our north boundary; face in quartz of low assay value.

Consolidated California & Virginia.—1850 level.—In continuing the work of stoping in the ore body to

the west and south and upward to the ninth floor—one floor above the sill floor of this level—we have extracted during the week 350 carloads of ore, about 347 tons, the average assay value of which per mine car samples was \$97.07 per ton. On the 1700 level, from the south drift, 40 ft. in from its starting point, an upraise has been carried up and connected with the south drift No. 3 (or fourth floor stope) 22 ft. above, all the way in good ore which averages \$75 per ton.

Gould & Curry.—200 level.—At a point in the south drift 200 ft. from main west crosscut, started west crosscut No. 2, and extended it 20 ft., passing through soft porphyry.

Hale & Norcross.—375 level.—Advanced north drift 13 ft.; total length 62 ft.; face in porphyry. 1100 level.—North drift on this level was advanced 10 ft.; total length 76 ft.; face in quartz and porphyry.

Justice.—The branch drift from the Justice drain tunnel was advanced 20 ft.; face continues in fair grade ore. A point 63 ft. back from the face of this drift they have commenced stoping upward, following the ore. During the week we have extracted 50 tons of ore; average assay value, as per car samples, \$23 per ton, nearly all gold. Have shipped to the Dazet mill at Silver City about 100 tons of ore, which is now being worked.

Mexican.—1465 level.—The west crosscut started from the top of the upraise which was carried up 45 ft. above the sill floor of this level at a point 40 ft. west from the main north drift and 100 ft. north from the south line of the mine, has been extended during the week 21 ft.; total length, 372 ft. Face in porphyry, showing fine lines of quartz.

Occidental.—From the several openings above the 400 level we extracted about 18 tons of ore of the average assay value of \$32.50 per ton. The west crosscut started near No. 3 upraise, on the 500 level, is now in 120 ft. and has entered the ledge about 2 ft. The material so far explored is of low assay value. We milled during the month 97 tons of ore and slimes and produced bullion valued by assay at \$1,752.

Ophir.—1464 level.—The upraise started at a point 70 ft. in from the mouth of the east crosscut started from a point in the main north drift 124 ft. north from the main east crosscut from the Ophir shaft, has been carried up 13 ft.; total height, 53 ft.; face in porphyry, clay and quartz of low value. Have continued jointly with the Mexican company the work of making repairs in the main shaft 1100 at the level. On the Central tunnel, the old winze, which was reached at a point 220 ft. in from the mouth of the crosscut run west from the north drift from the Mexican shaft on the tunnel level has been re-opened down 30 ft.; total length 54 ft.

Potosi.—West crosscut No. 4, 450 level, has been extended 30 ft.; total length, 191 ft. Face in quartz and porphyry of no practical value. The main north drift 450 level has been advanced 33 ft.; total length, 610 ft.; face in porphyry.

Savage.—On the 1,100 level in the north lateral drift, started from the east drift, they continue to extract ore on the sill floor upward to the third floor. On the 1,050 level, at a point 30 ft. north of the south boundary, they have started a west crosscut and advanced the same 10 ft.; face in low-grade quartz. They have also completed a large working station at this level east of the shaft. On the 1,100 level the north lateral drift from the station was advanced 10 ft.; total length, 307 ft.; face in quartz and porphyry, giving low assays. The west crosscut, started 20 ft. back from the face of this drift, was advanced 10 ft.; total length, 41 ft.; face in porphyry and quartz. During the week we have hoisted 59 cars of ore from the 1,000 level. Car samples average \$21.35 per ton.

Segregated Belcher.—The mine continues to yield a small quantity of fair-grade ore from the 1,100 level, and the prospecting operations will soon be increased.

Sierra Nevada.—The north lateral drift at a point 385 ft. east from the mouth of Intermediate tunnel, has been advanced 23 ft.; total length, 85 ft.; face in clay, quartz and porphyry. The southwest drift at a point 170 ft. west of the mouth of the Dayton tunnel, was advanced 30 ft.; total length, 30 ft.; face in clay and porphyry. The north lateral drift, from the west drift, 1,520 ft. west of shaft, 900 level, has been advanced 18 ft.; total length, 647 ft.; face in hard porphyry.

Union Consolidated.—From the Union shaft the south lateral drift from the west drift, 1,520 ft. west of shaft, 900 level, has been advanced 24 ft.; total length, 310 ft.; face in porphyry.

West Consolidated Virginia & California.—During the past week they have been engaged in shaft repairs. The west crosscut run from a point 320 ft. north of the 1,100 level station has been extended 19 ft.; the face is in hard porphyry, carrying lines of quartz of some value.

NEW MEXICO.

Sierra County.

Hillsboro District.—Shipments of ore concentrates and bullion from the Hillsboro gold mines for the week ending August 30th amounted to \$8,000.

Socorro County.

Copper Queen.—At this mine, in the Mogollon district, an important strike is reported. The vein was reached at a depth of 103 ft., the ore running high in silver and having some gold also.

OHIO.

Stark County.

The decisive struggle to end the miners' strike in the Massillon district was begun this week by an importation of colored men, who are to be housed and guarded by the allied operators. The coal-land owners have determined to oppose the substitute of the 1½ in. screen for the 1¼ in. mesh, as a violation of their lease contracts, whereby the companies agree to pay for coal passing over the smaller screen. In the north district, where a few Polanders are working in opposition to the union, the operators have notified the sheriff to be prepared to quell any outbreak, but none has been so far reported.

PENNSYLVANIA.

Anthracite Coal.

Cross Creek Coal Company.—Kuyler Brothers, who some time ago received a contract to strip a large piece of coal land at Eckley, for this company, have commenced operations. The stripping will give employment to a large number of men.

Honeybrook Colliery.—At this colliery, near Hazleton, the premature explosion of a blast injured three men seriously and eight slightly. It was at first reported that a number of men had been killed, but examination reduced the accident to moderate proportions.

Lehigh & Wilkes-Barre Coal Company.—This company is reopening slope No. 7 at Tresckow. It will be used entirely as a pumpway, and a large new pump will be placed there.

Union Improvement Company.—A preliminary injunction has been granted in a suit in equity, begun by John Getting, a farmer of Nescopeck, against the Union Improvement Company, and the Jeddo Tunnel Company, Limited, restraining them from continuing work. Getting charges in his bill that active work has commenced by the defendants on a tunnel through Buck Mountain, that said tunnel is to drain a number of mines, that the mine water so drawn off will enter into the Nescopeck creek at the rate of 40,000,000 gallons per day, that the said creek runs through his farm and that the mine water will ruin said farm for purposes of cultivation. The tapping of the water in Ebervale and Harleigh mines will take place soon unless delay is caused by this suit.

Bituminous Coal.

Halleck G. Balridge, of Latrobe, last week purchased the 9 ft. vein of cooking coal under the Brownfield farm, three miles south of Uniontown, 220 acres, at \$187,000. This price, \$850 an acre, marks the highest price ever paid for coal in Lafayette county.

Shawmut Mining Company.—A charter has been granted to this company, organized by B. F. Hall, Andrew Kaul and others. The office is at St. Mary's in Elk County.

SOUTH DAKOTA.

Clark County.

General Sheridan.—On this claim, near Garden City, Little & Burns are getting out 50 tons of ore for treatment by the cyanide process. A previous lot of 48 tons gave good results.

South Dakota Mining Company.—A new ore body has been struck in this company's Josie claim on Anna Creek. Two small ore bodies have also been found on the Eva and Edna claim.

Lawrence County.

Baltimore.—On this claim in Nevada Gulch the owners, Ernest May and others, are preparing to sink a shaft at least 150 ft.

Golden Reward Mining Company.—This company is increasing its force, says the Deadwood "Times," and will work actively several claims which have been idle for some time past. A good ore shoot was struck recently in the Harmony.

Holy Terror.—It is stated that the development work shows a 5 ft. vein of free-milling gold ore, with some value in the sulphurets, which it is proposed to save by concentration. The owners have decided to put up a 10-stamp mill.

McShane Claim.—This claim, in the Yellow Creek district has thus far been developed only by an open cut, but a tunnel has been started. Two carloads of ore have been sent to the Deadwood & Delaware Smelter.

UTAH.

Iron County.

Little Creek Canyon.—Dr. J. H. Hall, of Parowan, says the "Iron County Record," has discovered and located a ledge of gold-bearing ore in Little Creek canyon, about 12 miles east of Parowan. The mineral bearing ledge is said to be about 10 ft. in width, and free gold is easily seen in the ore.

Juab County.

Centennial-Eureka Mining Company.—Development work is to be carried on more actively than ever before at this mine. A large air compressor has been ordered and will be in operation by November, when an additional number of drills will be put in operation.

Millard County.

Ibex.—A carload of ore from this mine was last week sent to the Hanauer smelter at Salt Lake City. Contracts have been made for material, and a milling and concentrating plant is to be put up at Leamington. A spur track will be built to the new plant for the delivery of material and the hauling of ore.

Salt Lake County.

Tilden No. 2.—The tunnel has been cleaned out into the face and preparations are being made to drive the tunnel ahead another 100 ft.

Yosemite No. 2.—The lessees, Harrington & Garland, shipped 150 tons of fine ore from the mine this week.

WASHINGTON.
Stevens County.

Cleveland Mine.—This mine, near Springdale, has been sold to parties from Slocan. The ores carry lead, zinc, silver and a small amount of gold.

WYOMING.

Cooper Hill.—On this claim two small shafts have been sunk, and a tunnel recently started is in over 40 ft. A third shaft is to be started soon to determine, if possible, the value of the lode.

Emma G.—At this mine, on Cooper Hill, a tunnel is now in 230 ft., and another will soon be begun. The ore is chiefly quartz and oxide of iron, carrying some free gold.

Richmond.—On this mine, on Cooper Hill, two shafts have been sunk about 40 ft and connected by a drift. The vein is about 30 in. in width and carries free gold. Some 60 tons of ore have been taken out and are ready to ship.

Rip Van Winkle.—On this claim, on Cooper Hill, a tunnel is in 230 ft., the end being 120 ft. below the surface. Some ore has been taken out, and it is hoped that the main vein will be reached in another 50 ft.

LATE NEWS.

The Riverside Tube Works at Wheeling, W. Va., have shut down on account of difficulties with the laborers.

The Birmingham (Ala.) Rolling Mill Company has again started its mill after being idle for several months. Four hundred men are at work. It is possible that in the near future black plates will be made at these works.

Mr. Harvey, who some time ago was appointed Master of the Wellman Steel Works at Chester, Pa., has reported in favor of selling the property. Judge Clayton rules that if no settlement with the creditors is reached the property shall be sold on November 17.

The Harqua Hala Mining Company, of Arizona, makes the following return for the month of August: Crushed during the month, 3,320 tons; estimated gross value of gold produced, \$24,600; miscellaneous revenue, \$500; total, \$25,100; estimated total expenses, \$11,500; estimated profit for the month, \$13,600.

The De Lamar Mining Company, of Idaho, makes the following return for the month of August: Crushed during the month, 3,763 tons; bullion produced in the mill, \$75,295; estimated value of shipping ore, \$5,200; miscellaneous revenue, \$85; total produce, \$81,310; total expenses, \$38,780; estimated profit for the month, \$42,530.

Trust deeds for \$1,900,000, covering all branches of the Illinois Steel Company's system, were executed September 19th. The mortgage bears 6%, and is issued to cancel present indebtedness. The trustee is the Merchants' Loan and Trust, of Chicago. Of the above, \$270,000 was for Chicago & Southeastern, \$120,000 for Chicago & Kenosha, \$1,410,000 for the Calumet and Blue Island works.

The report that the Standard Oil Company has purchased the sulphur mine in Calcasieu Parish, Louisiana, owned by what is now the American Sulphur Company, is denied by representatives of the latter concern, and not confirmed by the Standard Oil Company. It is asserted, however, that the Standard Oil Company has interested itself to the extent of \$175,000 in these sulphur deposits, while not purchasing them entirely, and proposes to aid in their development. Machinery has been ordered from a Lake Charles, La., firm.

The Elkhorn Mining Company, of Jefferson County, Montana, makes the following report for the month of August: Mill worked 30 days and crushed 1,194 tons. Bullion produced in the mill, \$25,240; 141 tons of smelting ore sold, \$11,034; total produce, \$36,274; total expenses, \$22,725; estimated profit for the month, \$13,549. The directors have declared an interim dividend of 1s. per share (free of income tax) for the quarter ending August 31st, 1894. Dividend warrants will be posted September 28th to all shareholders registered on the books on September 3d.

Edward B. Leisenring, president of the Lehigh Coal and Navigation Company, died September 20th at Homburg, Germany. He was 49 years old, and was a native of Mauch Chunk, Pa. He was the oldest son of the late John Leisenring, who was for many years a most prominent figure in the anthracite trade. His son succeeded him in his various enterprises, and had been connected with the Lehigh Navigation Company nearly all his active life. His health failed last spring, and a few weeks ago he started for Homburg in the hope of securing some benefit.

Dispatches from Cripple Creek, Colo., give the following detailed statement of the gold output of that camp for the month of August, which has been greater than that of any previous month: Number of tons shipped to Denver and Pueblo smelters, 4,650; value, \$418,500; number of tons treated under stamps, 4,000, which yielded \$35,000; tons treated by the Lawrence Chlorination mill and cyanide process mill at Mound City, 1,300; value, \$41,560. There was \$3,000 worth of gold taken out on the placers. Total value of output for the month, \$498,060. This is an increase of 33% over July. The September shipments will, it is believed, show a corresponding gain over August.

Definite figures regarding the ore movement to August 1st are at hand, says the Cleveland "Marine Review," and they show an aggregate of 3,686,470 tons shipped from all ports, or a gain of 272,389 tons over the movement on the same date in 1893. A statement of shipments from Escanaba shows that the movement from that port to August 18th was 664,959 gross tons less than on the same date in 1893. The St. Mary's Falls Canal report on August 1st, or about the same date on which the Escanaba report is made, showed shipments from all Lake Superior ports aggregating 3,077,623 net tons, against 1,927,793 net tons on the same date a year ago, or a gain of 1,049,830 net tons. This gain of 1,049,830 net tons from Lake Superior ports is equal to 937,348 gross tons, but the decrease of 664,959 tons in the movement from Escanaba leaves the shipments from all upper lake ports on August 1st or thereabout only 272,389 gross tons in excess of what they were a year ago. On August 1st no ore had been moved from Gladstone, and no ore from the Gogebic range had been shipped through Escanaba. Only one of the Menominee range mines, the Pewabic, which produces ore of a special grade, has exceeded last year's shipments.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Sept. 21.
Statement of shipments of anthracite coal (approximate) for week ending September 8th, 1894, compared with the corresponding period last year:

Regions:	Sept. 15, 1891.	Sept. 16, 1893.	Difference.
Wyoming region.....	406,275	436,548	Dec. 32,273
Lehigh region.....	138,170	148,146	Dec. 9,976
Schuykill region.....	206,953	252,574	Dec. 45,621
Total.....	751,398	837,268	Dec. 85,870

Totals for year to date. 27,743,715 29,347,283 Dec. 1,553,568
PRODUCTION OF BITUMINOUS COAL, in tons of 2,240 lbs., for week ending September 15th and year from January 1st:

Shipped East and North:	1894.		1893.
	Week.	Year.	Year.
Phila. & Erie R. Co.....	836	51,371	59,551
Cumberland, Md.....	80,178	1,955,914	2,895,538
Burclay, Pa.....	5,591	114,625	37,630
Broad Top, Pa.....	5,591	251,231	415,259
Clearfield, Pa.....	72,435	1,677,219	2,785,014
Allegheny, Pa.....	48,327	793,063	88,426
Beck Creek, Pa.....	1	1	2,517.9
Pocahontas Flat Top.....	70,574	2,269,821	1,939,481
Kanawha, W. Va.....	59,800	1,793,840	2,300,826
Totals.....	317,931	8,726,077	13,797,577

* To September 8th.
** To September 1st.
† Returns not received.

Shipped West:	1894.		1893.
	Week.	Year.	Year.
Pittsburg, Pa.....	27,851	957,704	863,444
Westmoreland, Pa.....	46,266	1,074,565	1,777,482
Monongahela, Pa.....	13,963	492,258	489,928
Totals.....	88,080	2,524,527	2,730,854

Grand totals..... 401,339 11,250,604 16,128,431

Anthracite.

The anthracite coal market is probably in an unsatisfactory condition just now as it has been at any time this year, and that is saying a great deal. The dullness is extreme, and new business is next to nothing. The slight movement of coal noted during the few days of cool weather last week seems to have died out.

In addition to these unsatisfactory and discouraging conditions there is still another which is perhaps worse than all the rest combined since there is naturally bound to be a greater volume of business as soon as the cold weather sets in. A cause for anxiety, however, is to be found in the demoralization which exists in the matter of production and prices. Last month, despite the fact that all producing interests seemed to realize the gravity of the situation, and agreed to mine only 2,500,000 tons, the output exceeded 3,000,000 tons, only one or two producers failing to exceed that, and stocks have increased. It may be remarked incidentally that while the figures of production published by the Bureau of Anthracite Statistics probably are correct, it is not likely that the statistics of stocks at tidewater shipping points are very accurate. Thus in the figures printed elsewhere in this review it appears that stocks on August 31st show a decrease of 49,595 tons for the month, whereas almost all shippers report an increase. And this fact obviously increases the probabilities that it will take the trade some time to recover from its present demoralization. The output for the first half of September is 1,417,444 tons, but much good work may be done in the remainder of the month. It is better to fall below the 2,500,000 tons agreed on for this month than to exceed it. There is no reason to doubt that prices are really

weaker to day than at any time for the past six weeks—not that "off" grades are selling for less than they were, but that good grades are cheaper. We quote good loads, as follows, f. o. b. New York: Stove and chestnut, \$3.20@3.25; egg, \$3.15@3.20; broken, \$3@3.10. There are some "stock" coals which may be had for less, all reports to the contrary notwithstanding. And it is also only just to state that the majority of the companies are asking more—and not getting it, as a rule. Thus the following quotations represent what the majority of sales agents call "fair" f. o. b. prices: Stove, \$3.35@3.50; egg, \$3.30@3.35; chestnut, \$3.30@3.45; broken, \$3.20.

The agents of several of the big companies are far from happy. Every day their customers come to them with reports of lower prices from somebody else. Credence, of course, cannot be placed in all these reports and, therefore, the agents manage to find some consolation by thinking or, at least, by saying that they think that these low-priced sellers are not companies, but individual operators who have no bonded debt on which to pay interest—firms which having but limited storage facilities are frightened at demurrage charges and are willing to make some sacrifice to unload their coal.

At the same time we wish to call attention to the fact that an ugly and ominous feeling is developing among these agents, who represent coal companies controlled by railroads. All alarmist reports are met by the statement that there is no "open light" among the companies, as if it were a matter of congratulation. That is really the case just at present. But various representatives of these very companies admit that if positive proof is brought to them that any company is underselling the other, they will do the same and meet any price. And it is this fact, for which we can vouch, that must needs concern the trade.

The trade is in so concededly bad a condition that moralizing seems superfluous, but despite all warnings and despite all acknowledgment by the producers a month and a half ago that they realized how serious the situation was, the trade has been steadily going from bad to worse. It was early in July last that the "Engineering and Mining Journal" commenced to warn the sales agents that unless they displayed greater wisdom than had been shown in the more than stupid overproduction of June, they would plunge the market into complete demoralization. It is a pleasure to us that our articles attracted considerable attention and praise and were conceded to be impartial and truthful. At the same time we had not looked for so utter a disregard for our warnings and such an absence of foresight and common sense from the very persons who admitted that they could not gain any statement, and who should have taken them to heart. But they are the greatest sufferers, and unless they act more wisely in the future greater tribulations are in store for them. It must be borne in mind that for the trade to resume normal conditions there must be a more active demand during the next three months than there is any reason to expect. Dealers' stocks are pretty heavy—and they will not buy much coal until their supplies are diminished. The public which is always complaining about the "grasping monopolists" of the anthracite regions and the extortionate prices of coal, would have little real cause for complaint this winter did it but buy its season's supply now. But instead of so doing it is not even buying as much as usual; the dealers therefore will not or cannot buy from the wholesale men, and in consequence of it all, no one is benefiting by the present state of affairs.

The presidents of several of the coal owning railroad companies held a meeting on Thursday, September 20th, at the office of the DeWane & Hudson Coal Company. The principal reason for holding the meeting was that the condition of the coal trade had grown so bad that some measure is deemed necessary to avert total demoralization.

Nothing definite was arrived at. The question of a new allotment was discussed and we understand that the presidents are nearer a solution of this vexed problem than they were a month ago. The condition of the trade was thoroughly discussed. None of the officials present would give any information whatever, save that the result of their deliberations would be manifested at the next meeting of the sales agents. At any rate it is encouraging to know that the heads of the operating companies realize that some radical measures must be taken to preserve the trade from utter demoralization.

NOTES OF THE WEEK.

The Bureau of Anthracite Coal Statistics furnishes the following statement, compiled from the returns furnished by the mine operators, giving coal shipments for August and the eight months ending August 31st:

	August		Eight months	
	1893.	1894.	1893.	1894.
Wyoming region.....	1,760,983	1,591,987	15,474,565	14,613,255
Lehigh region.....	591,779	591,333	4,452,579	4,245,560
Schuykill region.....	956,086	901,524	7,677,561	7,505,276
Total.....	3,308,768	3,084,844	27,604,705	26,364,091

The stock of coal on hand at tidewater shipping points, August 31st, was 814,483 tons; on July 31st it was 855,078 tons, showing a decrease of 40,595, or 4.9% during August.

For August the output shows a decrease of 2,8324 tons, or 6.6%, as compared with August of last year; for the eight months the decrease was 1,241,404 tons

or 4-5%. The decrease was chiefly in the Wyoming region, those in the Lehigh and Schuylkill shipments being comparatively small. The August production shows little signs of restriction.

The great retail war in Brooklyn is reported to be at end. A meeting of the combatants, comprising some of the more prominent dealers in the City of Churches, was held on September 18th, and an armistice was declared. It was agreed not to sell coal for less than \$3.50 in yard or \$4.20@4.40 delivered. These prices are for free burning coals. This marks the end of a period of remarkably bitter competition, during which coal was sold for \$3, and in some instances \$2.75—manifestly a losing operation. Had it kept up, numerous failures would have resulted.

The receivers of the Philadelphia & Reading Railroad and Coal and Iron Company have approved the revised Olcott-Earle reorganization plan. There were present at the conference Samuel Dickson, counsel for the receiver; F. W. Whitbridge, of New York, and Mayer Sulzberger, of counsel for the Committee; the local members of the committee and the three receivers. The plan will be presented to Judge Dallas, of the United States Circuit Court, and authority asked to pay the commissions charged for underwriting the reorganization plan. A new factor of importance in connection with the proposed reorganization concerns the treatment which is to be accorded to bondholders of the Philadelphia, Reading & New England Railroad, better known as the Poughkeepsie Bridge system. The Reading company is the guarantor of the principal and interest on these bonds, but since the receivers have been in control no interest has been paid. It is stated that while no mention of these bonds will be made in the forthcoming reorganization plan, some of the prominent bondholders have received assurances that their rights will be recognized when the reorganization is accomplished. The reorganization plan as revised requires that one assessment—3%—be levied upon the stock and preference income bonds, unless their holders avail themselves of the privilege of subscribing to the collateral trust bonds. The details of this portion of the plan are as follows: Every \$10,000 of preference income bonds will be required to subscribe to \$1,000 collateral trust bonds at par and interest. In case, however, holders of the income bonds do not care or feel able to make such subscription, by paying \$300 in cash (3%) to the company they will be relieved of the subscription by a syndicate organized for the purpose, and their securities will be protected under the amicable reorganization proposed or the foreclosure, if such radical action should be found necessary. In other words, the income bondholders, if they are unwilling to subscribe to the collateral trust bonds, will surrender their privilege to do so to the syndicate and pay to the Reading company \$300 per \$10,000 worth of the incomes. The stock is treated in a similar way. Each holder of 200 shares of stock will be required to subscribe to \$1,000 collateral or trust bonds at par and interest, or pay \$1.50 (3%) per share to the company and surrender his privilege of subscribing to the collateral trust bonds to the syndicate, which has already been formed by parties in New York and Philadelphia, and which will take the bonds at 70. Stockholders agreeing to either of the propositions will be protected in the same manner prescribed for the preference income bondholders, but acceptances must be made within 60 days after the promulgation of the plan, which will probably be some time this week. The above arrangement will net the company \$10,000,000—\$7,000,000 from the syndicate if they buy all the collateral trust bonds, and \$3,000,000 from the junior security holders in assessments. In case the latter should decide to subscribe for the bonds, the return to the company would still be \$10,000,000, which would be sufficient to pay off all the floating debt, receivers' certificates, unpaid sinking funds and a certain amount of car trusts. Something in addition, however, will be required of the stockholders, for they may be asked to assign their voting power to the general mortgage bondholders during the period the latter's coupons are funded, which will be less than 3½ years from date. So far as the stockholders are concerned, this arrangement will be practically a voting trust, as the Earle-Olcott committee will probably be empowered to select the Board of Managers. Upon the funded period expiring, the plan contemplates giving two representatives each in the board to the general mortgage and income bondholders and the stockholders.

Bituminous.

The soft coal trade continues dull. There is very little new business doing, and most producers are now at work on old contracts and on shipments to some regular steady customers, who are taking their usual amounts and no more. Only a few shipments are making to the shoal water ports, and it looks as if the fall trade will be a little later than usual this year. The dullness seems equally great in all the districts, though perhaps the trade this side of Cape Cod is an exception, being slightly better than the rest.

Prices remain unchanged; namely, \$2@2.25 at the lower shipping ports and \$2.50@3 alongside New York, according to quality.

All rail trade is in much the same condition as the tide-water; there is nothing new or interesting in it and only small shipments are making. The natural increase which had been expected of the all-rail

trade this year has not kept pace with that which has been experienced in the tide water business.

The New York harbor market is also very dull, no new business is doing, and the trade via the Chesapeake & Ohio Canal has had a little spurt lately, but the greater quantity of coal shipped this way goes to consumers along its line. Few shipments of coal reaching tidewater by this route are made from Georgetown or Alexandria, due to the old complaint of a lack of vessels, together with the advance in freight demanded by the captains.

Owing to the general dullness the production has decreased this week, although it is scarcely fair to compare this week with the corresponding week of August. Last month many of the companies in the various regions, and even some of the regions themselves, produced the heaviest tonnage in their history, owing principally to the scarcity of coal and almost total exhaustion of the stocks in consumers' yards resulting from the prolonged coal miners' strike.

The slight blockade which occurred on the Pennsylvania Railroad is over and coal is now coming forward much more rapidly. The railroad officials report that the old-time dispatch will be given by the beginning of next week. The coal has been started from the laterals on which it was sidetracked. The car supply is good and fully equal to all demands for tidewater business; but for local points on the line of the road, and especially for points on the line of "foreign" roads, cars are difficult to obtain. This is notably the case with the Baltimore & Ohio Railroad.

The supply of vessels is about equal to the demand. There is quite a number of vessels discharging at the various shipping ports, but there are not many "light." On account of the delays of coal on the lines of the railroad and the quantity of vessels ready to load, shippers are unable to charter; there is not the usual demand for vessels. We hear of small fleets bound for the shipping ports. This will offset the tendency toward an advance in freights, which would otherwise exist when the coal which has been sidetracked arrives at the tidewater and creates an increased demand for vessels.

We quote the following freight rates from Philadelphia: To Boston, Salem and Portland, 65@70c; Providence, New Bedford, New Haven, Bridgeport and other Sound ports, 61@65c; Wareham, 85c, Lynn, 75c@85c; Newburyport, 75c@80c; Dover, 8c and towage; Bath, 70c; Gardiner, 70@75c and towage; Bangor, 75c. From Newport News, Norfolk and Baltimore 10c. Above the foregoing rates is asked.

Boston. Sept. 20.

(From our Special Correspondent.)

It is surprising how slowly the anthracite coal market improves. The retailers, who are of course the buyers, are not doing enough themselves to warrant their laying in any fresh supply of stock. The companies and individual operators alike are selling very little coal under these conditions, but are maintaining prices quite well; that is, concessions hardly exceed 15c. per ton. The companies would undoubtedly make even greater concessions than they do were it not so near the season when the retailer will have to have coal, as his stock is fast accumulating owing to the large production. Circular rates are, as last reported, \$3.50 per ton on stove and chestnut, and \$3.75 on egg and broken.

There is a fair amount of bituminous coal coming forward, but it is about all on old contracts, very little new business being in sight. It is thought by some that there will be even less doing a month from now, but these are only individual opinions. Cumberland is coming forward rather slowly just at present. On cars here this coal is quoted \$3.25 per ton; New River and Pocahontas, \$3.20; and Clearfield, \$3.

There has been practically no appreciable change in freight rates from last week. New York rates are 40@45c; Philadelphia, 70@75c; Baltimore, 75c; Newport News and Norfolk, 75c. Rates to Sound points are now on a parity with those to Boston.

Buffalo. Sept. 20.

(From our Special Correspondent.)

Coal.—Anthracite coal is dull and unchanged quotations rule. Families are apparently not in a hurry to lay in their winter supplies either in the city or near-by towns and villages; hence the slack business.

Bituminous coal for a few days was in fair demand, and as stocks had decreased somewhat dealers were firm in their views and did not make concessions; but since, the inquiry has ceased and the firmness also. Manufacturing industries are steadily improving the quantity of their output.

Complaints come from Sault Ste. Marie that in consequence of the large traffic through the canal locks to and from Lake Superior the detention of boats has become a serious hindrance to quick transit.

A large coaling station has been completed at Bradford, on the line of the Buffalo, Rochester & Pittsburgh Railroad; an improvement much needed.

The United States Engineers' Boards have reorganized at Duluth and Detroit, under General Poe. One will survey the route of the canal from Lake Erie to the Ohio River and the other the harbors of Duluth and Superior, looking to the establishment of a 20 ft. channel there.

The victory of the vessel men last week in securing a 50c. freight on coal from upper Lake Erie ports to Lake Superior ports has caused strong hopes to be raised among owners of lake craft that

they would be successful in combining to advance grain, flour, ore and other freight.

The coal tonnage passing the Sault Ste. Marie Canal to September 1st this year aggregated 1,223,150 net tons, as compared with 1,921,803 net tons in 1893, 1,972,239 net tons in 1892, and 1,671,357 net tons in 1891.

The shipments of coal from this port westward by lake from September 9th to 15th both days inclusive aggregated only 66,830 net tons, distributed as follows: 21,800 tons to Chicago, 18,300 tons to Milwaukee, 7,000 tons to Duluth, 6,650 tons to Toledo, 600 tons to Gladstone, 2,500 tons to Superior, 300 tons to Saginaw, 2,000 tons to Port Huron, 2.0 tons to Bay City, 680 tons to Detroit, 900 tons to Marine City, 900 tons to Sault Ste. Marie, 1,100 tons to Marquette, and 4,000 tons to miscellaneous ports via Tonawanda vessels. The rates of freight were 50c. to Chicago, 20¢ to Milwaukee, 65c. to Kenosha, 50c. to Sault Ste. Marie, 40c. to Marine City and Port Huron, 30c. to Duluth, Superior, Gladstone and Marquette, 5c. to Toledo and Detroit, and 35c. to Saginaw and Bay City. Closing quiet for Lake Superior ports and fairly active for Lake Michigan ports at 5c. higher quotations.

Chicago. Sept. 20.

(From our Special Correspondent.)

With the exception of Tuesday and Wednesday of the past week, the trade in both anthracite and bituminous coal has been very quiet. Tuesday and Wednesday developed enough activity to give dealers generally a hope that buying for the coming winter had at last set in, though it may not be more than a flurry, for such have occurred often of late. Hard coal has undoubtedly had the advantage in point of sales, orders having come in for a tonnage much surpassing that of last week, although that is not much to brag about. Soft coal has had but little attention; what sales have been made of it are mostly orders from out of town, and this can also be said of hard coal. The supply of both hard and soft coal continues to be greatly augmented by shipments by lake and rail. The lake during the past few weeks has contributed fully twice the tonnage of the same period in 1893, and the railroads are rushing it forward in quantities quite equal in proportion to the lake shipments. The want of agreement is yet very much in evidence concerning prices. The prevailing plan appears to be: Make us an offer and you will get the coal. The Green Ridge Coal Company, of Girard, Ill., made its first shipment of coal to C. L. Deering & Co., agents at Chicago. It was one of two carloads. The first shovel put into this mine occurred May 27th of this year, and the vein was reached September 1st. The coal is a fair grade of Illinois soft coal.

Prices on anthracite coal are for grate \$5.25; egg, stove and chestnut, \$3.50.

For bituminous prices are, f. o. b. Chicago: Youghiogheny, \$3.15; Raymond, \$3.50; Indiana Block, \$2.50; Hawnee, \$2.60; Pocahontas, \$3.75; Blossburg, \$3.90; New Kentucky, \$2.75.

Coke.—Chicago is not overstocked with coke, for that article is in much more demand than the present supply, which mainly comes from West Virginia and Kentucky.

Price of Conneltsville is \$5 per ton and that of West Virginia and Kentucky \$3.50@4.

Pittsburg. Sept. 21.

(From our Special Correspondent.)

Coal.—The market here and elsewhere along the river contains an ample supply notwithstanding the fact that the last coal shipment from Pittsburg to lower ports was made April 23d. In the railroad district a fair amount of business is being transacted, with heavy shipments, and are expected to continue for some time. There has been a light rain the past 48 hours, with a reasonable prospect for boating water. The Ohio River is the lowest for the past 10 years from here to Cairo; it will require a large amount of rain to restore navigation. There is no rush to buy winter stocks at Cincinnati; the buying of coal for winter is less at present than was ever known before; this is due to rigid economy which hard times have enforced, and the belief that the big supply on hand, and the vast amount about ready to come out will make coal very low here. Thousands of families are figuring on \$2 coal; good judges say \$2.50 will be the average price, making it \$1 less than last year.

The great strike of the New York & Cleveland Gas Company's mines has been declared off and the men are returning to work as individuals at 55c. per ton, 14c. below the Columbus scale. Another strike is talked of.

Conneltsville Coke.—The well paid leaders must go to work now; the formal recall of the last order for a meeting on Wednesday is the last gasp of the big strike of 1894. Even Mike Barrett declines to prolong the pretense of maintaining a strike any longer. About 1,000 of the old employees are preparing to leave the region; several hundred are departing for the West. The great reservoir of the H. C. Frick Coke Company is now nearly ready, and in a short time will be supplying through an 18-in. main all the works that require water extending from three to eight miles distant. The reservoir is on the summit of a mountain range on the Youghiogheny River two miles above Conneltsville, covering an area of one acre; it is 16 ft. deep, and was cut of solid sand rock. The coke trade is showing good signs of large proportions. The active ovens are 15,000, with more ovens being fixed. The car supply is getting scarce; a better supply is

promised. Week's shipments, 7,046 cars; increase, 430 cars. Shipments were to Pittsburg, 1,745 cars; east, 1,440 cars; points west, 3,861 cars. Prices are nominal and very irregular.

Shanghai, China. Aug. 17.
(Special Report of Wheelock & Co.)

Coal.—In Japanese we have nothing to record except that everything is at a complete stand-still in this direction, and what few tons have arrived have been entirely for the use of consumers. As for native dealers, they hold, at the very most, some 5,000 tons Moji kinds, and having disposed of one or two small lots at Tls. 9.00@9.50 ex godown, are now holding out for the latter price, and with a very good prospect of obtaining it, and even higher.

In Cardiff, the lot of 2,000 tons reported in our last, has been disposed of at Tls. 17.00 per ton, but having been placed with native dealers, it is still in stock and for resale, the price asked being Tls. 20.00 per ton.

In Australian, the cargo of Wollongong just arrived was sold previous to arrival at Tls. 9.75, and importers are asking Tls. 10.50 for further shipments, an offer of Tls. 10.00 having been refused. A cargo of Newcastle to arrive has been sold, at Tls. 10.50 ex godown.

Kerosene Oil.—We can only report a weak feeling in this market, a very limited business having been done during the past fortnight. At auction on the 28th ulto, 20,000 cases damaged Devoe's realized from Tls. 1.25 to 1.185, and again on the 13th 480 cases were put up and sold at Tls. 1.075 per case, the latter lot being badly damaged. We quote Tls. 1.31 as today's price for immediate delivery, while for one month's prompt Tls. 1.325 is demanded. In Batoum we have heard of no transactions, and nothing has arrived, though the "Trocas," with bulk oil, is due today. Devoe's arrivals have been the "Alcides" with 110,000 cases on the 7th inst., and the "Ancaios" with 77,000 cases on the 9th inst.; these we include in our stocks, which now total 1,500,884 cases American and 337,999 cases Russian. Quotations are: Devoe's, Tls. 1.325 per case, one month's prompt; Batoum, Tls. 1.25 per case; Batoum bulk, Tls. 1.17½ @1.20 per two tins.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Sept. 21, 1894.
Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending		From		From	
	Sept. 22, 1893.	Sept. 21, 1894.	Jan., '93.	Jan., '94.	Tons.	Tons.
Anthracite.	43	20,382	36	19,548	1,148,906	603,391
Coke	54	57,076	111	125,365	4,503,571	3,306,934
Charcoal...	28	5,999	22	4,942	319,503	152,063
Totals....	125	83,457	169	149,855	5,971,782	4,064,388

This week we can report an improvement in the iron market, due largely to the increasing volume of the usual fall trade and also, in some measure, to the feeling that during the coming winter, since disturbing legislation has been disposed of, there will be a decided revival in all lines of manufacturing business. Reports from most of the large iron centers indicate both a stronger tone to the market and slightly better prices. Thus far the improvement has been slight, but after the long period of depression existing anything pointing to better times is eagerly grasped by the iron trade as an indication of quick returning prosperity. This has resulted, unfortunately, in the starting up of too large a number of hitherto idle furnaces, while many more are being overhauled and put in shape to go into blast as soon as prices reach a point to justify it. This is a menace to the market. Our present consumption is about equal to production, and should there be a slight increase in the former, which would result in stiffening and possibly advancing prices, many of these furnaces would go into blast and flood the market with iron, immediately lowering prices and again bringing about the unfortunate condition which has prevailed for so long.

There is one redeeming feature to the past depression. It has forced upon furnacemen, ore and coal miners and coke makers, economies which, had the price of iron remained as in 1889, would never have been carried out. Pig iron is to-day being produced at less cost than ever before in the history of iron-making, and it is a question, and not a very doubtful one, either, whether the extremely low prices at which fuel and ore have been secured, and the slighter reduction in labor cost, there is not as much or more profit to advantageously located furnaces at the present price of pig, as when the metal was selling for \$14 and \$16 in New York.

As we said last week, one disturbing feature in the present market is the frequency with which southern railroads have been altering freight rates to Northern points. During August the rate from Birmingham, Ala., to New York was changed from \$3.50 to \$4, and again back to \$3.50, and now it is announced that on October 1st the \$4 rate will again hold. This is a serious matter when sales are made on close margins. Quotations at tidewater are as follows: Northern brands, No. 1, \$12.50@13; No. 2 \$11.50@12.50; gray forge, \$10.50@11. Southern irons, No. 1, \$11.75@12.50; No. 2, \$10.75@11.50; No. 1 soft F., \$10.75@11.50; No. 2 soft F., \$10.50@11.

Billets and Rods.—The steady decline in billets has finally forced the price down to \$18.50@19, but

little business is being done other than what is absolutely essential. Nominal quotations are: Domestic billets, \$18.75@19.50; wire rods, domestic, \$27@27.50; foreign rods, \$38.50@39.50.

Manufactured Iron and Steel.—Business during the week has been light, and prices are as last week: Angles, 130@140c.; axles, scrap, 140@160c. delivered; steel, 140@155c.; bars, common, 115@130c.; refined, 125@140c. on dock; beams, up to 15 in., 140@150c.; channels, 140@150c. on dock; steel hoops, 145@160c., delivered; links and pins, 140@165c.; plates, flange, 160c.@180c.; fire-box, 180@210c.; marine, 245@270c.; sheared, 180c.; shell, 140@160c.; tank, 130@140c.; universal mill, 125@140c.; tees, 150@160c., all on dock.

Merchant Steel.—The signs of improvement noted last week have not resulted in any change of price, though there is better tone noticeable in the market. Quotations remain: Tool steel, 545@625c.; tire steel, 150@160c.; toe calk, 170@190c.; Bessemer machinery, 125@150c.; open-hearth machinery, 185@2c.; open-hearth carriage spring, 170@190c.; crucible spring, 340@365c.

Old Material.—There is little doing in this market, though there has been some demand for old rails for export. Nominal quotations are: Old steel rails, \$9.75@10.00; old iron tees, \$10.50@11.50 per ton; New York railroad scrap, \$11.50@12 per ton delivered at mill, and yard scrap at \$10; wrought turnings, delivered at mill, \$8.50@9; No. 1 wrought scrap at \$9.50@10.50 from yard, and machinery cast scrap \$9@10; old wrought tubes and pipe, \$6.50@7; old car wheel, \$9.50@10.50 New York; cast borings, \$6@6.50 delivered at mill.

Rail Fastenings.—There is little doing in this line, though some inquiries are reported. Quotations remain: Fish and angle plates, 120@140c. at mill; spikes, 150@175c.; bolts and square nuts, 2@225c.; hexagonal nuts, 210@230c., delivered.

Spiegeleisen and Ferromanganese.—There is no business reported. Prices are: 20% spiegeleisen, \$20.50@21; and 80% ferromanganese, \$50.50@51.

Steel Rails.—There appears to be a much brighter tone, if not an advancing one, in this product. While no large orders have been recorded, there is considerable business being done in smaller ones. Nominal quotations have not changed, standard sections remaining at \$24 at mill and \$24.80@25 at tidewater.

Tubes and Pipe.—There is a fair feeling but no change in prices. In cast pipe there are signs of activity among makers, but it is doubtful if this will continue for any considerable period. Delegates from various pig-iron manufacturers from both Pennsylvania and Alabama have been before the convention of traffic managers and general freight agents at Atlanta, Ga., to appeal against the action of the Pennsylvania and Reading roads in raising the freight rate on iron pipe \$1 per ton. No action has yet been taken. Ruling discounts on tubes and pipe remain: On 1½ in. and smaller, 60, 10 and 5 for plain black pipe, and 50, 10 and 5 for galvanized; for 1½ in. and larger, 70, 10 and 5 for black, and 60, 10 and 5 for galvanized.

Buffalo. Sept. 20.

(Special Report of Rogers, Brown & Co.)

There is little change to note over our last report. Consumption keeps up but production is active and is a close second. Prices both North and South have been firm and continue so, except with some of the furnaces recently blown in, whose backbones are a trifle weak. This feeling is, perhaps, a little more noticeable in the South than in the North, as nothing but a well-filled order book gives nerve after such trials as backbones have had of late. We quote for cash f. o. b. cars, Buffalo: No. 1 foundry strong coke iron Lake Superior ore, \$11.75; No. 2 foundry strong coke iron, Lake Superior ore, \$11.25; Ohio strong softener No. 1, \$12.25; Ohio strong softener No. 2, \$11.25; Jackson County silvery No. 1, \$15.75@16.75; Lake Superior charcoal, \$14; Tennessee charcoal, \$15.50; Southern soft No. 1, \$11.75; Southern soft No. 2, \$11.50; Hanging Rock charcoal, \$18.50.

Chicago. Sept. 19.

(From our Special Correspondent.)

The past week has seen no real improvement in the iron trade at Chicago. In most lines there is a good run of orders, and inquiries are in such numbers as to warrant the belief that business will not fall off any the coming weeks. The various pig iron furnaces continue to be operated to full capacity and the mills are nearly all running at limit. Prices remain almost as last week, though there is a tendency toward stiffening in some branches. Manufacturers of mining machinery in Chicago report business as much improved, particularly in the line of gold working plants. The Gates Iron Works declares that its business has never been so good. Fraser & Chalmers have been booking numerous orders of late, while other large houses in the line say that prospects are exceedingly high.

Pig Iron.—The run of orders in Northern iron continues in sufficient quantity to tax the local furnaces. Sales during the week have footed up a good figure. From carload lots they ran up to several sales of 1,000 tons. An effort is being made to increase prices. For the past few weeks a couple of the larger furnace companies have in a few instances made quotations 25c. higher, but this is merely one as a test. It is hardly probable that

prices will ascend much before spring. Southern iron is still being bought in small quantities, and dealers in this product continue of the opinion that it is absolutely necessary as a mixture with Northern iron. Prices remain as last week, which are per gross ton f. o. b. Chicago: Lake Superior charcoal, \$14.25@14.75; Lake Superior coke No. 1, \$10.25@10.50; No. 2, \$10.00@10.25; No. 3, \$9.50@9.75; Jackson County silveries, \$14.50@15; Southern coke, foundry No. 1, \$11.25@11.50; No. 2, \$11@11.25; No. 3, \$10.50@10.75; Southern coke, soft, No. 1, \$10.75@11; No. 2, \$10.50@10.75; Southern car-wheel iron, \$17.50@18; Southern silveries No. 1, \$11.50@12; No. 2, \$11.50@12; Tennessee charcoal No. 2, \$14@14.50; Bessemer, \$11.50; Ohio strong softeners, \$12.75@13.25.

Structural Material.—Bridge material continues in good demand. The elevated railroads now building or in contemplation will require a great quantity of material. Track elevation is now assured; several of the railroads have begun work. The latest of the railroads to submit a proposition for elevating tracks is the Northwestern road, and it is likely that the city will approve of the Northwestern's plans. Quotations are f. o. b. Chicago: Angles, 145@150c.; tees, 150@160c.; universal plates, 150@155c.; beams and channels, 150@160c.

Plates.—There has been no diminution in the demand for plates during the week. Some of the larger manufacturers are buying steadily, though not in large quantities. Business looks very encouraging. Prices are: Flange steel, 165@175c.; fire-box steel, 330@450c.; tank steel, 140@150c. boiler tubes, 70 to 75% discount.

Merchant Steel.—Some very good sales have been made and the prospects are for a good business the next few weeks. The majority of the sales are for small quantities, though in the aggregate they foot up quite well. Quotations are, carload lots: Smooth finished machinery, 180@190c.; tire steel, 170@180c.; Bessemer bars, 145@155c.; toe calks, 205@215c.; crucible spring, 340@365c.; tool steel 6½c. and upward; specials, 12@20c.

Galvanized Sheet Iron.—Demand is good with quotations at 75, 10 and 5% off for carload lots.

Black Sheet Iron.—Demand is good, carload lots are plentiful and prospects are bright. No. 27 is quoted at 235@240c.

Bar Iron.—Business is rather behind last week, though dealers are hopeful for a better trade shortly from the inquiries now coming in. Sales at present are for small quantities, with a large one occasionally. Quotations are yet 105@110c. for iron and 125@130c. for steel.

Billets.—The week's business has been confined entirely to numerous orders for small quantities. The aggregate sales are about on a par with last week. Inquiry is good, but that also is for quotations on small lots. Price remains \$18@18.25.

Steel Rails.—The total sales of steel rails for the week foot up possibly beyond last week, but, like billets, sales are all small lots, with nothing large in sight. Quotations remain \$25@27.

Old Rails and Wheels.—Old iron rails are in fair demand at \$10.50@11. Car wheels are dull at \$10@10.25.

Scrap.—No demand has yet materialized for scrap. Quotations are: Forge \$8.50@9; cast iron borings, \$3.50@4; wrought iron turnings, \$4@4.50; axle turnings, \$6@6.50; mixed steel, \$5@5.50; tires, \$12.50@13; iron axles, \$13.

Philadelphia. Sept. 21.

(From our Special Correspondent.)

Pig Iron.—The heavy increase in production has frightened consumers, big and little, out of the iron market until the effect of the sudden increase can be seen. No one is buying this week for other than urgent wants. Shaded quotations are being generally given, but this, instead of assisting business, is rather depressing it. Bessemer is down to \$13.25; No. 1 foundry is quiet but firm at \$12.50; No. 2 at \$11.50, and forge is without any life at \$10.70. There is no explanation offered as to the cause of the present unsatisfactory condition of things.

Muck Bars.—There is not enough business even at \$18.75 mill to keep going single turn.

Steel Billets.—The down-grade epoch of prices has finally been dammed, and that with the prevailing dullness accounts for the very limited business of the past few days. Purchases of large lots will be postponed until the downward tendency has reduced prices to nearly \$18. To-day late delivery can be had at \$18.75.

Merchant Iron.—Business has been falling off and prices are irregular. Common iron has sold at a trifle over 1c. per lb.; refined bars, 120c.

Nails.—Low prices continue for both wire and cut, and factory production continues too large for fair prices.

Skelp.—A fair amount of business has been done during the past week at 125.

Sheet.—The promised improvement in sheet iron does not come. Manufacturers are anticipating winter requirements by accumulating certain sizes and thicknesses that will be wanted.

Plate.—The plate mills are gathering up more or less business all the time, but it is not enough to make stronger prices possible. Tank, sheet and heavy plates range from 130 to 135.

Structural Material.—The relentless competition going on has swept considerable business from the East, and there appears to be no help for it. Angles are supposed to be quoted at 1'40, and beams and channels are supposed to be quoted at 1'50.

Steel Rails.—Very small orders are said to be plenty, but large orders are unknown. Standards, \$24. Girders are active.

Old Rails quoted at \$11.50.

Pittsburg. Sept. 21.
(From our Special Correspondence.)

Raw Iron and Steel.—The volume of business is slowly but steadily increasing at most points in the West and South. While the consumption of most forms of iron and steel appears to be expanding, the capacity for production is increasing at a more rapid rate, so that prices are somewhat irregular. While some dealers have set prices for their product there are others who occasionally do a little shading in order to make a sale. The market is far from being a broad one, but it is growing at a healthy rate and consumers are disposed to place orders, and if the capacity were restricted to the present amount there would be some profit in the business very soon; but a number of blast furnaces have recently gone into operation and new mills are opening right along, so that the immediate future is hard to forecast. An encouraging sign is the appearance of a number of large orders in different parts of the country, indicating a general recovery in business. The principal operations of the Philadelphia rail mills are work on old contracts and street rail orders, a round lot of the latter for 4,000 tons being taken by an Eastern mill. Taking the trade all through, however, the conditions are not as satisfactory as we would like to see from the point of view of producers, either as regards demand or prices, although the consumption of iron, a true index of improvement, has been gradually increasing since the extreme depression of last spring. The larger output of pig iron has had a depressing effect on the views of furnacemen who have been looking forward to a higher range of values for crude iron. Of course, the increase in production has been almost entirely in the West and South, where furnaces were forced to shut down on account of the scarcity of coke. Notwithstanding the great increase in production, the consumption has thus far been able to prevent accumulation of stocks. The quantity of pig iron sold and unsold at the furnaces on July 1st was 573,935 tons; it decreased to 507,848 tons on August 1st, and to 532,264 tons on September 1st. These figures exclude the stocks by the large steel companies and consumed by them.

COKE		SMELTED LAKE AND NATIVE ORE.		SKELP IRON.	
Tons.	Cash.				
4,000 Bessemer, Oct.		600 Nar. gr'vd. .1'25 4 m.		400 Sheared iron.1'35 4 m.	
Nov.	\$11.45	385 Wide gr'vd. .1'25 4 m.			
2,000 Bessemer, Sept.	11.65	SKELP STEEL.			
2,000 Bessemer, Sept., Oct.	11.60	500 Sheared iron.1'25 4 m.		400 Wide gr'vd. .1'10 4 m.	
1,000 Bessemer, Sept.	11.50	360 Nar'w gr'vd.1'10 4 m.		MUCK BAR.	
1,000 Bessemer, Sept.	11.50			1,000 Neut'l, Sept., Oct. \$19.35	
1,000 Gray Forge.	10.10	FERRO-MANGANESE.			
1,000 Gray Forge.	10.15	100 80%, delivered... 51.60		BLOOMS, BILLETS, BAR ENDS.	
1,000 Gray Forge, Oct.	10.00			750 Delivered. 11.50	
500 Gray Forge, Sept.	10.15	SHEET BARS.			
300 Bessemer. 11.60		700 Delivered. 22.80		STEEL WIRE RODS.	
300 Off Bessemer. 15.00				600 5-gauge American, at mill. 24.60	
200 Off Bessemer. 10.50		SPELTER.			
300 No. 1 Foundry. 12.00		50 Prime Western per 100 lbs. 3.38		SCRAP MATERIAL AND RAILS.	
200 No. 2 Foundry. 11.25				125 Light steel scrap, gross. 8.00	
200 No. 1 Foundry. 12.25				100 Soft steel, scrap gross. 9.25	
CHARCOAL.				100 Wrought turnings, gross. 7.50	
50 No. 2 Cold Blast. 23.50				100 Light steel scrap, gross. 7.75	
50 No. 2 Cold Blast. 23.50				100 Iron rails, gross. 12.00	
25 No. 2 Cold Blast. 16.50					
25 No. 2 Warm Blast. 16.50					
25 No. 2 Foundry. 16.50					
25 No. 2 Foundry. 16.50					
BLOOMS, BILLETS AND SLABS.					
3,000 Billets, Sept., Oct. at mill. \$17.50					
2,000 Billets and Slabs, Sept., Oct. at mill. 17.35					
1,500 Billets, Oct. at mill. 17.40					
1,000 Billets, Sept., at mill. 17.25					
500 Slabs, Sept., at mill. 17.60					

METAL MARKET.

NEW YORK, Friday Evening, Sept. 21, 1894.

Gold and Silver.

Prices of Silver per Ounce Troy.

September	St. Ex.	London	N. Y. Cts.	Value of sil. in \$.	September	St. Ex.	London	N. Y. Cts.	Value of sil. in \$.
15	4'86	29 3/8	61 1/2	498	19	4'86	29 3/8	63 1/2	494
17	4'86	29 3/8	63 1/2	484	20	4'85 1/2	29 3/8	63 1/2	492
18	4'86	29 3/8	63 1/2	493	21	4'85 1/2	29 3/8	63 1/2	491

Under the impulse of special orders, presumably for coinage purposes, silver advanced to 29 3/8 d. The orders being filled, the price fell back to the

Bazaar buying prices, and the India Council awarding 40 lacs on Wednesday, the market declined to 29 1/2 d. At this figure the market closes steady.

The United States Assay Office at New York reports the total receipts of silver at 200,000 oz. for the week.

Gold and Silver Exports and Imports at New York Week Ending September 15th, 1894, and for Years from January 1st, 1894, 1893, 1892).

Week	Gold.		Silver.		Total excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
1894.	\$2,427,435	\$189,078	\$548,701	\$13,002	E \$346,621
1894.	82,427,435	14,112,076	25,401,521	1,169,600	E 92,547,255
1893.	69,355,316	55,977,782	23,136,279	1,805,504	E 31,708,302
1892.	58,691,073	6,530,756	16,115,141	1,788,496	E 66,519,965

There were no gold exports for the week; the silver exported went chiefly to London. The gold imported came from the West Indies; the silver from Central America.

During the five days ending September 20th the imports and exports of gold and silver from the port of New York were as follows: Imports, gold, \$286,838; silver, \$79,560. Exports, gold, none; silver, \$537,768. Of the silver exported, \$51,000 was in Mexican coin, \$1,000 of which went to Spain and \$50,000 to London; \$6,490 was in English coin, \$240 going to the West Indies and \$6,250 to London. Of the remainder \$1,035 was in Peruvian coin, and went to South America, and \$478,583 was in American coin and bullion, and went to London.

Gold and Silver Exports and Imports of the United States, at all Ports, for August, 1894, and for Eight Months to August 31st, 1894, 1893.

Month	Gold.		Silver.		Total excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
Aug.	\$5,120,939	\$3,482,748	\$4,420,441	\$1,607,478	E \$4,450,754
1894.	90,362,463	16,416,393	31,356,159	8,019,125	E 97,223,104
1893.	74,341,652	59,281,687	28,677,632	13,691,465	E 31,146,132

For the two months of the current fiscal year, from July 1st to August 31st, the exports and imports have been as below:

	Gold.		Silver.	
	1893.	1894.	1893.	1894.
Imports.	\$1,123,714	\$19,351,140	\$9,125,801	\$7,634,426
Exports.	47,821,907	4,911,919	4,418,894	2,961,878
Excess.	\$146,698,253 E.	\$14,439,221 E.	\$4,706,967 E.	\$4,672,598

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

NOTES OF THE WEEK.

The signs of increasing activity and expansion in trade, to which we have referred from week to week, continue to multiply. From all quarters we have accounts of the starting up of idle mills and factories, and of the increase of forces in those which have kept at work. New projects also increase in number, as do plans for new construction, and a resulting demand for material is apparent. Prices do not yet show very much gain, though there has been a moderate improvement. In the iron and many other trades it is doubtful whether they ever will reach the level of two or three years ago. Such a fall as was experienced last year is never entirely recovered, and a permanently lower level is generally reached after each period of panic. That has been the general experience of past years, and there are no exceptional reasons now for expecting a different result. It must be remembered, however, that there has been such a general cheapening in raw materials, fuel and all production-costs that the profits and wages may be quite satisfactory even with selling prices much below the average in the past.

Both the Treasury and the New York banks report a large demand from all quarters for small bills; so large, in fact, that it is difficult to fill all orders. At this season there is always some demand of this kind—not large enough, however, to cause much remark—but this year it is becoming greater than usual. Much of the present demand is undoubtedly due to increasing business and the reopening of many mills and factories, where bills are needed in paying wages. This is another of the encouraging signs of the growth of business.

Railroad earnings, which are generally regarded as a barometer of business, are beginning to show substantial increases for the first time this year. These increases are apparent on nearly all the principal lines east of the Mississippi, while the Western lines seem to gain also, though more slowly. Nearly all the Eastern roads report a rapid gain in freight traffic.

The Solicitor of the Treasury has given a formal opinion that the rates in the new tariff bill went into effect on August 28th, the day on which the bill became law, and not on August 1st, the date named in the bill. Instructions in accordance with this opinion have been issued to all customs officers. It is understood that one or more test cases will be made up in order that the question of date may be finally settled by the courts.

The statement of the New York banks for the week ending September 15th shows increases of

\$3,385,700 in loans, \$2,854,300 in deposits, \$579,400 in specie and \$203,100 in circulation; decreases of \$1,980,575 in reserve and of \$1,846,400 in legal tenders. The total reserve was \$206,612,300, being \$59,953,700 in excess of the legal requirements. The increase in loans and discounts is the largest reported in many weeks. The total amount of loans is \$495,087,100, an increase of \$11,333,600 since the first week in July. It is the largest total ever reported, and exceeds that of the corresponding date last year by \$102,206,300. The nearest approach ever made to this week's amount on the corresponding date was in 1892, but the total was then \$19,775,600 less. It will be seen, therefore, that the expansion of business as represented by bank discounts is now nearly \$20,000,000 greater than in 1892, which good crops and a heavy foreign demand combined to make exceptionally prosperous year.

The statement of the United States Treasury on Thursday, September 20th, shows balances in excess of outstanding certificates as below, comparison being made with the corresponding day of last week:

	Sept. 13.	Sept. 20.	Changes.
Gold.	\$56,528,479	\$57,518,955	I \$1,303,566
Silver.	14,900,279	12,539,532	D 2,360,687
Legal tenders.	24,647,708	20,628,942	D 3,018,566
Treasury notes, etc.	29,570,158	29,878,690	I 308,532
Total.	\$124,646,424	\$121,026,209	D \$3,620,215

Government deposits with national banks on same date amounted to \$10,955,372, a decrease of \$416,853 during the week.

The Bureau of Statistics of the Treasury Department reports the total exports of merchandise from the United States in August at \$60,969,276, and the imports at \$51,766,684, these figures comparing with \$79,683,731 and \$58,641,185 in August, 1893. For the eight months ending August 31st the exports and imports of merchandise are reported as follows:

	1893.	1894.
Exports.	\$331,195,075	\$518,012,881
Imports.	579,021,760	452,952,066
Excess.	I \$47,829,685	E \$65,060,825

The slight decrease in exports and the very large one in imports together make a total change in the apparent balance of \$112,890,510. The movement of gold and silver is given above, in the usual table. The total excess of exports over imports, including merchandise, gold and silver, was \$162,283,929 for the eight months. Somewhat over a year ago we estimated that the amount paid Europe yearly for interest, dividends, freights, etc., was about \$84,000,000 yearly, to which we may add this year \$60,000,000 for money spent abroad by travelers. This would represent the greater part of the above apparent surplus, leaving about \$18,000,000 only, which has probably been covered by securities returned here during the year.

There is no sign at present of gold imports, though London has been preparing for them for two or three weeks past. Gold exports are over for the year probably, and no more are to be expected. The movement of securities and the repayment of loans are substantially at an end for the present, and the counter-buying movement which many have looked for has been checked, largely on account of the Reading troubles, the Atchison disclosures and some other matters of the same kind. The Atchison history, as disclosed in the expert's report, has alone diverted foreign capital from investment here to an extent that is almost impossible to calculate.

It was not expected that the very heavy receipts which followed the passage of the tariff bill would continue long, since these were due to an exceptional cause. The result has been as was expected; the Treasury, however, continues to show a steady gain in the gold balance. The receipts from customs have dropped back to a more nearly normal level, but those on internal revenue account continue large.

The Bank of England on Thursday, September 20th, reported its gold holdings at £39,573,327, an increase of £12,197,111 as compared with the corresponding date last year. The Bank is still increasing its reserve, which this week amounts to 70 7/8% of liabilities, the highest proportion ever reported. A year ago the proportion was 53%. The Bank's individual deposits decreased £565,000 during the week, while public (government) deposits increased £397,000, showing a net diminution of £168,000 for the week.

The Bank of England, in spite of the unexpectedly favorable results of the Baring settlement, is able to make the October dividend 4% only, against 4 1/2% in March and 5% in October, 1893. This is the smallest half year's dividend since 1868, and is due, not to any exceptional losses, but entirely to the exceedingly low rates for money and the general financial depression of the year.

The Bank of France on Thursday, September 20th, reported its specie holdings at 1,906,832,000 fr. gold and 1,260,552,500 fr. silver; an increase of 222,478,550 fr. gold and a decrease of 10,840,375 fr. silver, as compared with the corresponding date last year. The Bank is not expanding its credits, in spite of its rapidly growing reserve, and for several weeks past the amount of loans and discounts has shown a small decrease each week. This decrease is 9,656,000 fr. this week.

The Bank of Russia on August 22d-September 3d, reported its specie holdings at 255,376,000 roubles gold and 141,531,200 roubles silver. The notes in circulation on the same date amounted to 1,092,130,000 roubles.

The Imperial Bank of Germany on September 19th reported its specie holdings at 477,150,000 marks; gold and silver are not reported separately. As compared with the corresponding date in 1893, this is an increase of 76,330,000 marks.

Exports of silver from London to the East for the year up to September 7th are given by Messrs. Pixley & Abell's circular as below:

	1893.	1894.	Changes.
India.....	£1,949,452	£3,267,315	D. £1,084,137
China.....	834,013	2,093,373	I. 1,259,360
Tue Straits....	969,340	97,146	D. 872,194
Total.....	£3,743,805	£5,457,834	I. £1,714,029

For the week ending September 7th the only shipments reported were £74,300 to Bombay. The receipts in London for the week were £12,000 from Cbde, £16,000 from the West Indies and £120,000 from New York; a total of £178,000.

Indian exchange has sympathized with the lower price of silver. The Council bills offered in London on Wednesday, September 19th, amounted to 40 lakhs, and they were taken at 13½d. per rupee, a fall of ½d. from last week's rates. The full amount was taken.

Domestic and Foreign Coins.

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

	Bid.	Asked.
Mexican dollars.....	52	52½
Peruvian soles and Chilean pesos....	51½	52½
Victoria sovereigns.....	4.84	4.88
Twenty francs.....	3.84	3.88
Twenty marks.....	4.75	4.80
Spanish 25 pesetas.....	4.76	4.83

Other Metals.

A very firm tone has permeated the market for all metals this week, and there has been good buying or consumption.

Copper.—Rather high prices for copper have been established this week, the impulse coming from London, where G. M. B.s closed on the 14th at £41, with an advancing tendency. On the 17th the market opened at £41 17s 6d. @ £42 for cash, and 7s. 6d. higher for three months prompt, and with only slight fluctuations these prices were upheld until this morning, when a decline of about 7s. 6d. to 10s. took place, the closing prices being £41 10s. @ £41 12s. 6d. for cash and £42 @ £42 2s. 6d. for three months. The higher prices established did not fail to have a good effect on our market, the more so as lately consumption showed signs of improvement, and we are informed from the large manufacturers that they are fully occupied, practically for the first time since the commencement of the crisis. The demand for copper for electrical purposes is especially large, and consequently, there is a good demand for wire bars, which can hardly be filled. Early in the week transactions took place in Lake copper at 9½c., but, with a great many inquiries coming in at this figure, producers advanced their price, and during the last few days sales of importance have been made at 9½c., at which price there are still some lots to be had. For prime electrolytic copper 9½c. has been refused, and generally 9½ @ 9½c. is asked. For casting copper rather a large business has taken place from 9½ @ 9½c., at which price sellers would go on for the moment. Arizona copper has been dealt with in rather large quantities at 8½c., but since then 8½c. has been refused. In general the tendency is a very firm one.

In Europe the quotations for refined and manufactured have been raised, but it is reported that consumers do not buy freely at the advanced values.

The following figures give the production (in tons of 2,240 lbs.) of copper in the United States, and also by the chief foreign mines, and the exports from the United States, for August and the eight months ending August 31st:

	August.	Eight mos.
Production fine copper, long tons:		
Reporting mines in the United States.....	11,815	98,465
Pyrites and outside sources, United States.....	1,501	10,800
Reporting foreign mines.....	7,367	59,620
Total production, long tons.....	20,683	168,885
Exports from United States, fine copper....	6,418	53,103

As compared with the statement for the corresponding period last year the production from reporting mines shows an increase for the eight months of 13,140 tons, or 15.4%; (from outside sources, 2,018 tons, or 27.0%). There was an increase of 16,731 tons, or 45.6%, in the United States exports.

Copper Exports.—The exports of copper from the port of New York during the week ending September 22d, as reported by the New York Metal Exchange, were as follows:

Havre—Aloedene.....	Ingots	45 tons
".....	Cakes	50 "
".....	Plates	45 "
Bremen—Trave.....	Plates	10 "
".....	Cakes	110 "
Liverpool—Nomadic.....	Ingots	100 "
".....	Pigs	55 "
London—France.....	Ingots	35 "
Swansea—Chicago City.....	Bars	149 "

Rotterdam—Edam.....	Ingots	26 tons
".....	Plates	155 "
Antwerp—Friesland.....	Ingots	10 "
Swansea—Mohican.....	Pigs	50 "
Bordeaux—Chateau Lafitte.....	Ingots	130 "
".....	Bars	70 "
Rotterdam—Sparndam.....	Ingots	201 "
".....	Pigs	50 "
".....	Plates	63 "
Bremen—Trave.....	Ingots	15 "
".....	Plates	25 "
".....	Cakes	20 "
Havre—La Bourgogne.....	Ingots	150 "
Swansea—Brooklyn City.....	Pigs	50 "

Tin.—Spot tin continues very scarce and early in the week as high as 16'60 @ 16 70 was paid for spot. Since then several arrivals have taken place, which caused the stringency to abate somewhat, and we have to quote now 16½. For October rather large sales took place at 16'20, but now it can be had at 16 10. On the whole the article is very firm, and the deliveries this month will be larger than for a considerable period.

London rose early this week to £74 for spot cash, but the advance could not be maintained and we close somewhat easier at £72 12s. 6d. for spot and three months prompt.

Lead.—The demand is very large for the present and prices have hardened. A few days ago sales took place at 3½ @ 3'15, but nothing is to be had now for either this or next month's delivery below 3'20 @ 3'25.

The foreign market has eased off slightly, Spanish lead being quoted at £9 15s. @ £9 17s. 6d., and English at 2s. 6d. more.

We are indebted to Mr. E. A. Caswell, of New York, for the following answer to questions submitted by him to the Secretary of the Treasury in relation to the duty on Spanish lead under the new law. The Secretary's statement gives a definite ruling on the points in question: The proviso in the act contemplates a condition existing at, or after, the time the act took effect. That is to say, if, on or after August 28th, 1894, a country shall have imposed an export duty on the ores described, "then the duty upon such ores shall remain the same as fixed by the law in force prior to the passage of this (said) act." The said proviso does not apply to the ores described when exported to the United States from a country which does not impose any export duty thereon. The question as to the place of production is immaterial. If the ores described are the product of a country which levies an export duty thereon, but are exported to the United States from a country which does not impose such duty, then the rate of duty provided by the act of August 28th, 1894, shall be imposed. If any entries have been liquidated under an erroneous construction of the law referred to, they will require reliquidation in accordance with the above ruling.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Since our last report our market has been in a somewhat unsettled condition, affected to some extent by the low prices quoted at the seaboard. The scarcity of spot lead continues and car lot sales have been made at 3 05 @ 3 07½c., while sales have been made for October delivery at from 2 95c. to 3c.

Splitter, also, could not resist the somewhat firmer tendency, and the consumers have had to pay a trifle more. We quote 3 25 St. Louis, and 3 46½ New York.

In England good ordinaries are quoted at £15 7s. 6d and specials at £15 10s.

Antimony remains rather dull and is depressed in price, Hallett's being obtainable at 7½ @ 7½c; Cookson's at 9½c.; L. X. 8½c.; U. S. French Star, 9½c.

Quicksilver.—This market continues quiet and without features of especial interest. Only a light demand is reported. Quotations are: New York, \$36 50; London, £6 15s.

Aluminum.—Current quotations are unchanged, as follows, No. 1 being over 98% pure metal, and No. 2 over 94% pure: No. 1, in rolling ingots, 63c. per lb. for small lots at factory; 60c. in 100 lb. lots; 58c. in ton lots. No. 1 in ingots for remelting, 60c. for small lots, 55c. for 100 lb. lots, and 53c. in ton lots. No. 2 in ingots for remelting, 55c., 53c. and 50c. per lb., according to size of order. Sheets, 80c. @ \$4 40 per lb., according to size and thickness. Wire, \$1 @ \$2 50 per lb., according to gauge. Castings, 90c. per lb. up, according to number, weight, patterns, etc. Tubes, from 20c. to \$3.15 per foot, according to thickness and diameter.

Abroad quotations for 99% pure metal in Paris are 5 75 @ 7 75 fr. per kilo. for ingots; 7 50 @ 11 50 fr. for sheets, 10 @ 17 50 fr. for wire, and 16 @ 22 fr. for tubes. The Neubauen Company quotes No. 1 (guaranteed 98% pure, and in fact 99 75%) at 5 francs per kilo. for ingots in small lots; for large lots a considerable discount is allowed. This price is at the works in Switzerland.

Bismuth.—Recent quotations on the New York Metal Exchange are \$2 per lb. for lots of 500 lbs. or over; \$2.25 @ \$2.50 per lb. for smaller lots.

Magnesium.—No quotations are to be found for this metal in New York, where sales are seldom made. Prices in Germany are, for lots of over 10 kilos.: Ingots, \$6.75 per kilo.; bars, \$6 50; powder, \$9; ribbon and wire, \$9.50. For orders of less than 10 kilos., 25 cents per kilo. must be added for ingots or bars, and 50 cents for ribbon, wire or powder. These prices are delivered at works: the

Aluminum und Magnesium Fabrik, Hemelingen, Germany, is the only maker of the metal in commercial quantities.

Nickel.—Quotations are nominally 40 @ 40c. per lb., according to grade. Business is dull, and some sales have been made below these figures, say 3½ @ 43c. Abroad the demand has also been light, and prices have a downward tendency.

Platinum.—Abroad the prices are still unsettled and tending upward, owing to light supply.

For chemical ware, hammered metal, Messrs. Eimer & Amend, New York, quote crucibles and dishes 41c. per gram for orders of over 250 grams; 43c. for orders of 100 grams or over, and 45c. for small lots. Wire and foil are 40c., 41c. and 42c. per gram, respectively, for orders of the quantities named. Current retail prices for crucibles are 50c. per gram.

Phosphorus.—Quotations continue steady at 50 @ 52½c. per lb., f. o. b., New York or Philadelphia.

Sodium.—Abroad the price continues steady at 90 @ 95c. per lb. Sales in this market are too small to furnish quotations.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Sept. 21.

Heavy Chemicals.—The heavy chemical market has continued to improve on the line noted in our last review of the trade. There has been a livelier inquiry, and several sales both for immediate and for future delivery are reported. Caustic soda for delivery extending into 1895 has been fairly active, and considerable rivalry in the struggle for orders has been manifested among the local agents of the various makers. Carbonated soda ash has been in fair request, and shipments to this country are increasing. Alkali has also been in some demand, and is somewhat firmer in price than last week. Bleaching powder remains very quiet, although values are firmer, owing to the limited supplies on the spot. Sal soda has been fairly active at unchanged prices. Foreign caustic is now quoted as follows: 60%, 2½ @ 2½c.; 70%, 2½ @ 2½c.; 74%, 2 15 @ 2 17½c.; 76%, 2 35 @ 2 60c. Carbonated soda ash, 90 @ 1c.; Alkali, 90 @ 97½c.; bleaching powder, 1½ @ 1½c.

Acids.—A better business is reported in the acid market, owing to the improvement in business conditions among consumers. There is not much business of consequence doing just now, but the jobbing demand is livelier and acid is moving more freely, especially sulphuric and muriatic. Nitric continues quiet. There is no change of any importance in prices and we quote: Acids, per 100 lbs. in New York and vicinity, in lots of 50 carboys or more: Acetic, in barrels, \$1.40 @ \$1.60; muriatic, 18°, 80c. @ \$1; 20°, 90c. @ \$1.10; 22°, \$1 @ \$1.25; nitric 40°, \$4; 42°, \$4.50 @ \$4.75; sulphuric, 75c. @ \$1; chamberacid, \$6 per ton. Mixed acids according to mixture, oxalic, \$6 50 @ \$7 50 per 100 lbs. Blue vitriol is quoted at \$3.50 @ \$3 62½; glycerine for nitroglycerine, 11½ @ 12½c., according to quality and quantity.

Brimstone.—The market for Sicilian brimstone continues quiet. Quotations are: On the spot, best unmixed seconds \$16.25 @ \$16 50; best thirds, \$15.25 @ \$15 50. To arrive, best unmixed seconds, \$15.75 @ \$16; thirds, \$1 less.

Fertilizing Chemicals.—A fair business is doing in the fertilizer market, the demand coming principally from the South. Most of the raw materials sold recently have already gone into consumption and sellers are now holding off for firmer prices. Buyers regard present values as too high and are buying only what they are obliged to. The market is, however, quite firm, and the chances of a marked decline in prices are not very bright. Quotations this week are as follows: Sulphate of ammonia gas liquor \$3.60 @ \$3.75, and \$3 50 @ \$3.90 for bone. Dried blood, \$2 50 per unit for high grade and \$2 40 for low grade. Azotine, \$2.45 @ \$2.50. Concentrated phosphate (50% available phosphoric acid), 75c. per unit. Acid phosphate, 13% to 15%, av. P₂O₅, 60c. per unit at seller's works in bulk. Dissolved boneblack, 17% to 18% P₂O₅, 90c. per unit. Acidulated fish scrap, \$14 @ \$15, and dried scrap nominally \$25 f. o. b. fish factory. Tankage, high grade, \$23 @ \$24; low grade, \$22 @ \$22.50. Bone tankage, \$22.50; bone meal, \$24 @ \$25 50.

In lots of 50 tons on contracts we quote: Double manure salts, 48-53% (basis of 48%): New York and Boston, \$1.12; Philadelphia, \$1.14½; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$1.17. High grade manure salts, 90-95% and 96-99% (basis 90%), respectively: New York and Boston, \$2.07 @ \$2.11; Philadelphia, \$2.09½ @ \$2.13½; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$2.12 @ \$2.16.

Phosphate Rock.—Quotations at Charleston, S. C., are: \$4 @ \$4.25 for standard land, kiln dried rock; ground rock, in buyer's bags \$5 50 @ \$5 60, in seller's bags \$1 higher. Acid phosphate remains at \$6.25 @ \$6.50.

Muriate of Potash.—Arrivals during the week amounted to 750 tons at this city and 500 tons at Boston. In lots of 50 tons, quotations are as follows: 80-85% and minimum 9% (basis 80%), respectively: New York and Boston, \$1.78 @ \$1.91; Philadelphia, \$1.80½ @ \$1.83½; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$1.83½ @ \$1.86.

Kainit.—Prices for kainit (minimum 23% in cargo

lots for 1894 delivery are as follows for invoice and actual weights respectively: New York, Boston and Philadelphia, \$9@9.25; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$9.75@10. For sylvinite, 27-35%, prices are as follows, per cent. per gross ton, invoice weight: New York, Boston and Philadelphia, 37½c.; Charleston, Savannah, Wilmington, N. C., and New Orleans, 41c. Actual weight, 1c. more per cent.

Nitrate of Soda.—A good jobbing trade is reported in the nitrate market this week, with prices slightly lower. Quotations are: Ex-vessel, \$2.10; to arrive, \$2.05; shipments, \$2.

Liverpool.

Sept. 11.

(Special Correspondence of Joseph P. Brunner & Co.)

Since our last report there has been a rather better demand for some lines of chemicals, but trade is quieter again this week. Soda Ash is dull for Le-blanc makes, and nominal spot range is about as follows: Caustic ash, 48%, £3 15s. @ £4 per ton; 57 and 58%, £4 10s. @ £4 15s. per ton. Carb. Ash, 48%, £3 5s. @ £3 15s. per ton; 58%, £3 15s. @ £4, per ton, net cash. Ammonia Ash, 58%, in fair demand at £3 10s. @ £3 12s. 6d. per ton, net cash, for tresses, and 5s. less for bags. Soda crystals attract little attention from buyers, and are quoted at £2 10s. @ £2 12s. 6d. per ton, less 5%. Caustic soda in moderate request, while quotations are unchanged, varying according to export market. The nearest spot range being about as follows: 60%, £6 15s. @ £7 15s. per ton; 70%, £7 15s. @ £8 15s. per ton; 74%, £8 15s. @ £9 15s. per ton; 76%, £9 15s. @ £10 15s. per ton, net cash. For parcels under 10 tons 5s. per ton extra is charged.

Bleaching Powder is somewhat slow of sale, and for hardwood packages prices vary from £1 5s. to £3 per ton, net cash, according to destination. Chlorate of Potash: Some little business has been done by resellers for prompt delivery at 6d. per lb. and offered at this figure, but the difficulty is to find buyers. Bicarb. Soda is not active, but prices are without change at £6 15s. per ton, less 2½% for 1 cwt. kegs, with usual allowances for larger packages. Sulphate of Ammonia in limited demand, and newest spot values are about £13 15s. @ £13 17s. 6d. per ton, less 2½% for good gray 24 to 25%, in double bags f. o. b. here, as to quality. Nitrate of Soda without special feature, and steady at £9 5s. @ £9 7s. 6d. per ton, less 2½% for double bags f. o. b. here. Carb. Ammonia: Lump, 3¼d. per lb.; powdered, 4d. per lb., less 2½%.

MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Aspen, Colo.; Baltimore, Pittsburg, St. Louis, London and Paris, see pages 2, 6 and 284.]

NEW YORK, Friday Evening, Sept. 21.

It is the old story of dullness in the mining stock market. So far as the actual trading was concerned, the market was absolutely featureless. There was a slightly better inquiry for some of the low-priced Leadville silver stocks but it did not result in business of any consequence. The public on the whole shows little or no interest in mining securities as traded in at the Consolidated Stock and Petroleum Exchange.

The Comstocks have ruled fairly steady in price during the week, but they have continued dull. Consolidated California & Virginia shows sales of 430 shares at \$4.00@4.40.

Other sales were as follows: Comstock Tunnel bonds, \$1,500 at 4%; 300 scrip changed hands at 15c.; also 100 shares of Hale & Norcross at 75c.; 100 shares of Ophir at \$2.60; 200 shares of Savage at 70c.; 300 shares of Sierra Nevada, at \$1.15@1.25; 200 shares of Yellow Jacket at 75c.@80c.; 200 shares of Best & Belcher at \$1.30@1.35; 400 shares of Chollar at 46@51c.; 200 shares of Mexican at \$1.30@1.40; 100 shares of Union Consolidated at 80c., and 300 shares of Consolidated Imperial at 10c.

One of the surprises of the week, which we are enabled exclusively to publish, was Bodie Consolidated. On September 20th the Bodie Consolidated Mining Company declared dividend No. 20 of 25c. per share, payable at the office of Mr. F. R. Grant, transfer agent in this city, No. 57 Broadway. Books close on September 26th. This is the first dividend declared by this company since April 6th, 1885, when dividend No. 19 of 50c. per share was declared. During the past two months the news from the Bodie Consolidated mine has been of an encouraging nature, although some of the veteran speculators were inclined to regard it with suspicion, not knowing whether it was simply a stock movement.

During the week the stock of the Bodie Consolidated advanced from \$1 50 to \$1.70, although only 300 shares were sold. No other Bodie stock was traded in.

Brunswick Consolidated shows sales this week of 1,300 shares at 1c. assessment unpaid.

Of the Colorado stocks, Victor shows a sale of 200 shares at \$3.00, and Little Chief of 300 shares at 15c.

A meeting of the Little Chief Mining Company will be held at the office of the company No. 60 Broadway on October 20th. The polls open from 12 M. to 2 p. m. Transfer books will be closed on September 24th, and reopen on October 3d.

We note a sale of 300 shares of Phoenix of Arizona at 10c.

The "Engineering and Mining Journal" is enabled to publish exclusively the fact that the Horn Silver Mining Company has decided to pass its regular quarterly dividend.

Mr. Allan C. Washington, president of the company, has issued the following letter to the stockholders:

"At a meeting of the board of directors held on the 20th inst., it was decided to pass the dividend for the current quarter. This action has been taken in consequence of the fire which occurred at the mine on April 6th last, resulting in the total destruction of the hoisting works, concentrating plant, shaft lining, etc., and effectually preventing the extraction of ore. The loss sustained by your company amounted to about \$100,000, upon which there was no insurance; there being no water at Frisco, it was impossible to find companies to underwrite the risk.

"The plant has been renewed on a larger scale than before, and the shaft re timbered down to the 700 ft. level, the cost of which has been paid out of the surplus, and work has again commenced in the mine, the first shipment of ore having been made on the 10th of the present month. For these reasons, and also that the last dividend was paid wholly out of the surplus, it is deemed more prudent to abstain from a further encroachment upon it and wait until the receipts from sales of ore will warrant the resumption of dividends, which is believed to be possible by December next. As regards the physical aspect of the property, it was never in better condition than it is at the present time."

A sale of 100 shares of Horn Silver stock at \$2 40 was made at the Stock Exchange this week in anticipation of such a step on the part of the board of directors.

We believe that the directors of the company have acted wisely in passing the dividend. This company has been managed in such a manner as to gain it the confidence of the stockholders. There is at present a surplus of more than \$200,000 in the treasury, so that there is but little reason to doubt Mr. Washington's statement to the effect that dividends will be resumed in December. We understand that certain unscrupulous speculators will try to take advantage of the passing of the dividend to induce timid stockholders to part with their holdings at a low price. The stock of the Horn Silver to day should at the least be worth only 12½c. per share, or the amount of the dividend, less than it was a year ago. The prospects of the company are as good to-day as they were then, and we advise stockholders to think carefully before they relinquish any shares which they may hold at the price which the "bear" traders will offer for them.

NOTES OF THE WEEK.

The American Bankers' Association, which meets in Baltimore in the second week of October, is acting with several New York bankers in framing a scheme of banking currency which they hope will meet the approval of President Cleveland and Congress. The details of the plan have not yet been made public, but it is understood that it is framed in many respects in accordance with suggestions made by President Cleveland and Secretary Carlisle.

At the semi-annual meeting of the directors of the Bank of England held on September 13th, Mr. David Power, governor of the Bank, announced a slight decrease in the dividend, due to the low value of money. The net results of the operations of the Baring liquidation, he said, have been to reduce the liabilities of the bank on that account to £2,481,985.

Boston.

Sept. 20.

(From our Special Correspondent.)

The market the past week has shown some of its old time activity, and prices have advanced all along the line under the influence of the strength of ingot copper both at home and abroad. Speculation has run largely in the Montana stocks, which furnish the greater part of the transactions for the week, and the feeling seems to be a confident one for higher prices for this class especially, while the Lake Superior companies will doubtless share in the improvement. The dealings in Boston and Montana aggregate about 7,000 shares, and the advance from \$29 to \$31½ has been very steady with only a slight decline from the highest figure. Butte & Boston advanced from \$10¼ to \$11¼ on sales of nearly 9,500 shares and closed within one-eighth of the highest price.

Calumet & Hecla advanced to \$295 on very small sales. Tamarack advanced from \$162 to \$163 on moderate transactions. Osceola felt the influence of the market this week and started an advance from \$23 to \$25½, and was in good demand to-day at the latter figure. Quincy also advanced from \$90 to \$95 on small sales. The Scrip sold at \$35½@36. Franklin was stronger and although not active, advanced to \$10¼, a gain of 8½¢ for the week. Atlantic touched \$11 an advance of \$1 from the previous sales. Kearsarge and Wolverine have been the speculative stocks of their class. The former advanced from \$6¼ to \$8 on sales of nearly 2,000 shares, closing firm at \$7½, and the latter on sales of about 6,000 shares advanced from \$2¼ to \$3¼, closing at \$3. Centennial sold at 90c.@\$1, and Allouez at 25c. Quite a speculative interest was manifested in Tamarack, Jr., which advanced the price from \$11 to \$11½. There is a growing belief that the property will prove valuable as the work of development progresses.

A sale of Napa quicksilver is reported at 4%, an advance of ½% over last sale.

3 P. M.—At the afternoon call Tamarack declined to \$163 for 10 shares. Butte declined to \$11½ for round lots, but 10 shares sold at \$11½. Boston & Montana sold off to \$31 and Wolverine to \$3.

San Francisco.

BY TELEGRAPH.

SAN FRANCISCO, Sept. 21.—The market to day opened a shade lower than at the close yesterday. It was, however, fairly steady. The opening prices were: Best & Belcher, \$1.30; Bodie, \$1.45; Bulwer, 12c.; Chollar, 53c.; Consolidated California & Virginia, \$4.25; Eureka Consolidated, 25c.; Gould & Curry, 74c.; Hale & Norcross, 70c.; Mexican, \$1.30; Mono, 30c.; Navajo, 10c.; Ophir, \$2.75; Savage, 67c.; Sierra Nevada, \$1.10; Union Consolidated, 73c.; Yellow Jacket, 72c.

Paris.

Sept. 12.

(From our Special Correspondent.)

For the first time in many weeks I am able to note a gain in the general speculative tendency, and an increase in the buying of stocks. It is true that purchases are still confined to the higher class shares, but that people should feel disposed to buy anything in a speculative line is a very distinct gain. The effect is perceptible already, and a few weeks more will probably show a greater increase in this way. The fact is that the prevailing abundance of money and the very low rates paid for its use are beginning to have a stronger effect than distrust. It is necessary to venture, to do something, or else one must sit down and eat up his capital.

The revival has not done much for the metallurgical shares, which are still dull. The lead, copper and zinc companies have all been sold freely on the rising prices of those metals. In copper especially there has been a demand; Rio Tinto, Tharsis, Cape Copper and Jerez I auteira have all been active. Even the unhappy Societe de Nickel has taken a slight upward turn.

In the precious metals Huanchaca has risen a little, and is firm at the rise. On the other hand the Transvaal stocks, though very active, have fallen a little, Robinsons, Langlaagte and Champ d'Or being all lower.

The coal stocks have felt the effect of the improvement and are all firm, except Dombrowa, which has fallen heavily in consequence of the fire in the mine, which was recently reported to you.

In August shipments of 610 kilos of gold from French Guiana were reported, the largest yet noted. A letter from Cayenne in one of our Paris journals gives some details respecting these new goldfields. They lie in the province of Carsewene, in the neutral territory contested by France and Brazil since 1856. The discovery of gold has caused a rush to the region of some 5,000 or 6,000 miners, and, as a consequence, some disorders have occurred which have prevented any organized working of the deposits, which are alluvial. Since the discovery of the gold about 1,500 kilos have been received at Cayenne. As the country is not administered by either France or Brazil lawlessness exists, and conflicts are frequent. The French colonists at Guiana are anxious that the authorities there should take possession of the territory provisionally until a settlement with Brazil can be arrived at.

The tax on bourse operations for the account, enacted in France last year, at first gave rise to a great outcry, but the opposition has since died out, and the government now proposes to levy a similar tax on transactions for the account in merchandise. Before bringing forward a bill the Minister of Commerce has decided to take the opinion of the chambers and tribunals of commerce, and has issued a circular to those bodies. The questions asked are whether such operations are detrimental to trade; whether they encourage speculation and gambling, and disturb legitimate trade by producing fictitious prices; and whether they should not be assimilated to bourse operations when they are settled by the payment of a difference. The Minister fears that a tax might prejudice trade by rendering competition with foreign countries more difficult, and making French merchants and manufacturers who have contracted for deliveries or the execution of orders at a future date dependent on foreign markets. He is also in doubt as to whether persons who engage in purely gambling speculations would be deterred by the imposition of a tax, and fears that the tribunals would have great difficulty in distinguishing between real and speculative dealings for the account.

The improvement to which I referred above would be greater were it not for the continued apprehensions of war, which are not by any means quieted; there is not space now to speak of these. The cholera we hear less about and hope that it is arrested—for this year at least. I see that you are now well started towards better times and hope you will keep on.

AZOTE.

DIVIDENDS.

Bodie Consolidated Mining Company, dividend No. 20 of 25c. per share (\$25,000), payable October 5th at the office of E. R. Grant, 57 Broadway, New York city. Transfer books close September 26th and reopen October 6th.

Cambria Iron Company, dividend of 2% payable October 1st at the office of the company.

Elkhorn Mining Company, dividend of 25 cents per share, \$43,750, payable September 28th at the office of the company in London, to stockholders of record September 3d.

NEW YORK MINING STOCK QUOTATIONS.

Table with columns for 'DIVIDEND-PAYING MINES' and 'NON-DIVIDEND-PAYING MINES'. Each section lists company names and their stock prices for various dates from Sept. 15 to Sept. 21. Includes a 'SALES' column for each entry.

* E-dividend. † Deal in at New York stock Ex. ‡ Assessment paid. § Assessment unpaid. Dividend shares sold, 3,993. Non-dividend shares sold, 2,800. Total shares sold, 6,793.

BOSTON MINING STOCK QUOTATIONS.

Table with columns for 'DIVIDEND-PAYING MINES' and 'NON-DIVIDEND-PAYING MINES'. Lists company names and stock prices for dates from Sept. 14 to Sept. 20. Includes a 'SALES' column.

Dividend shares sold, 10,469. Non-dividend shares sold, 17,077. Total shares sold, 27,546.

COAL AND COAL RAILROAD STOCKS.

Table listing various coal and coal railroad stocks with columns for dates from Sept. 15 to Sept. 21 and a 'Sales' column.

* For week commencing Sept. 14 and ending Sept. 20. Total shares sold, 82,881.

INDUSTRIAL AND TRUST STOCKS.

Table listing industrial and trust stocks with columns for dates from Sept. 15 to Sept. 21 and a 'Sales' column.

Total shares sold, 374,945.

COLORADO.

Table listing Colorado stocks, including Denver, with columns for dates from Sept. 15 to Sept. 21 and a 'Sales' column.

Total shares sold, 265,000.

MARYLAND.

Table listing Maryland stocks, including Baltimore, with columns for dates from Sept. 21 to Sept. 21 and a 'Sales' column.

PENNSYLVANIA.

Table listing Pennsylvania stocks, including Philadelphia, with columns for dates from Sept. 21 to Sept. 21 and a 'Sales' column.

UTAH.

Table listing Utah stocks, including Salt Lake City, with columns for dates from Sept. 15 to Sept. 21 and a 'Sales' column.

CALIFORNIA.

Table listing California stocks, including San Francisco, with columns for dates from Sept. 14 to Sept. 21 and a 'Sales' column.

FOREIGN.

Table listing foreign stocks, including London Quotations, with columns for dates from Sept. 14, 1894, and a 'Sales' column.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns: Name and Location of Company, Capital Stock, Shares, Par, Assessments (Total Levied, Date and amount of last), Dividends (Total paid, Date and amount of last), Name and Location of Company, Capital Stock, Shares, Par, Assessments (Total levied, Date and am't of last).

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 \$12,330,000. § 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 \$2,400,000 in dividends against \$425,000 in assessments.

RAILROAD MATTERS.

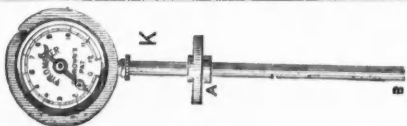
Mr. F. L. Patrick has been re-elected president of the Chicago, Indianapolis & Chattanooga road.

Mr. John E. Earley has resigned the position of chief engineer of the Mexico, Cuernavaca & Pacific and that title has been abolished.

The reorganization of the Richmond Terminal system has been definitely and formally completed, and many properties have lost their identities and become merged in the Southern Railroad Company. This company now operates 4,500 miles of railroad and 150 miles of water line. With the exception of 491 miles, Goldsboro, N. C., to Atlanta, Ga., which is leased, the entire system is owned by the company. The old Richmond Terminal Company did not own any railroad at all, and the Richmond & Danville owned only 145 miles. The rest of the Richmond & Danville system was made up of some 30 separate companies, ranging in length from 6 to 582 miles. On such a basis efficiency and economy were impossible, and a good opportunity was afforded for objectionable methods in accounting. The organization of the East Tennessee, Virginia & Georgia was more compact, but it, too, left much to be desired. As a result of this reorganization over 30 corporations, whose affairs and securities were interlocked in every conceivable way and in almost hopeless confusion, have been united in one company, wiping out 30 boards of directors and 30 sets of separate accounts. Ignoring a number of small branch lines, the Southern Railroad Company extends from Washington, D. C., Alexandria, West Point and Richmond, Va., via Salisbury, N. C., to Augusta and Atlanta, Ga., and thence to the Mississippi River at Greenville. At Salisbury another main line crosses the State of North Carolina by way of Asheville; thence over to Knoxville and Chattanooga, Tenn., and from there to Rome, Ga., where it divides, one line going to Brunswick and the other to Meridan, Miss. An other line runs from Louisville to Lexington and Burgin, Ky., there connecting with the Cincinnati Southern. The Cincinnati Southern and Memphis & Charleston were included in the plan of reorganization as originally promulgated, but were dropped from the amended plan, as the security holders failed to accept the terms offered. The general impression is that, sooner or later, these lines will be absorbed by the Southern Railroad Company. It is also expected this company will, sooner or later, secure control of the Georgia Central Railroad.

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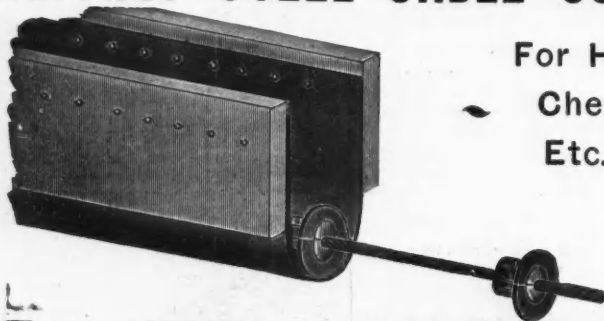
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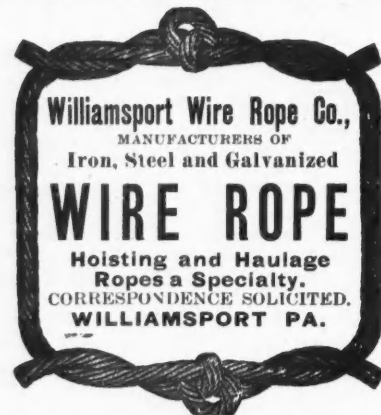


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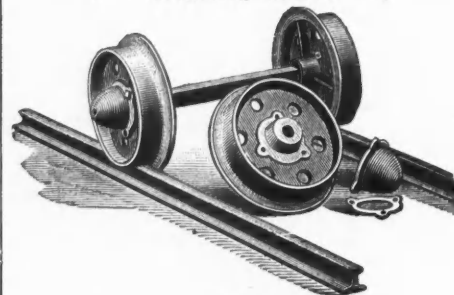
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MINING ENGINEER, TECHNICALLY EDUCATED, aged 28, four and one-half years with large mines as surveyor, engineer and assistant to superintendent, desires employment; some experience in mechanical engineering and some commercial experience. Past employers as references; no objection to going out of United States. Address **DELTA**, ENGINEERING AND MINING JOURNAL, 531 Rookery, Chicago, Ill. No. 16,984, Oct. 20.

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U. S. ENGINEER OFFICE, BURLINGTON, VT.—Sealed proposals in triplicate for repairs to Burlington Breakwater, Vt., will be received here until October 5th, 1894. Full information furnished on application to **SMITH S. LEACH**, Captain Engineers.

U. S. ENGINEER OFFICE, BURLINGTON, VT.—Sealed proposals in triplicate for dredging in Odenburg Harbor, N. Y., will be received here until October 5th, 1894. Full information furnished on application to **SMITH S. LEACH**, Captain Engineers.

WATER-WORKS.—Sealed proposals to build Water-Works in the City of Greenville, Miss., will be received by the Clerk up to Oct. 2, 1894. Upon the franchise system. Specifications on file with the City Clerk.

DREDGING.—U. S. Engineer Office, Burlington, Vt.—Sealed proposals in triplicate, for dredging in Great Chazy River, N. Y., will be received here until October 5th, 1894. Full information furnished on application to **SMITH S. LEACH**, Captain Engineers.

ROCK EXCAVATION.—U. S. Engineer Office, Burlington, Vt.—Sealed proposals in triplicate, for rock excavation in Otter Creek, Vt., will be received here until October 5th, 1894. Full information furnished on application to **SMITH S. LEACH**, Capt. Engrs.

DREDGING.—U. S. Engineer Office, 601 Eighteenth Street N. W., Washington, D. C.—Sealed proposals for dredging at Nomini and Lower Machodon Creeks, Va., will be received here until October 4th, 1894. All information furnished on application. **CHAS. E. L. B. DAVIS**, Major Engrs.

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ARTESIAN WELL.—Illinois.—Sealed proposals will be received by the City Clerk of the City of Wenona, Ill., for an artesian well, according to the specifications therefor now on file until Monday, October 1st, 1894. The right is reserved to reject any and all proposals. Copies of specifications will be furnished on application to **C. E. ERWIN**, City Clerk, City of Wenona, or to **GEO. C. MORGAN**, 49 Major block, Chicago. **C. E. ERWIN**, City Clerk.

PUMPING ENGINES.—Department of Public Works, Chicago.—Sealed proposals will be received by the city of Chicago until October 11th, 1894, for two vertical compound pumping engines, each engine having a capacity of 15,000,000 U. S. gallons of water in 24 hours, with the necessary boilers and all appurtenances ready for daily use, to be erected at the Chicago avenue pumping station in the City of Chicago. According to plans and specifications on file in the office of the Department of Public Works of said city. Proposals must be made out upon blanks furnished at said office and be addressed to said department, indorsed "Proposals for Vertical Compound Pumping Engines." **H. J. JONES**, Commissioner of Public Works.

DAM.—Sealed proposals for constructing a dam, a retaining wall and a pump pit together, with foundation piers for vertical pump, will be received at the office of the undersigned until October 3d, 1894. Plans and specifications can be seen at the office of the undersigned. Specifications and forms of proposal will be furnished upon application. Proposals must be inclosed in envelopes, sealed and marked "Proposal for New Water Supply," and addressed to the Board of Water Commissioners, care of **R. W. HAVENS**, City Engineer, Dallas, Tex. **R. W. HAVENS**, City Engineer.

U. S. ENGINEER OFFICE, BOSTON, MASS.—Sealed proposals for dredging in Powon River, Massachusetts, will be received here until October 4th, 1894. All information furnished on application. **S. M. MANSFIELD**, Lieut.-Colonel Engineers.

TREASURY DEPARTMENT, OFFICE SUPERVISING ARCHITECT, Washington, D. C., September 25th, 1894.—Sealed proposals will be received at this office until 2 o'clock p. m. on the 23d day of October, 1894, and opened immediately thereafter, for all the labor and materials required for the approaches, etc., for the U. S. Court House and Post-Office at Detroit, Mich., including all the stone and brickwork required for the Wayne and Shelby street entrances, in accordance with the drawings and specification, copies of which may be had at this office or the office of the Superintendent at Detroit, Mich. Each bid must be accompanied by a certified check for a sum not less than 2% of the amount of the proposal. 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 bids received after the time stated will be returned to the bidders. Proposals must be inclosed in envelope, sealed and marked "Proposal for Approaches, Etc., for the U. S. Court House and Post-Office at Detroit, Mich.," and addressed to **CHARLES V. KEMBER**, Acting Supervising Architect.

PUMPING ENGINE.—Department of Public Works, Chicago.—Sealed proposals will be received by the city of Chicago until October 11th, 1894, for one triple expansion pumping engine of a capacity of 30,000,000 U. S. gallons of water per day of 24 hours, with the necessary boilers and all appurtenances ready for daily use, to be erected at the Fourteenth street pumping station in the city of Chicago.

According to plans and specifications on file in the office of the Department of Public Works of said city. Proposals must be made out upon blanks furnished at said office and be addressed to said department, indorsed "Proposals for Triple Expansion Pumping Engine, Fourteenth Street, Works." **H. J. JONES**, Commissioner of Public Works.

WATER-WORKS.—Sealed proposals will be received by the Board of Water Commissioners of the Village of Morrisville, N. Y., until September 28th, 1894, for the construction of a system of water-works consisting of a reservoir and piping system with valves, hydrants and appurtenances. Plans can be seen at the office of the Board and specifications obtained from the Secretary after September 17th, 1894. Proposals must be sealed and addressed to **David D. Jones**, Secretary of the Board of Water Commissioners, Morrisville, N. Y., and inclosed on the envelope inclosing them "Proposals for Morrisville Water-Works." **A. M. HOLMES**, President; **D. D. JONES**, Secretary; **L. W. BURROUGHS**, Treasurer; **H. P. MEAD**, SUMNER GILL. The **STANWIX ENGINEERING COMPANY**, Engineers, Rome, N. Y.

Continued on page 19.

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MEETINGS.

THE ANNUAL MEETING OF THE STOCK-
 holders of The Eureka Consolidated Mining Company will be held on Monday, October 15th, at eleven o'clock A. M., at the office of the Company, No. 134 Market street.

(Signed) **H. P. BUSH,** Secretary.
 SAN FRANCISCO, Sept. 20, 1894. Oct. 6.

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Continued from page 18.

PROPOSALS FOR SUPPLIES FOR THE New York Navy Yard, Sept. 20, 1894.—Sealed proposals indorsed "Proposals for Supplies for the New York Navy Yard, to be Opened Oct. 9, 1894," will be received at the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., until 12 o'clock noon, Oct. 9, 1894, and publicly opened immediately thereafter to furnish at the New York Navy Yard, a quantity of calfskin shoes, blacking, brawn, salt beef, rice, raisins, prunes, bacon, tea, plated ware, glass ware, china ware, hardware, lumber and electrical supplies. The articles must conform to the Navy standard and pass the usual naval inspection. Blank proposals will be furnished upon application to the Navy Pay Office, New York. The attention of manufacturers and dealers is invited. The bids, all other things being equal, decided by lot. The Department reserves the right to waive defects or to reject any or all bids not deemed advantageous to the Government. **EDWIN STEWART,** Paymaster-General U. S. A.

BRIDGE.—Sealed proposals will be received by the Board of Chosen Freeholders of Middlesex County, N. J., at their office in the County Court House, New Brunswick, N. J., until October 3d, 1894, for rebuilding the Landing Bridge over the Raritan River, in accordance with plans and specifications prepared by Geo. H. Blakeley, Consulting Engineer. Plans and specifications can be seen at the office of Asher Atkinson, County Engineer, George Street, New Brunswick, N. J. The Board of Chosen Freeholders of Middlesex County, **MICHAEL WELSH,** Director.

WATER-WORKS.—Sealed proposals will be received at the office of the City Clerk of Tomah, Wis., until October 1st, 1894, for the erection of a complete system of water-works, including pumping station, tower, pumping machinery, boilers, heater and feed pump, with all attachments, fittings and trimmings, pipes and specials, hydrants, valves and valve boxes, and materials of every kind for the construction of said water-works, all complete as per plans and specifications, which may be seen on and after September 24th, 1894, at the office of H. J. Skinner, City Clerk, Tomah, Wis.; or at the office of Geo. Cadogan Morgan, Engineer, 49 Major Block, Chicago. All proposals must be addressed to the Hon. Thos. McCaul, Mayor, and Common Council, care H. J. Skinner, City Clerk, Tomah, Wis., and marked "Proposals for Water-Works." **H. J. SKINNER,** City Clerk.

STEEL FORGINGS.—Sealed proposals, in duplicate, will be received until October 1st, 1894, for supplying the Ordnance Department, U. S. Army, with five sets each, more or less, of steel forgings of American manufacture for 8 and 10-in. guns and two sets for 12-in. guns. All information furnished upon application to Brig.-Gen. **D. W. FLAGLER,** Chief of Ordnance, Washington, D. C.

WATER-WORKS.—Greenville, Miss.—Sealed proposals to build water-works will be received by the City Clerk until October 2d upon the franchise system. Specifications on file with the City Clerk.

WATER-POWER CANAL.—Sealed proposals will be received by the Niagara Power and Development Company until October 1st, 1894, for the construction of a power canal. The work will be let in eight sections, each 5,000 ft. in length. The amount of material to be removed is estimated at 1,300,000 cu. yds. of earth and 4,300,000 cu. yds. of rock, chiefly limestone. The contractor on any section will be expected to remove therefrom an average amount of not less than 2,000 cu. yds. per day. Plans, specifications and blank forms of bids may be had on application to the Chief Engineer, **E. C. Reynolds,** Model City, Niagara County, N. Y. **THE NIAGARA POWER AND DEVELOPMENT COMPANY,** Model City, Niagara County, N. Y.

PIPE, CASTINGS, ETC.—Sealed proposals will be received by the Building Committee of Beaver Falls, Pa., Council, until October 2d, as follows: For 2,300 tons cast iron water pipe and special castings; 230 fire hydrants; 265 valves and valve boxes; the laying of 20 miles of 4 to 16-in. pipe. For the sinking of a sufficient number of tubular wells to obtain a 6,000,000 gallon supply of water. **PUMPS.**—Also, until October 16th, for two 3,000,000 gallon pumps, and for the building of a 6,000,000 gallon reservoir. **FILTERING PLANT.**—Also, until November 8th, a complete filtering plant, with a capacity of 3,000,000 gallons in 24 hours, and buildings to contain the pumps, boilers and filtering plant. Plans may be seen and detail specifications for the above-mentioned work and material can be obtained of the Borough Clerk, **W. W. Kerr,** and also at the office of the engineers, **James H. Harlow & Co.,** Times Building, Pittsburgh, Pa., and **Wilkinsburg, Pa.,** two weeks previous to the above dates. **SAMUEL CREESE,** Chairman; **H. F. DILLON,** **L. S. LUTTON,** **A. O. MEYERS,** **TITUS WELSH,** Building Committee. **JAMES H. HARLOW & CO.,** Engineers.

HORIZONTAL PUMPING.—Office of the Department of Public Works, Chicago.—Sealed proposals will be received by the city of Chicago until October 11th, 1894, for two horizontal compound condensing pumping engines, each engine having a capacity of 14,000,000 U. S. gallons of water in twenty-four hours, with the necessary boilers and all appurtenances ready for daily use, one engine to be erected at the Sixty-eighth street pumping station and one engine to be erected at the Lake View pumping station, in the city of Chicago. According to plans and specifications on file in the office of the Department of Public Works in said city. Proposals must be made out upon blanks furnished at said office, and be addressed to said department, indorsed "Proposals for Horizontal Pumping Engines." **H. J. JONES,** Commissioner of Public Works.

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ELECTRIC LIGHTS.—The City Council of Cynthiana, Ky., will receive sealed bids until October 9, 1894, for furnishing the said city with not less than 25 arc lights of 1,200 nominal candle power each, and not less than 40 incandescent lights of not less than 24 candle power each. All bids shall be sealed and delivered to the clerk. **L. S. WILLIAMS,** City Clerk.

DREDGING PLANT.—U. S. Engineer Office, 121 Franklin street, Buffalo, N. Y.—Sealed proposals will be received at this office until October 15th, 1894, and then publicly opened, for the hire of dredging plant, including a submarine drill boat, for use on the Niagara River, between Tonawanda and Port Day. For information apply to Maj. **E. H. RUFFNER,** Corps of Engineers.

DREDGING.—U. S. Engineer Office, Room H 7, 39 Whitehall street, New York City.—Sealed proposals for dredging in Mystic River, New Haven Harbor, Norwalk Harbor, Conn., and East Chester Creek, N. Y., will be received here until October 16th, 1894, and then publicly opened. All information furnished on application. **HENRY M. ROBERT,** Lieut.-Col. Engrs.

DREDGING.—U. S. Engineer Office, Army Building, New York.—Sealed proposals for dredging channels in Raritan Bay, N. J., will be received here until October 15th, 1894, and then publicly opened. All information furnished on application. **ROBERT MCGREGOR,** Second Lieutenant Engineers.

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