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The quotations of the stock of the Philadelphia Acetylene Company have been shrinking quite severely of late. The shares which were quoted \$25 to \$30 have dwindled to \$5 bid, \$12 asked. What is the matter? Have the holders at last come to appreciate the cost of making calcium carbide and the value of the Acetylene Company's patents? It would seem as if light were breaking on them.

A company has been formed in London, called the London and Cripple Creek Reduction Corporation (Limited), and subscriptions are being invited from the public. The object of the company is to acquire the process of James R. Page for extracting gold from ores, and to erect a plant on this system at Florence, Colorado. The process is apparently not patented, and is, therefore, presumably, a secret one. It is of the nature of the cyanide process, and the solution used is a mixture of cyanide and another chemical not specified. The mixture is called by Mr. Page, "Cyanidella." The capital of the company is £130,000, and the purchase price of the secret process £86,493, payable £79,493 in shares and the remainder in cash. This leaves £43,507 available for acquiring works and machinery and for working capital. Mr. Page erected and, until recently, managed the plant of the Metallic Extraction Company at Florence, and he will be manager of the present company. The unfavorable point about the prospectus is that the exact nature of the process is not divulged, and that no information is given of its value metallurgically. The word of Mr. Page alone is relied on, and all he says is that the percentage of gold recovered is greater and the expenditure of cyanide less than in the McArthur-Forrest process.

### The European Petroleum Company.

A company has been formed in London called the European Petroleum Company, Limited, which from its large capital and the magnitude of its proposed operations will receive more notice and consideration in America than its intrinsic merits warrant. It looks like nothing more than a gigantic scheme to work off a lot of non-paying tank steamers on an unsuspecting public. The ostensible purpose of the company is to acquire: (1) oil-bearing properties in the Baku field and also in Roumania and Galicia; (2) fourteen tank steamers, and (3) refineries and storage plant at Ulverston, Middlesborough and on the Thames, and also at Bremen and Harburg. The total capital is £1,400,000, divided into 500,000 ordinary shares of £1 each, 500,000 preference shares of £1 each and 4,000 debentures of £100 each. The purchase price is £1,120,000, payable £166,660 in ordinary shares, £166,660 in preference shares, £133,330 in debentures, and the remainder £653,350 in cash. The amount available as working capital will therefore be £280,000.

There are two points in the prospectus which show up the promoters in a bad light. First, the earnings of the 14 steamers are given for three years ending September, 1895, and the average rate for charters was then 15s. a ton, but no mention is made of the fact that since then, owing to the competition of more modern steamers, the rate has sunk steadily until it now stands at 11s., with a prospect of a still further fall. Consequently the profits of the company are immensely overestimated. Second, the company states that it has acquired 2,000 acres in the oil field at Bustenar in Roumania, which is stated to be producing 21,600 tons per annum. As a matter of fact, however, the figures 21,600 tons represent the total output of Bustenar as given in the Government reports, and already the International Petroleum Industrie Actiengesellschaft controls three-fourths of the output. If we wanted to criticise the prospectus still further we might point out that though the refineries to be acquired have been at work some time, we are not told whether they are being run at a profit or not.

Altogether, we may take it that though the company appears to be an imposing concern, it will have little permanent influence on the petroleum industry of the world.

### The Sunlight Incandescent Mantle Patent.

With an astounding lack of judgment the owners of the Sunlight patent for incandescent gas mantles have formed a new limited liability on a large scale in London and invited the public to subscribe £100,000 in hard cash for the privilege of acquiring the patent and commencing the manufacture of the Sunlight mantle, while yet the whole question of the validity of the patent is *sub judice*. In our issue of May 23d we announced that the action by the Incandescent Gas Light Company against the Sunlight Company for infringement of the Welsbach patent had resulted in a verdict for the Sunlight Company, whose patent was, therefore, held to be good in law, though the judge admitted that the defendants were morally indebted to the Welsbach discovery. Notice of appeal was shortly afterward given by the Incandescent Gas Light Company against this decision of Mr. Justice Wills. Seeing that the validity of the patent is to be again discussed in a short time, the present is a very inopportune moment for the owners of the Sunlight

patent to come before the public. In their prospectus they practically admit as much, for they say that until the appeal has been decided in their favor they are willing to leave the purchase money in the hands of trustees, and to return it in case of an adverse decision.

Another injudicious proceeding on their part is to announce in the prospectus that the company will be given the option of acquiring Rawson's patent 11,161 of 1886. The object of this patent is to stiffen the mantles for transport by immersing them in a readily combustible gelatinous solution which afterward hardens and forms an efficient protection for the delicate textures. The vendor company is at present suing the Incandescent Gas Light Company for infringement of this patent, but on the other hand the Incandescent Gas Light Company are petitioning for the withdrawal of the patent in question on the ground that the subject matter of the specification is not patentable. As a matter of fact the Incandescent Gas Light Company has always used such a method for protecting the mantles during transport, and it would be impossible to move them about otherwise. They probably never supposed that the application of a gelatinous solution for this purpose was a patentable invention. Under the present circumstances it is therefore not only injudicious, but also highly improper on the part of the Sunlight people to ask the public to subscribe large sums of money. They should have waited until they were quite sure that their two patents were valid.

#### Mining Activity in Utah.

Utah has been passing through an experience much like that of her sister State, Colorado. So long as those interested in her mines persisted in looking backward instead of forward, regretting the passing of old-time conditions, of great silver bonanzas, the promotion of big English stock companies, good prices for the silver and lead product, and general extravagance in mining and metallurgical methods, so long did depression, which reached its nadir in 1893, continue. But the mining men of Utah, like those of Colorado, soon awoke to the realization that a new order of things had set in, and that methods and aims must be adjusted to changed conditions. Hence, there has been a healthy reaction of late, and all have been watching with admiration the energy and recuperative powers of the Utah mining industry.

Although, as elsewhere in the far West, gold was the main object of search at the outset, people later began to consider silver mining the main, if not the almost exclusive, reliance of Utah; and it is only within the last few years that the gold possibilities of the new State have begun to be recognized. Thus in one sense the silver depression has been beneficial, by forcing attention toward other resources, and particularly toward gold mining, just as has been the case throughout all the Western mining regions.

From the older silver and gold camps we are receiving the most encouraging accounts. At Park City the Ontario proceeds on the even tenor of its way, and continues paying dividends, while new strikes are reported in Daly ground and extensions. Tintic and Bingham are quiet, but still productive. The Camp Floyd district reports new discoveries of low-grade gold ores, which in that district can be and are worked at good advantage. All are familiar with the Mercur mill records. Now we have a fresh one from the Geyser, where the average value of the ore milled in April is stated at only \$3.92 per ton; the entire cost of mining and milling was but \$1.97 per ton, and the profit on this rather low-grade rock was therefore \$1.95 a ton. Thus at this 50-ton cyanide plant the handsome return of about \$100 a day was made on less than \$4 ore. In the Camp Floyd district the ore is by no means all of the low-grade sort however, but this one example shows what can now be done with large bodies of \$4 or \$5 gold rock, not truly free milling, when such a small plant is so successful.

The latest information, which we believe to be more than rumor, is that the famous Centennial-Eureka mine has been sold in England for \$4,000,000. We do not know whether this sum is actually correct or not, or the exact conditions of sale, but the quoted price of the stock last week and the dividends paid to date show the high estimation in which the property is held. The \$50 shares were selling at nearly \$80—making a quoted market value for the property of about \$2,500,000—the dividends to date amounted to \$1,680,000.

Just now main interest centers in the new discoveries around Marysvale, from which come the usual highly-colored descriptions inevitable in all new mining excitements, but which in this case seem to have something substantial to rest upon.

Altogether, the outlook for mining in Utah is more promising than it has been for a long time, and no doubt the present activity will be reflected in the production records of the current and succeeding years.

#### Working Flat Placers.

The continued activity in the quest for gold is leading not only to the search for new deposits, but also to revived interest in the exploitation of ground long well known, but not hitherto much utilized because of

disadvantageous conditions. It may fairly be questioned whether there are not better opportunities in developing old territory now made available by improved methods and economies than in prospecting for entirely new discoveries. As to placer ground, the probabilities of coming across important deposits overlooked by the earlier prospectors are not very encouraging, at least within the limits of the United States, since the ground has been gone over pretty thoroughly and the methods of prospecting and testing are so simple and generally understood that whatever is worth it is seldom likely to escape notice. On the other hand, there are numerous known and proved occurrences, especially in the older gold-mining areas of the Pacific Coast States, toward which the eyes of mining men have long been turned with longing, but which have for the most part baffled attempts at profitable working.

In the region just indicated there are large tracts of good placer ground—that is, good so far as the tenor in gold goes—where there is plenty of water at hand or available from near-by sources, but which, for want of sufficient fall for dump room, are unfavorably located for hydraulicking or washing by any system involving the disposal of large volumes of tailings. Where the ground is unusually rich, so that relatively small quantities of material have to be handled, operations have been carried on in a desultory manner for the last three or four decades, but never on a very important scale or very successfully from the investor's point of view. Yet in this particular line of mining there are evidently good opportunities under present improved conditions.

Ground which runs much below a dollar a yard, with the pay concentrated in a well-defined stratum, will not pay for working by the drift system, which involves substantial timbering and often heavy pumping; and, besides, drift mining needs some fall and a moderate amount of dump room for washing the material and afterward disposing of it. The sort of proposition we now have in mind is intermediate between ground suitable for drifting and that workable by the usual open hydraulic method; that is, the gold content may be too low for drifting, but still high enough and contained in a fair mass of material to be available for means considerably more expensive than ordinary hydraulicking. Much of this ground is unsuitable for drifting, for reasons wholly apart from the question of cost.

Of all the numerous systems proposed, many of which have been tried on a working scale with varying degrees of success or want of it, the prominent ones rely upon either hydraulic elevators or steam shovels. In the former case the material is taken up high enough for feeding in at the head of a string of sluice boxes; in the latter the preference is usually to wash in some form of appliance provided with close grizzlies and medium screens, with riffles and copper plates, mercury troughs, etc., and often having a shaking motion imparted by power. This needs less elevation and fall, less dump room because the great bulk of the material is kept back by the grizzlies and retained near the source, and the washing machines generally require much less water than continuous sluices. In whichever way the dirt is raised and handled, there is generally no conflict with any debris laws, for the amount of material is not only much less than in the big open hydraulic workings, but does not need to be moved far.

Under reasonably fair circumstances of water supply and power, or water enough for washing and cheap fuel for power, ground running, say, 25 cents a cubic yard ought to pay, if there is enough of it. Any system to be successful on a large scale must adhere to the underlying principle of hydraulicking—the reducing of manual labor to the very smallest minimum. Most of the operations thus far in this line have been on entirely too small a scale to be very profitable, hence another lesson must be borrowed from hydraulicking—to handle as much material and that as rapidly as the case allows. The plant is not very costly, and can be transported and sold when a given area is worked out. But before entering upon any enterprise of this kind the ground should be as thoroughly proved by test pits and numerous systematic pannings as if it were proposed to put in a half million ditch line. Nor should the too enthusiastic inventors of patented appliances or the makers and venders of them be relied upon in their usually over-sanguine claims. Very often processes and machines for this purpose are introduced by people who know nothing practically about working placers. We have just heard of a steam shovel installation in which the difficulty lay in not having hoist enough to the boom, the makers not understanding the requirements and supposing that any sort of a steam paddy would answer. The only safe criterion of either tried or novel apparatus of this kind is in the recorded experience gained from actual working on a sufficiently large scale and extended over a long enough period to really prove something.

#### NEW PUBLICATIONS.

ONE HUNDRED YEARS OF AMERICAN COMMERCE. Edited by Chauncey M. Depew, L.L.D. New York, 1895; D. O. Haynes & Co. Pages, 924; imp. 8vo; illustrated. Price (subscription), library edition, 2 vols., cloth, \$14; do. half morocco, \$17; do. full morocco, \$20; ed. de luxe, 1 vol., \$25; do. 2 vols., \$32.

As announced by the publishers, this work is intended to commemorate the completion of the first century of industrial progress in America,



as inaugurated by the Jay treaty in 1795. It consists of one hundred articles on special commercial and industrial topics, describing the practical development of the various branches of trade in the United States within the past century, and showing the magnitude of our financial and commercial institutions. These articles are credited to one hundred prominent Americans as contributors. As might be anticipated, in view of the immense field to be covered, even the large size of the book is severely taxed in the attempt to award just prominence to each of the lines of trade and production discussed, so that it has been impossible to go into much detail in any particular direction. Here and there are evidences of somewhat hasty compilation; and perhaps some of the peculiarities of arrangement and distribution of subjects may be attributed to the novel and striking idea of assigning the many phases of treatment of the century of American commerce to just one hundred Americans in just one hundred chapters of nearly equal length. Still, on the whole, the main purpose has been well accomplished, and the result is a work of reference which will be valued and consulted in many a library. The chapter on mining has been contributed by Mr. R. P. Rothwell, while under the heads of the different metal trades and various manufactures may be found other matters relevant to the mining and metallurgical industries.

**SOUND CURRENCY: OUR MONEY—AS IT IS.** By J. H. Cuntz. New York. Published by The Sound Currency Committee of the Reform Club. Pamphlet; pages, 16.

A recent number printed by this committee is very interesting in the way in which it deals with gold coin, gold certificates, United States notes, currency certificates and National Bank notes. The introduction is explanatory of the present situation, and we draw a line purposely between the subsequent part of the essay on the subjects of silver dollars, silver certificates, Treasury notes of 1890, the redemption of Treasury notes and greenbacks, subsidiary silver and minor coin.

Everyone is well informed upon the subject of our gold coin and of its value; but gold coin, although not quite so bad as silver coin in not being so bulky, is inconvenient to handle in large amounts, for which reason the Secretary of the Treasury was authorized to issue certificates of deposit in sums of not less than \$20. These certificates have been an advantage in one respect, that of convenience, and occasionally a disadvantage, that they have been rushed in upon the Treasury for the withdrawal of gold when a foreign demand has made the same profitable.

The conditions ruling the United States notes, commonly called greenbacks, are well stated, and anyone wishing to inform himself upon this portion of our currency could do no better than read the little pamphlet we are referring to.

With regard to the division which we make in this short review, we wish to draw special attention to the reference to the Treasury notes of 1890, in which year the Sherman Act was passed by Congress and received the approval of President Harrison. The effect of this act was supposed to be a step in the direction of reinstating silver as a money metal on a parity with gold, but it entirely failed of its object. Silver at that time, as to-day, is simply a commodity, and its value must be governed by the market value unless recognized by international agreement, and the effect of an act of Congress directing the purchase of silver bullion and the issue of Treasury notes thereon to the extent of 4,500,000 oz. in each month, was and will be utterly powerless to place silver on a par with gold.

Subsidiary silver and minor coin will never give trouble financially to this country or any other, unless the privilege for their issue is abused to an outrageous extent, and, as pointed out by the writer, the amount issued is limited only by the needs of the country. At present there is about \$20,000,000 worth of minor coin in circulation and in the Treasury, the exact amount being difficult to determine, and the subsidiary silver coin, the issue of which is practically unlimited, being governed entirely by the amount required for active circulation, which upon March 1st, 1896, was \$78,564,547.

The metal for our coins is acquired by the Government by purchase. Gold coin.—Any holder of gold bullion may deposit the same in amount of \$100 or over at any mint to be formed into coin for his benefit. This is the true meaning of free coinage, as there is no charge beyond the cost of the alloy used. With regard to subsidiary silver and minor coins the profit from the coinage accrues to the Government, and in the case of subsidiary silver the profit may be called "seigniorage," while the profit from the minor coinage amounts to such a figure that it would be more correctly determined "commercial profit."

#### 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.

*Gemeinofsliche Darstellung des Eisenhüttenwesens. Volume III.* B Th. von Beckert and E. von Schröder, Düsseldorf, Germany. Published by the Verein Deutscher Eisenhüttenleute. Pages, 115; with illustrations.

*Bulletin of the United States Fish Commission for 1895. Volume XV.* Washington, D. C. Government Printing Office. Pages, 472; with maps and illustrations.

#### CORRESPONDENCE.

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

Canadian Steel and Iron Production and Bounties.

Sir: The Consular report quoted in your issue of May 30th is certainly incorrect. The total production of steel ingots (open-hearth only) in Canada last year amounted to about 17,000 gross tons, not 62,761 tons as stated. The only plant in the Dominion that makes steel is the Nova Scotia Steel Company, Limited; yet the report names at least three others. The

consul has probably confounded pig iron with steel, as the production of pig iron if added to the steel production will give approximately the figures you name—pig iron, 37,829 tons; steel, 17,000 tons—54,829 gross tons, or 61,408 net tons, the latter being chiefly used in Canada. Possibly bar iron is also included, as the Dominion pays a bounty of \$2 per ton on all three products.

BEVERLY, N. J., June 3, 1896.

WM. G. GRAY.

Old Dominion Copper Company.

Sir: Will you kindly inform me through your columns whether it is true that the Bigelow-Lewisohn syndicate, which organized this company last fall, with a nominal capital of \$3,750,000, in 150,000 shares at \$25, and sold these shares at \$25 and above, paid actually through Leonard Lewisohn, only \$1,000,000 for the property and spent \$150,000 for incidentals; then the stock must have cost to the syndicate only \$7½ per share!

Is it true, that at the present production of the mine of about 10,000,000 lbs. of copper per year, the ore in sight is only sufficient to run the plant for two years?

Does the management publish official reports of developments in mine and statements of production and costs of both development work and smelting expenses?

NEW YORK, June 2, 1896.

J. C.

#### ABSTRACT OF OFFICIAL REPORTS.

The Anglo-French Exploration Company, Limited.

The total issued capital of the Anglo-French Exploration Company is £335,300, £300 being Founders' shares. With this capital the realized profits on working for the year amount to £493,444 17s. 8d. Some of the capital was issued at a premium of £86,999, and this amount has been carried to reserve fund, and is not included in the profit above referred to. An interim dividend of 3s. is now supplemented by a distribution of 7s., making a total distribution on the ordinary shares of 50%, and after making this there remains £263,477 to be carried forward. The investments of the company at average cost and the cash are referred to in the report as exceeding the paid up capital and liabilities of the company by a sum of about £825,000; and since the day when the accounts were made up "a substantial improvement has taken place in the value of the investments."

#### POSSIBLE CHANGE OF MINOR CURRENCY MATERIAL.

Experiments regarding the use of pure nickel, aluminum or other substances for minor coins of the United States and their relative adaptability for the purpose of coinage, are being made at the Mint. Director Preston has already obtained a few of the minor coins made from pure nickel which are used in Austria-Hungary, and has also some samples made from aluminum. These will be subjected to tests for wearing capacity, retention of color and convenience in handling. The belief is that pure nickel will be found superior to the composition now used in half dimes. If the Secretary of the Treasury should report in favor of the use of pure nickel an effort would probably be made to authorize its exclusive use for minor coins in the future coinage of the United States. Aluminum is so light in weight that it would probably excite distrust at first among those receiving it, especially those who are not familiar enough with the existing coinage system to know that the minor coins possess an intrinsic value which is but a fraction of their face value. Hon. Bartlett Tripp, United States Minister at Vienna, has made a report regarding the operations of the new coinage system in Austria-Hungary, which went into operation with the laws providing for the gold standard in 1892. Austria-Hungary began the coinage of minor coins composed of pure nickel in October, 1892, from which date until January, 1893, there were coined and circulated 180,000,000 of 20-heller (4c.) pieces at a nominal value of 36,000,000 kronen (\$7,000,000) and 240,000,000 10-heller pieces of a nominal value of 24,000,000 kronen (\$4,700,000). Regarding the success of the Austrian Mint, Minister Tripp makes the following interesting statement:

"The director and chief engineer of the Austrian mint states that pure nickel for minor coins has many advantages. It does not change color, it is very hard and wears very well, yet it receives a beautiful, clear impression, works well in the presses, does not oxidize, feels soft and velvet-like to the touch, is strongly magnetic, and is in every way far superior to every other metal or combination of metals for minor coinage. The only possible objection to it which has been found in Austria-Hungary is that sometimes during the process of milling the edges of pure nickel coins nickel dust is formed in the coining ring, which adheres to the coins and sometimes dulls their brilliant surface. For this reason the authorities of the mint here advise minor coins of pure nickel to have smooth edges. The analysis of pure nickel as used for minor coins in Austria-Hungary is as follows: Nickel, 97.37%; cobalt, 1.30%; copper, 0.32%; iron, 0.80%; carbon, 0.07%. Excess of cobalt darkens the color. Excess of iron and cobalt makes the metal too brittle. The plates from which the pieces are coined must be exposed beforehand to white heat for annealing in closed furnaces in order to make them sufficiently soft."

The Austrian Government makes no effort to proportion the amount of metal in the coins to their face value, but makes the lower pieces of comparatively higher value in order to make them large enough for convenient circulation. One kilogram of pure nickel is coined into 250 20-heller pieces or 333 10-heller pieces. The 20-heller pieces, therefore, weigh 4 grams and the 10-heller pieces 3 grams. One kilogram in 20-heller pieces will have a nominal value of 50 kronen, while in 10-heller pieces it will have a nominal value of 33 kronen 30 heller. The Austrian Mint has made some coins for Serbia containing 25% nickel and 75% copper, but Minister Tripp reports that "this composition does not receive so good or so clear an impression as the pure nickel; it soon wears smooth; loses its bright color, is not at all magnetic and does not work any easier or more advantageously in the presses."

The Metrical System.—It is reported that the Russian Minister of Trade and Commerce is considering the question of introducing the metrical system of weights and measures into Russia.

## THE EMBREVILLE ESTATE, TENNESSEE.\*

By Guy R. Johnson.

It is now generally acknowledged that the successful management of a modern foundry necessarily embraces a knowledge of chemistry, and especially a thorough acquaintance with the effect of the various metalloids on cast iron, in order to produce, with certainty and regularity, castings of the requisite strength and physical properties. Nothing so much assists in this work as having a strong pig-iron, low in metalloids, to act as a basis of mixture, and to carry cheaper grades.

In this connection the writer has thought that a brief description of the Embreville property, and the iron made there, may be of interest to the Institute.

This property is situated in the extreme northeastern corner of Tennessee, on the banks of the Nolachucky River, one of the principal affluents of the Tennessee. It is in a region formerly dotted over with Catalan forges and charcoal blast furnaces, the product of which was famous all over the South for toughness and ductility.

The present plant at Embreville is the successor of an old charcoal furnace and rolling mill, erected some 60 years ago, which always turned out a high grade of iron, commanding a ready sale throughout the South.

As was the case with many of these early plants, the great expense of getting charcoal, the distance to market and the crude methods of transportation caused successive business embarrassments, as a consequence of which the property passed through a number of hands. It was finally purchased in 1888 by an association of Englishmen, under the style of "The Embreville Freehold, Land, Iron and Railway Company, Limited."

After considerable negotiations, this company induced the East Tennessee, Virginia & Georgia Railroad to build a branch from Johnson City, on that road, to Embreville, a distance of about eleven miles.

Immediately on securing the railroad, the company caused to be constructed by the Pittsburg Iron and Steel Engineering Company a first-class blast-furnace plant, which was erected during the years 1891 and 1892. It consists of a stack 80 ft. high by 19 ft. bosh, furnished with three Cowper-Kennedy stoves, two McIntosh-Hemphill & Co. blowing-engines, pumps, boilers, stand-pipe, etc., the whole plant being well built, but of the Pittsburg type, and unfitted for the ores of this section.

As was usual during the years from 1891 to 1893, a town-company was formed, and a good farm was spoiled by grading operations.

The furnace was put in blast in 1892, and ran about 12 months in all, making an average of about 100 tons per day of fair iron, the lower grades predominating.

Owing to the collapse of the "boom" in 1893, the furnace was shut down, and stood idle until 1895, when it was bought by Mr. George B. Parker, of London, England, who promptly took steps toward putting the property in running order.

In October, 1895, all repairs and changes having been effected, the furnace was blown in, and has been running steadily ever since, turning out an average of from 80 to 90 tons per day, principally of high grades.

The output of the furnace seems small compared with its size and apparent capacity, but it is simply a question of quantity or quality. By driving rapidly, 150 tons per day could be made, but it would be principally of the three lower grades.

Such soft, brown iron ore as the mines supplying this furnace produce cannot be driven rapidly through a furnace of this size, and yet produce a large proportion of foundry iron. With ores of this kind, it is the writer's opinion (shared by several prominent members of the Institute) that the lining from the bell to the bosh line should have a strong outward slope, *i. e.*, the interior of the lining, from bell to bosh line, should have the shape of a truncated cone, with an outward slope of about 1 1/2 in. per foot; and the bosh should be put as low in the furnace as possible in order to lower the melting point, and should not be too large, these conditions necessitating a comparatively low furnace.

The difficulty in working a high furnace on a soft brown ore burden is that, in the high furnaces, the ore melts too high up, and the iron coming down through the stock is more apt to be of lower grade, or colder, than in a furnace in which it melts lower down. By reason of this condition, the Embreville furnace, not having been altered from its original interior lines, has to be driven very slowly as compared with its theoretical capacity according to modern ideas (as based on Pittsburg practice), the blast being increased only as the heat gets higher, which increase is instantly followed by a cooling of the whole furnace.

The iron thus far produced is, so far as the writer knows, unique, the average contents of phosphorus in the whole blast so far having been only 0.12%, and running in many cases down as low as 0.08%—certainly a remarkable figure for iron made from brown ore. Manganese runs from 0.40 to 0.50%, and silica is easily controllable, the furnace having produced iron running all the way from basic open-hearth—both as to silicon and sulphur—to a high-silicon foundry, containing 5% of silicon and 0.008 of sulphur, with the fracture of No. 2 foundry.

The tensile strength of the iron is remarkable. The iron breakers often throw the iron several times on the breaking-blocks before fracture, and the result of a number of tests at the Addiston Pipe Company's works gave it a tensile strength of 24,000 lbs., and a transverse breaking strength of 2,200 lbs.

Of course, an iron so low as this in phosphorus cannot but be red-short, and for that reason we have had considerable trouble in getting our customers to use it properly. If employed in too large a proportion for castings, it will chill, and the shrinkage will be very great. When properly mixed, however, it gives splendid results, and by reason of its great strength, freedom from impurities and scrap-carrying qualities it is gradually finding its way to a class of customers who need a special iron of this nature.

Another interesting feature is the presence of lead in both ore and limestone. This element, though not present in proportions large enough to cause trouble by running out in quantity with the iron, gives considerable annoyance, owing to its curious property of causing the iron to part with its graphitic carbon, which lies in great masses in the runner after each cast. This throwing-off of graphitic carbon, in turn, gives the iron

a "close-grained" look, which, of course, hurts it with the "rule-of-thumb" foundryman, who depends on the appearance of the fracture to tell him the nature of the iron. There is, also, a small quantity of zinc present.

The ore from which this iron is produced lies in one of the Tennessee limestone coves—Bumpass Cove—and is decidedly interesting from a geological standpoint.

According to Professor Lesley, a great fault took place just beyond the point where the Nolachucky River makes its last break through the mountains into the great limestone valley, and this fault left, settled down behind the Potsdam sandstones and shales (known locally as the Chilhowee grit and shales), a syncline of No. 11. limestone, which is overlaid throughout a large part of its extent with from 6 in. to 30 ft. of brown iron ore.

From recent examination, however, the writer is inclined to think that Professor Lesley was in error when he thought a fault made this deposit possible. A study of the geological features of the region reveals numerous short bends, and the writer thinks that Professor Lesley mistook an unusually short bend for a fault; in which opinion he has the support of the observers of the United States Geological Survey. The upper part of the bend has, of course, been denuded, leaving the sandstone and shale lying, apparently, over the limestone.

The property presents three varieties of ore, the first being a very siliceous specular iron ore, containing Fe, 30; SiO<sub>2</sub>, 50; and P, 0.5%, lying high on the mountains, and found, of course, in the Potsdam measures. This ore lies in thin bands from 12 to 14 in. thick, separated by several feet of shale. There is an enormous quantity of it; but owing to its low iron-contents and high phosphorus, it is hardly probable that it will ever be profitable to work.

Descending the mountain some 200 ft. vertically, a vein of massive brown hematite is reached, which is apparently very persistent, and is found on both sides of the cove. Some lumps of this ore have yielded 63% of iron, 2.5% of silicon, and of phosphorus, sulphur, and manganese only a trace; but the bulk of the ore is not nearly so good, averaging about 48% of iron.

Under the former management this ore had not been touched, since it lay high on the mountain and was difficult of access. It is now being opened as rapidly as possible, but so little has been used as yet that it is impossible to tell whether it will have any effect on the furnace operation or not. It is hoped, however, that an extra amount of the "lump" will enable the furnace to carry a larger burden.

Still further down the mountain comes the limestone, which is overlaid by the brown ore now used. As above observed, the depth of this ore varies from 6 in. to 30 ft. and occasionally even more. In the limestone pockets it has attained in some instances a depth of over 100 ft. The whole ground seems to be filled with particles of soft brown ore, so that it is usual with us to wash everything "from the roots down." The upper layer of red clay yields, on an average, about one car of washed ore to five of dirt, though often dropping to a proportion of one to ten; but when the ore body itself is reached the yield of ore is very much increased, running up in some cases as high as 60% of the material moved.

In the writer's opinion this ore has been broken up and washed down from the massive brown hematite lying above it and deposited in the limestone. This hypothesis is certainly supported very strongly by the configuration of the ground and the physical characteristics of the iron ore, which yields a comparatively small amount of lump (about one-eighth) and runs 44% in iron and 10% in silica. It is soft and easily smelted, melting down very rapidly, with a tendency to clinker and dirt-accretions on the walls. It also shows only a small quantity of phosphorus, but about 0.20 of manganese.

The washers employed are all double log-washers of the Thomas type, with one exception, which has three logs.

The limestone underlying the ore is usually capped by a stiff black clay, locally called "ocher," which rarely contains any ore. The limestone is dolomitic, and works excellently in the furnace, containing only about 1 1/2% of silica and producing a very fluid cinder. An average analysis would be SiO<sub>2</sub>, 1.50; CaCO<sub>3</sub>, 54; MgCO<sub>3</sub>, 43%.

Although a separate quarry is worked for this stone, yet, at the same time, in cases where limestone has to be blown out in order to get into the ore body, it is broken up and sent down to the furnace, thus furnishing an exceedingly cheap flux. About three-fourths of a ton of stone per ton of iron made is required for this purpose.

At present the fuel used is Pocahontas coke, on which there is a 200-mile haul, partly over the Norfolk & Western and partly over the Southern Railway, a state of affairs naturally not conducive to cheapness of fuel. But in case the coke of Big Stone Gap proves all that is anticipated, coke ought to be had at a reasonable rate.

The product of the Embreville furnace is marketed principally in the West at foundries which need a strong, special iron. However, the iron is beginning to be in demand for malleable work. Possibly the malleable shops will eventually consume the larger part of it. The analysis of most of the iron thus far made is an ideal one for malleable work. The malleable-iron concerns which have bought small quantities of the iron for experimental purposes have in each case sent in return orders for larger quantities for further experiments, reporting their initial tests as entirely satisfactory. Pig suitable for malleable iron from south of the Ohio River is something of a novelty; but this development is in keeping with the other exceptional features of the Embreville iron.

**Bridge Building in Asia.**—The scheme relative to the construction of an iron bridge across the Tigris at Bagdad has been approved by the Turkish Ministry of Public Works. The bridge will have a total length of about 660 ft.

**New Russian Iron Works.**—The formation of a new company to establish iron works in Southern Russia is announced in Germany. The capital stock is 4,000,000 rubles gold (\$3,000,000), and the chief promoters are the Dresdener Bank and the Sachsener Maschinen Fabrik, of Chemnitz. The company will build blast furnaces, a foundry, a steel plant, a rolling mill and machine shops. Besides castings, bar iron and steel and rails, the works will manufacture steam engines and locomotives also.

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## A BUILT-UP WOODEN-FRAMED STAMP BATTERY.

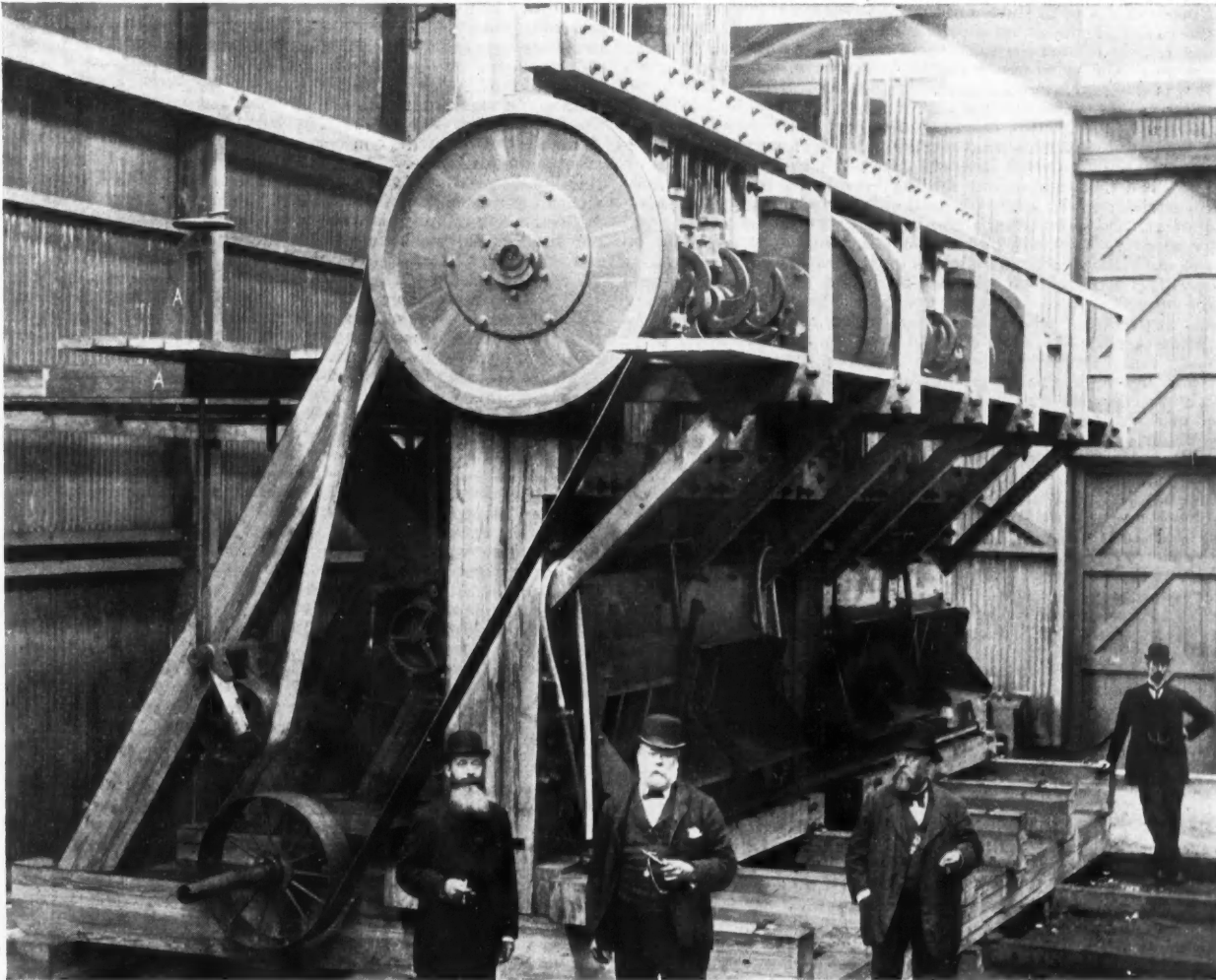
We illustrate herewith a stamp battery of novel construction, made for the Bacis Gold and Silver Mines, which are situated on the Sierra Madre, near the city of Bacis, Durango, Mexico. In designing a mill for these mines it was necessary to build it up so as to make the parts all portable on mule-back. It was impossible to obtain suitable wood for the framing on the spot, and the iron-frame design was not considered desirable. A new departure has been made by constructing the framing of wood, and at the same time building it up of pieces of wood which individually can be transported by mule. The frames are constructed of pitch-pine planks 3 to 4 in. thick, having thin plates of mild steel sandwiched between them and similar plates on the outside, the whole being securely bolted together. The mortar blocks are made up of square pieces of pitch-pine bolted together without steel plates. The cam-shaft pulleys are built of wood and are 5 ft. diameter and 10 in. face. The cam shafts, stems and housings are of mild steel. The mortar-box bottoms are of cast iron, made in sections, bolted together. The boxes are fitted with forged steel

## THE OPENING UP OF OUR BIG GOLDFIELD.

Written for the Engineering and Mining Journal by Dan De Quille.

The goldfields of the world are at present prominently "at the front" and are attracting an unusual amount of attention among capitalists in the great financial centers, particularly across the water in the principal countries of Europe. A great deal has been written of late in regard to new gold discoveries in various countries, and the accounts given of these have been read with much interest by all men of affairs from the fact that gold is now about the only raw product which has not suffered in the great decline in value brought about in the last few years. There is an ever-increasing demand for gold, and the mining of the yellow metal is about the only industry in which the man of capital can invest his money with a certainty of receiving a good price for his product.

While the people of England, France and Germany have been booming the mines of South Africa, West Australia and India, little has been done by our people or any other people for the development of the gold-bearing



A BUILT UP WOODEN FRAMED STAMP BATTERY.

false bottoms, and the shoes and dies are of chrome steel. The stamp heads weigh 750 lbs., and no other part weighs over 400 lbs. The number of stamps is 20, and they will be driven by a turbine of 150 H. P. The battery has been made by the Chatteris Engineering Company, Chatteris, England, from the design of Mr. John Darlington, of London, the engineer of the Bacis company.

**Welding Metals.**—Experiments recently made by the Royal Society of Belgium in connection with the welding of metallic bodies by simple pressure at heats below their fusing points, have demonstrated the fact that the most perfect joints are obtained with gold, lead and tin, and the weakest with bismuth and antimony. In the course of the experiments cylinders of pure metal, with smooth surfaces, were brought together by a handscrew and kept at a temperature of between 200° and 400° for from three to twelve hours. When separated the break in no case corresponded with the jointed surfaces.

**The Action of Sulphur Vapor on Copper.**—Before a recent meeting of the Institution of Electrical Engineers Mr. R. Appleyard read a note on this subject. When a copper wire is exposed for some time to the action of sulphur vapor it becomes entirely converted into sulphide of copper, and it is found that there is a fine axial hole running down the rod of sulphide formed. Rods of copper of square section cut from a block of copper, after exposure to the action of sulphur vapor, also exhibited the axial hole, the rod of sulphide formed being of circular cross-section. In every case the diameter of the rod of sulphide formed is about twice that of the original rod of copper. Delta metal was found not to be acted upon by the sulphur vapor.

veins of this country, though we have the richest and most extensive gold field in all the world; reaching, as it does, from the north line of Mexico to the frozen regions of the Arctic Ocean and from the Rocky Mountains to the shores of the Pacific. While exploration and development, backed by an abundance of capital, have been active in South Africa, Australia, and India for years, our great goldfield has been permitted to lie fallow. Here and there in California a few of the old productive mines opened in times past were steadily worked by their owners, as they had been for 20 or 30 years, but there was seen no disposition to branch out and develop new mines, although the whole country was known to be rich in gold. Miles of the great mother lode, which extends from Mariposa County almost to the Oregon line, were lying untouched in every county through which it passes, and there were lying idle hundreds of other veins in systems outside of the main gold belt, but it was only here and there that any work on any of these veins was done, and then it was generally in a small way by some old miner who was obliged to dig or starve. The fact was that about fifteen years ago mining in California was warred upon and brought into disrepute. The ranchmen of the valleys inaugurated a legal war against the miners of the mountains, and succeeded in shutting down all the hydraulic mines. The men of the mountains were stigmatized as "outlaws" and "bandits." Spies were sent up into the mountains to watch them, and when a man was caught washing out a little gold in order to procure food for his hungry family he was arrested and sent to jail in one of the valley towns. Many mountain towns were killed and thousands of fine paying properties rendered valueless. Those who had money went down into the valleys and began life anew, while the others eked out an existence by drifting and scraping bedrock.

When the people of the valleys had killed mining they started a boom in orange groves, town sites and fruit farms and ran such properties up

to a high figure. All who had money went into these speculations and the hundreds and thousands of men and women who came from the East with money invested it in town lots, fruit farms or orange groves. Nobody put a cent into mines, though there were lying idle and unnoticed all along the mother lode the finest and richest gold properties in the world. Great mines at Grass Valley, Nevada City, Sonora, Angels and other points that had been steady producers for thirty to forty years were the best evidence in the world of the richness and permanence of the mother lode, but no one would look at a mine; all were after orange groves.

But times are now changing in the "Golden State." There is beginning to be seen a return to the old original industry of that State. Mining is again coming to the front and it is coming to stay. Whoever gets a mine on the mother lode will be the owner of a portion of the greatest gold-bearing quartz vein in the world. This is now beginning to be seen and well understood by scores of mining men.

While orange groves were being boomed and mining fought down in California, miners in Nevada, Utah, Idaho, Montana, Colorado and elsewhere in regions east of the Sierra Nevada range were paying little attention to any other mines than those producing silver and copper. After the miners of Idaho, Montana and Colorado had worked out the great and rich placers they turned their attention to the silver mines; they did not go in search of the veins which had thrown off the gold found in the placers. It was the general opinion that the gold-bearing quartz veins east of the Sierras were not likely to prove reliable or permanent, and they received but little attention from prospectors. All were after silver. When they wanted a gold mine they would go to California and hunt up a good substantial one—one that it would do "to tie to."

Thus it happened that while gold mining was being pushed in Australia, South Africa and India, with millions supplied for prospecting and development, little was being done in the great Pacific Coast gold belt. But when silver was so beaten down in price that it would no longer pay to mine that metal the miners of the silver-producing States began to turn their attention to the long-neglected and almost ignored gold-bearing quartz veins. It was soon found that the gold-bearing quartz veins of the Great Basin region and other regions lying to the eastward of the Sierras were as reliable as those on the California side; also that many veins rivaled those of the "Golden State" in richness. Marked improvements in mining and milling machinery, in explosives and in processes for the extraction of the precious metals from the crushed ore made it possible to profitably work great deposits of low-grade ore which some years before could not have been touched, and these big low-grade veins have everywhere from the Rocky Mountains to Alaska proved steady and reliable producers.

Confidence having been established in the paying and staying qualities of the gold veins of the arid regions, it was not long before many prospectors were in the field in all the States and Territories between the Rocky Mountains and the Sierra Nevada Range, and the result was the discovery of an astonishingly large number of rich and promising veins of gold-bearing quartz in every section of the country. But to sink shafts and run tunnels in hard rock for the proper opening of mines is a kind of work that requires time, and besides there are roads to build and many difficulties to be overcome in getting machinery to mines situated in wild and rugged mountain regions. Also in the opening up of mines in shape for work, and in the purchase, transportation and setting up of suitable machinery a great deal of money is required, but until quite recently our miners have received but little assistance from the great capitalists of the country, but were obliged slowly to "work out their own salvation."

Thus it happens that, while there have been booms in the mines of the South African and Australian goldfields that have wildly excited the financial centers of the world, the mines of our own far greater goldfield have hardly been heard of outside of the States in which they are situated. But, then, the people of England backed up their miners and prospectors with liberal supplies of money, and when deposits had been found that proved sufficiently rich to be profitably mined, they sent out millions to be used in pushing development work. However, our people at last appear to be moving, and we now see the commencement of development work in our own big goldfield, which will increase from year to year, resulting in a total gold production that will far surpass that of any other region in the world.

Cripple Creek, Colorado, and Mercur, in Utah, are centers now attracting a large share of the attention of the American mining world. They are undoubtedly developing into rich and permanent gold-mining camps. At Cripple Creek is found a perfect network of astonishingly rich gold-bearing quartz veins, while at Mercur there has been discovered an immense blanket-like auriferous deposit. In this vein no ore so rich as the leading mines of Cripple Creek produce has yet been found, but the yield is sufficient to pay a good profit for working, and the ore is of a very even grade. The deposit is in a very peculiar formation and much resembles that of the Rand Basin, South Africa. An immense sheet of auriferous material seems to underlie a great area of country, and wherever shafts are sunk to sufficient depth to this deposit good pay is found. The work of prospecting steadily extends the area of paying territory, and no limit has yet been found to the deposit in any direction. Shafts widely separated and differently situated as to range have cut the deposit upon attaining the proper depth, and everywhere it has been found the same. The ore contains a small per cent. of cinnabar and also possesses other ear-marks by which the main paying deposit is at all points recognized as soon as reached. Every week shafts in some direction are tapping the big vein in some new place. Already there are many millions in sight in the mines that have been opened up and many new shafts are being put down, necessitating the erection of hoisting works and first-class machinery. Mercur is sure to become a great and permanent mining center. Many men of capital are now interesting themselves in the development of the big auriferous belt. The bounds of the district will be greatly extended this summer and many interesting and valuable discoveries are sure to be made. Above the main vein—that showing cinnabar—is a vein containing a large amount of arsenic as a distinguishing feature. It also contains a paying amount of gold and can be worked to a profit by a special process. Below what is now called the main vein, a third vein may yet be found. Big prices are being paid for mines that have reached and opened out into the ore deposit.

No doubt there are many other places on the Pacific Coast, of which little is now being said, which upon proper development, would prove equal to either Cripple Creek or Mercur. It would seem that the concentration of men and capital upon a point where there are leading mines of merit very quickly makes a showing that attracts attention far and wide. It was so in South Africa, at Cripple Creek, at Mercur and at many other places in times past. Where many men and plenty of money are brought to bear upon a place prospecting is persistent and thorough, whereas with no excitement scores of veins may remain undiscovered. To discover all there is in a section of country requires very close examination. There may be a whole system of paying parallel veins where only the central or leading one shows up on the surface.

De Lamar, Nevada, a camp which is not being boomed, and in regard to which there is at present no special excitement, if thoroughly prospected and developed would probably prove at least the equal of either Cripple Creek or Mercur. It is here that is situated one of Captain De Lamar's richest Pacific Coast mining properties. He owns a large group of wonderfully rich gold-bearing veins and with his present milling facilities works about 80 tons of ore a day, taking out from \$60,000 to \$100,000 a month. In a short time the mill will be so far enlarged as to work 200 tons of ore daily. He has in sight in his several veins an almost inexhaustible supply of ore. When the enlarged mill starts up and 200 tons a day are worked—which will be in about 30 days—the monthly shipments of gold will be immense.

Near the De Lamar is the April Fool group of wonderfully rich lodes. The ore of these is as rich as that mined in the De Lamar veins. The April Fool people will soon have a mill in operation. They have in sight a vast amount of ore. The town of De Lamar, which has grown up near these mines, is one of the liveliest camps in Nevada. Some exceedingly rich ore has been found two or three miles north of De Lamar. Doubtless, with the close and vigorous prospecting that has characterized Mercur and Cripple Creek there would here be developed a very extensive mineral belt. In the system of rich parallel veins now being mined there is every indication of the existence of a great and rich district. All this section of country along near the line of Utah and Nevada is rich in veins of gold bearing quartz. New discoveries are constantly being made. It is a wonderful region, and were it in South Africa people would be risking their lives to get to it. Captain De Lamar is one of the sharpest of our big mining men. He can smell a rich mine though it be hidden in the mountains a thousand miles away.

In the reports of the European Mining Exchanges we see "Americans" very slightly mentioned, and then the mines spoken of are such as are here hardly heard of. At the same time English, French and German capitalists are in the Pacific Coast region and are quietly "taking in" first-class mining properties of all kinds—quartz, drift and hydraulic. They are going for paying mines and they are not putting their stocks on the market either in London, Paris or Berlin. They get their money out of their mines and divide it on the spot among the members of their several companies. They are not speculating in stocks. They are the owners of many fine mining properties in California from one end of the State to the other and also in other States and Territories. The Sierra Buttes Company is one of the oldest of the English companies in California. In the past 20 years they have taken out at the Sierra Buttes mine over \$11,000,000, and from the Plumas-Eureka \$8,000,000. We hear nothing of their stocks on the London market. They are so well satisfied with what they are getting out of their mines that they are looking out for other paying properties.

In conjunction with the Seligmans the London Exploration Company have taken hold of the Oneida mine in Amador County, on the "Mother Lode." The mine has been owned for several years by the Seligmans. The Exploration Company are sinking a shaft on it that will cost \$200,000. The work is under the superintendence of Ross Browne, at one time of the Comstock. In New Mexico the company is said to have taken hold of a big mining property near Carlisle, upon the recommendation of Louis Janin. In Alaska this company is interested in the Treadwell mine; also owns a mine of great promise near the Treadwell.

Although "Americans" cut a sorry figure in the European markets, European capitalists are in the field everywhere on the Pacific Coast, and are quietly picking up paying properties. They find this much safer than dealing in "Kaffirs." The French are fond of hydraulic mines, and usually go up into Northern California, along the Klamath River, where hydraulic mining is permitted. The foreigners generally go in for a large amount of territory on which work has been done on a small scale; then they so enlarge the plant, of machinery and increase the facilities for working that they are able to handle large quantities of material and obtain big returns. If they lack money after securing a desirable property they take in some friend or relation in the old country. This is the way in which American mines are now being dealt in by Europeans. They say that when they come over here they get mines, but in London Americans offer nothing but wild-cats.

**Washburn & Moen Co. Increases Capital.**—The stockholders of the Washburn & Moen Manufacturing Company have re-elected the present board of directors. It was voted to increase the capital stock from \$3,500,000 to \$4,000,000. A quarterly dividend of 2% was declared.

**The Austrian Petroleum Trade.**—The petroleum producers of Galicia and the refiners have been for some time negotiating as to the renewal of the pool agreement under which the business has been conducted for some time past. The contract expired June 1st, but the new one has not been concluded, the Presburg refineries demanding a larger share of the trade than the other producers were willing to concede. A provisional arrangement has been made, pending further negotiations.

**Electrical Aluminum Phenomenon.**—A curious phenomenon, first discovered by M. Charles Margot, was shown in a modified form by Professor Roberts-Austen at the recent meeting of the Society of Arts. An electric current was sent through an aluminum wire, raising it to a temperature of 400° above its melting point. Strange to say, it did not fall, the film of the oxide on its surface holding it intact. In this condition it was attracted, owing to the current within it, by a magnet, and by careful manipulation could be made to tie itself into a knot.



THE TREATMENT OF TIMBER FOR USE IN MINES.

This subject has been comparatively and in most cases entirely neglected in this country on account, on the one hand, of the abundance and cheapness of timber, and on the other of the profit being made by the enterprise in question, the latter resulting in carelessness as to durability. Abroad, on the contrary, great study has been made of the best methods of prolonging the life of timbers underground and we quote from a paper by Mr. Robert Martin, of the Mining Institute of Scotland, read before that society as follows:

The treatment of pit wood to render it durable and incombustible, though apparently a small matter, is of great importance for the safer working of mines and deserving of the attention of mining engineers.

Falls of roof and sides are, as is well known, one of the most prolific sources of accidents in mines, and probably no one will be disposed to deny that many of these are due to decay or dry rot in the timbering. But in addition to loss of life and injury to person there is considerable expense at every colliery due to falls, such as stoppage of plant, clearing the rubbish from the roadways and the replacing of timber. Systematic propping is good, and to be insisted upon, but the propping and securing of all main passages with timber as free as possible from decay is surely better.

Circular shafts lend themselves to lining with brick and cement, which are of such an enduring nature that anything else is scarcely ever thought of. Rectangular shafts, so common in Scotland, are almost universally lined with timber. It is very evident that this wooden lining should be so treated as to preserve it from decay or fire as long as the colliery is likely to be in use; the more so if the sides of the shaft are of soft materials. Those in charge of old shafts filled with winding-cages, pumps constantly in motion, haulage-ropes, pipes, etc., know the difficulty of carrying out thoroughly the repairs which may be absolutely necessary. The danger to all concerned from decayed timber in a shaft may be very great.

The writer knows a colliery, the pits of which were sunk through 60 ft. of sand containing very little water. The barring was 6 in. thick of good pitch-pine, and was water-tight. The colliery had been in existence for about 16 years. A portion of the area of one of the two pits was spaced off and used as the upcast shaft for both. The ventilation was produced by three furnaces and the furnace of a steam boiler, all situated near the shaft in the various coal-seams being worked. After a long spell of wet weather, one forenoon without the least warning, at a depth of about 30 ft. from the surface, the barring of the upcast shaft suddenly gave way through decay; a large quantity of sand and water rushed into the pit, and falling down the shaft reversed the air-current. Fortunately the miners were idle on the day of the collapse, and the furnaces were burning low, or the consequences might have been much more serious.

Underground fires in mines and fires on the surface at the pit-mouth are of frequent occurrence. These are sudden, destructive and frequently fatal. This is largely due to the use of ordinary timber in the engine, pump and lamp rooms underground, and in the erections which are situated near the pit-mouth on the surface. This timber is often so dry and sometimes so saturated with oil and grease, especially the floors, as to be readily inflammable, and an overturned lamp, a lighted match thrown carelessly down or a spark from a passing locomotive may give rise in a few seconds to an uncontrollable mass of smoke and flame. It is not uncommon to see, in the midst of a lofty and extensive series of wooden erections at a pit-mouth, an open fire-lamp or brazier burning, the ashes and cinders from which fall on an iron plate resting close on the planks of the staging. It would seem to be the correct thing wherever machinery is placed, or stationary lights of any sort are fixed underground, and in surface erections at the pit-mouth, that only iron, stone, concrete or timber rendered practically incombustible should be allowed.

A method of treatment of timber known as the Henry Aitken method is in use at Niddrie collieries. In this process the idea is to soak the timber in hot or boiling water containing a strong solution of common salt and chloride of magnesium. The timber treated should be free of bark, well-seasoned, and thoroughly dry. For this purpose it is kept under cover for a time. The props that have been found most suitable are those free of bark and natural sap. These are mostly shipped from Sweden, and from several ports in Norway. The ordinary good class of battens and deals from Sweden can also be treated to great advantage.

The plant at Niddrie collieries consists of two malleable iron rectangular boilers made of 1/2-in. plate, each 19 ft. long, 4 ft. wide and 3 ft. deep, built into a brick setting, with a furnace under each, a flue along the bottom and sides, and a chimney. There being no waste steam, the boilers are fired with dress coal, and kept as nearly at the boiling-point as possible. The tanks are covered with loose boards. The proportion of common salt to chloride of magnesium should be as 7 to 1, and there must always be unmelted salt at the tank bottom. One tank is emptied and filled daily with props, crowns, sleepers, wooden bricks, wedges, ladders and bratticing. This gives nearly two days' boiling for each tank. The props, being mostly 6 in. in diameter, require boiling for this length of time, in order that they may be thoroughly penetrated by the salts. One day's boiling is quite sufficient for 4-in. prop-wood. Pitch pine and larch require longer boiling than the softer woods. Each tank holds about 50 cwts. of all kinds of timber. About 15 tons of treated timber can be produced per week at a cost of:

	£	s.	d.
Dress, 2 tons at 3s. per ton.....	0	6	0
Salt, 18 cwts. at 21s. 6d. per ton.....	0	19	7
Chloride of magnesium, 2 1/2 cwts. at 3s. 7 1/2d. per cwt. . . . .	0	9	1
Wages of one man attending.....	0	18	0
Total.....	£2	12	8

or, say, 3s. 6d. per ton. This adds about 1s. 5d. per 100 ft. to the cost of 6-in. prop-wood. The royalty charges have to be added to this cost.

When the timber is removed from the boiler it is soft, and not in a condition for immediate use. It is dried by being put into a covered shed or stacked in the open air. A few days' exposure brings it back to nearly its original strength. When stacked on end, the props dry more rapidly than when placed horizontally.

The average life of ordinary prop-timber at Niddrie collieries is about

ten months, thus involving frequent and costly renewals in brake inclines, return airways, and horse roads. In some parts, where the decay is very rapid, timber treated as above described has stood since the latter end of 1893, and it is still as fresh as when put in.

The temperature of the air varies from 68 degs. to 80 degs. Fahr. in some parts dry, in others moist. It is found that hutch-sleepers of home-grown fir, spruce, and, in fact, every kind of wood subject to decay, used in a pit, is made much more durable by this treatment. In the mine passages, salted timber is easily distinguished from other timber by its damp appearance.

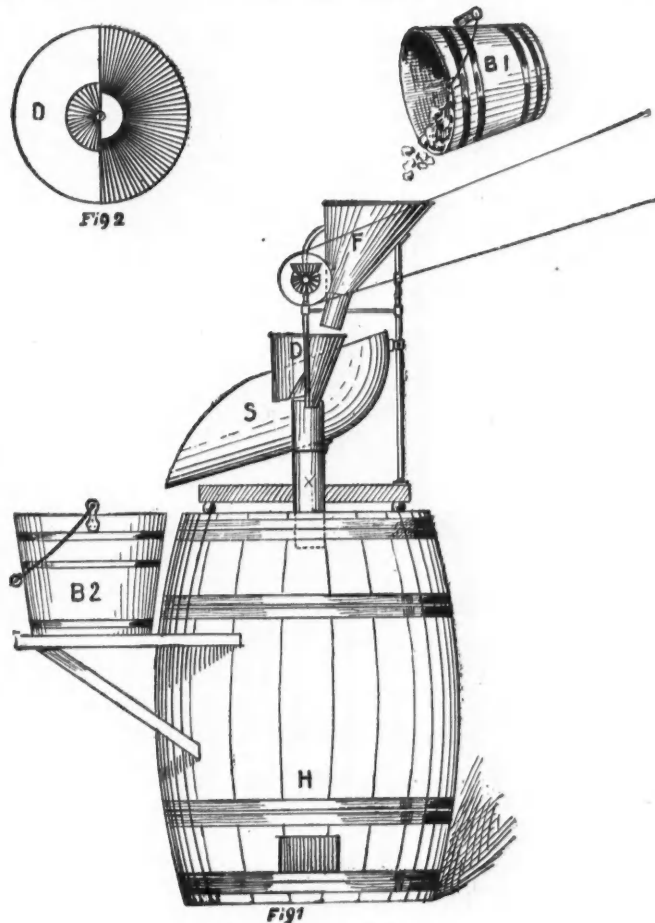
No experience has been gained at Niddrie as to the behavior of salted wood in case of fire; happily there has been no occasion. As a precaution against fire, if salted wood were used for lining or flooring engine-rooms or pit-head erections, being always damp, it would not catch fire so readily or burn so fiercely as ordinary timber does.

The cost of the plant is about £100.

BRIDGEMAN'S ASSAY OFFICE SAMPLING MACHINE.

We present herewith an illustration of the Bridgeman (size D) ore sampling machine, as placed on the market by the E. H. Sargent Company, of Chicago. It is a modification of Bridgeman's large machine, and is intended for assay offices, sampling works, smelting works, etc. It is used for the quick and certain cutting down of the miscellaneous small samples (from 5 lbs. to 500 lbs. in weight) that are constantly being received by all assay offices. It will sample anything, from the finest pulp to crushed material of one-half inch or more in size.

The material is fed either by hand, or (with large lots) from a suitably supported bucket B, into the funnel F, the divider D (Figs. 1 and 2) be-



ASSAY OFFICE SAMPLER.

ing first set in rotation by hand, clockwork or any convenient power. The divider gives, as will be seen by inspection of the drawing, two cuts to the revolution, one (the sample) being delivered to the shoot S and bucket B<sub>2</sub>, and the other (the rejected portion) by means of spout X to the receptacle H; that is, with uniform flow and speed it cuts the material in half. The divider may easily run 100 revolutions per minute, giving a very much greater distribution and division than can be secured in any other way. The sample, should it be too large, may be cut again and again, until of suitable size. The operation is very accurate and very rapid, being about as fast as the material will flow through a 1-in. spout.

The divider D, as usually furnished, cuts the material in half, as above explained. When desired, a quartering divider, retaining one-quarter and rejecting three-quarters, will be furnished instead,

Demand for Copper Abroad.—The rise in copper is caused by consumers and the public finding consumption exceeding production. While supplies are offered freely, speculators absorb them readily. There is more demand for refined copper for India and elsewhere. A contract has been placed for French Pacific Cable which requires 900 tons of copper wire. American Electrolytic Copper has been repurchased owing to reduced output of American mines.

## THE CEDAR VALLEY QUARRY.

Written for the Engineering and Mining Journal by Samuel Calvin, State Geologist of Iowa.

In many respects the stone quarry owned and operated by Mr. E. J. C. Bealer, in Cedar County, Ia., is one of the most notable and interesting in the entire State. The location of the quarry was well chosen. So far as relates to the quality of the stone it is capable of furnishing, and the courage and business ability on which success in such an enterprise depends, are manifest in the fact that this quarry is more thoroughly and expensively equipped with labor-saving machinery for taking out and handling stone than any other within the limits of Iowa.

The Cedar Valley quarry is located near the middle of the north line of section 19, in township 80 north, and range 3 west of the fifth principal meridian. In front of it flows the Cedar River, while behind it, and flanking it at either end, stand the low bluffs bounding the valley of this stream.

The quarry is opened in the right bank of the river. The stone taken out was as a vertical scarp in the face of the bluff. The work has been extended laterally into the bluff until the stone, above the level of the river, has been removed from an area some acres in extent. The quarrying has been carried downward over an area of 300 ft. long and 125 ft. wide until the bottom of the quarry is at present about 60 ft. below the water level of the adjacent Cedar. The whole thickness of the quarry stone is more than 116 ft. (Fig. 1).

The geological position of the beds worked at this quarry is the same as those worked at Stone City. Stratigraphically the rocks at both localities belong to the Upper Silurian system, to the Niagara series, and to what has been called in Iowa the Anamosa stage. The strata of the Anamosa stage at present lie in detached basins, and, while in a general and

a few seasons in exposed structures, the "flint" portions become separated from the rest, and the block is actually cleft into two or more parts. In the Cedar Valley quarry there are no "flint seams," and so its product is free from this source of weakness.

The stone in the upper part of the quarry of Cedar Valley, for a thickness of 32 ft., is inferior in quality and is used for riprap or rubble, or it may be run through the steam crusher and converted into macadam or railway ballast. The lower 94 ft. affords marketable grades of bridge stone and dimension stone, and the quality of the product improves with the depth at which the stone is taken out.

Above the Cedar Valley quarry stone there lie the usual superficial materials of the region. Next to the stone there is a thin layer of pebbly drift; upon the drift is a bed of sandy clay, and this is followed by a deposit of fine clay, free from sand and pebbles, and known to geologists as loess. The drift contains occasional boulders one or two feet in diameter, all of which, so far as observed, belong to the types characteristic of the older or Kansan drift sheet.

These unconsolidated beds, embracing the loess, sub-loessial sands and drift, are stripped off by washing. Very effective hydraulic machinery is used, consisting of the necessary steam pump, hose and other details necessary to a complete outfit. Hydraulic stripping is one of the effective means employed here for reducing operating expenses.

Besides the hydraulic stripping machinery the quarry is provided with two stationary steam plants, which furnish power to derricks and pumps. For the purpose of providing additional power a new 80 H. P. stationary boiler has recently been added. There are also two 15 H. P. portable engines and boilers to be used when occasion demands. There are three double channelers and one single one, each equipped with boiler and engine to supply its own power. There are three steam drills, five direct

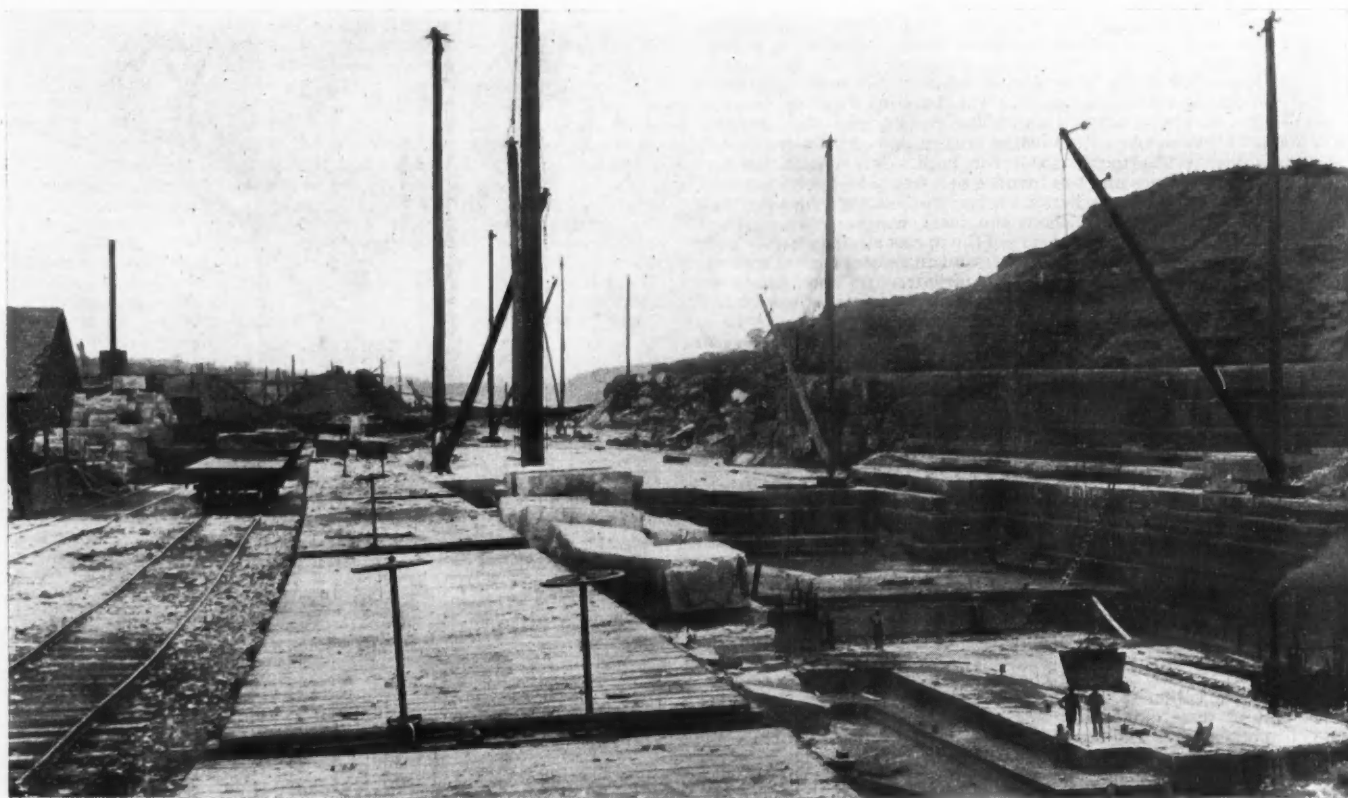


FIG. 1.—BED OF CEDAR VALLEY QUARRY STONE, 116 FT. THICK.

broad way they present the same characteristics in all known localities where they are exposed, they yet vary locally to such an extent that each basin may be distinguished by certain features peculiar to itself.

At Cedar Valley the quarry beds are, in the aggregate, much thicker than at most other exposures of the same stage, the mass of sediments is even less definitely divided into layers than usual, and there is less than the usual tendency to split along the planes of lamination. As at nearly all other exposures of the Anamosa beds, the Cedar Valley stone is a light-colored, warm gray or buff laminated dolomite, the light gray tints predominating. The best stone as usual occurs in the lower half of the deposit. The absence of bedding planes, by which fact the mass is reduced to a single layer though many feet in thickness; and the firm cohesion between adjacent laminae make it possible to take out a much larger amount of heavy dimension stone than can generally be obtained at quarries worked in this same formation. It is only necessary to decide what thickness is wanted, and with proper manipulation the blocks may be split along the lamination plane corresponding to the pre-determined dimensions (Fig. 2).

In some of the basins occupied by the Anamosa beds there are seams of fine-grained, non-laminated limestones varying from a fraction of an inch to 18 in. in thickness and known to quarrymen as "flint." It is needless to say that these seams are not made up of flint. The material composing them, however, is hard and brittle, and tends to break into angular fragments by the action of the weather. The presence of such a seam, however thin, in the midst of a block of stone is enough to cause the block to be regarded with distrust. The rate at which the "flint seams" and the ordinary laminated portions of the stone expand and contract as a result of changes in temperature, is not the same; the coefficient of expansion differs in the two kinds of stone, and the result is, that, after

and two indirect steam hoists capable of lifting from four to six tons each, and one 20-ton direct connected hoisting apparatus; 11 large derricks, to which others will soon be added; one steam crusher which, by use of a recently installed electric light plant, it is expected to run night and day; two pumps to keep the water out of the pit from which the principal part of the stone at present is quarried; and a thoroughly equipped machine shop where tools may be repaired, or the most complicated machines may be rebuilt.

One of the channelers used in this quarry, it is claimed, holds the "championship record" in its line of work. It has been made to cut 400 ft. in five hours, and for 10 hours its record is 750 ft. In constructing some of the new derricks soon to be put in place timbers 72 ft. in length, brought from the spruce forests of Washington, will be used. In connection with derricks, and in various other operations, 100,000 lbs. of wire rope are employed.

The channels cut by the machines are 6 to 12 ft. deep and 6 ft. 6 in. apart. Two systems are cut at right angles to each other, so that when the machines have completed their work a number of combined or prismatic blocks are ready for removal. These blocks are usually divided transversely by the process known as "plug and feather," and they are again divided horizontally by being split parallel to the planes of lamination. As a rule the blocks hoisted from the lower part of the quarry are approximately 6 ft. 6 in. long and 3 ft. 3 in. in width and thickness. Their weight is something in excess of four tons. The blocks raised from the quarry may be loaded directly on cars, or they may be laid down in the yard to be reduced by skilled workmen to the shapes and dimensions required by the necessities of the structure for which the stone is intended.

The product of the Cedar Valley quarry includes crushed stone, riprap



rubble, curbstone, three grades of bridge stone and dressed dimension stone of all grades which the market demands. Mr. Bealer began work at the present quarry in November, 1894, and the amount of stone shipped up to September 30th, 1895, aggregated 30,865 carloads. In 1892 the output reached the sum of 6,765 cars, or more than 20 cars for each working day of the year. With the present equipment, orders for 30 carloads daily can be easily filled, and during the busy season the daily average shipment of this number is often maintained for weeks in succession. The substitution of machinery, wherever possible, for hand power and horse power, secures both economy and efficiency in operating the quarry. Whenever an old appliance can be replaced by one more effective it is done regardless of the initial expense; the purpose being to reduce operating expenses to a minimum. That this purpose is accomplished will be admitted by anyone who sees with how little expenditure of time, and with how little apparent effort, the great blocks of stone are detached from the native ledges and car after car is loaded and made ready to be despatched to distant markets. To guard against overflow during any unusual rise in the river, a levee has been constructed along the water front, between the flanking bluffs, at an expense of \$20,000.

LIGHT RAILWAYS: THEIR CONSTRUCTION AND WORKING.\*

The Belgians have been fortunate in working out the problem of light railways to success in a manner peculiarly suited to the circumstances of their country. "In 1885 the National Society of Local Railways was founded to aid agriculture, industry and commerce, during a serious depression. It was determined to build light railways or steam tramways along existing roads, and with a narrow gauge . . . to enable agriculturalists and others to convey their produce to local markets, and also to compete with foreign producers."

The roads throughout Belgium are set out with a view, in the first place, to perfect grading, which makes them admirably adapted for the location of steam tramways. The site adopted necessitates, however, the use of tramway grooved rails, which are not adapted for ordinary railway rolling stock; the object of the tramways was the conveyance of country

THE METRIC SYSTEM.

The London *Times* has recently given considerable attention and space to the discussion of the advantages to be gained by the adoption of the metric system. Lord Kelvin, whom many of our readers will recognize better under the more familiar name of Sir William Thomson, one of the foremost and most practical scientists of the century, writes as follows:

"In your very interesting leading article on the metric system in the *Times*, you treat, in what seems to me a thoroughly clear and fair manner, the question at issue in respect to the demand for legislation on the subject.

"While not ignoring the preference of merchants and manufacturers and scientific men for the metric system, you rightly give prominence to consideration for the convenience of the poorer classes, 'who have no great power to make their voices heard, at least in such discussions as these.' If it were true that the adoption of the metric system would be hurtful, or even seriously inconvenient to them, that would be a strong reason against its being adopted in England. But in this respect we have happily a very large experience, and I believe it is quite certain that among the Germans, Italians, Portuguese and other European peoples who have had the practical wisdom to follow the French in the metric system, all classes are thoroughly contented with it, and find it much more convenient for every day use than the systems which they abandoned in adopting it.

"You rightly brush aside the duodecimal system as 'an ingenious mathematical exercise, but one whose figures must be read back into a decimal system before they can convey any meaning.' It seems to me, however, that you are quite right in maintaining that in ordinary everyday reckonings the shopkeeper and his customers must have halves and quarters; but I cannot go so far with you as to say 'halves, quarters and thirds.' Was any poor child ever sent to buy a third of a pound of tea? Did any thirsty traveler, other than a mathematician, ever ask for a third of a quart of beer? It may be taken as a practical result of natural selection, permanent through thousands of years, that halves and quarters of the ordinary unit for any class of measurement are natural and convenient.



FIG. 2.—LAMINATION PLANES, CEDAR VALLEY QUARRY.

produce and passengers to local markets, and the cost of a tramway on roads is enhanced by the width of paving, so that there were no objections to, and many advantages in, a narrow-gauge construction.

In July, 1894, there were 75 light railway or steam tramway lines in Belgium, extending over 836 miles, the cost of construction, land and rolling stock amounting to an average expenditure of £2,967 per mile. The gauge over the greater part of the light railways was the meter gauge, 3 ft. 3 3/8 in., the only departures from it being to meet the Dutch light railways, 3 in. broader, and a few miles of standard railway gauge to run into the main lines.

The success of the Belgian light railway system appears to be due to its rapid extension to meet the increase of trade and its adaptation to the wants of the country, and to the clever and public-spirited management of the National Society, which is continually re-arranging and reducing tariffs and fares to meet the special requirements of agriculture.

**Gold Accumulation in England.**—During the year 1895 the imports of gold into England were the largest on record, amounting to £35,800,000, of which £11,450,000 came from the United States, £8,200,000 from South Africa, £6,250,000 from Australia, and £3,300,000 from India and China. The exports amounted to £20,400,000, so that on balance the net addition to the gold stock of England was £15,400,000. For the last five years the addition has been £37,330,000.

**Aluminum in Scotland.**—The British Aluminum Company, which was formed in 1894 to produce aluminum at Foyers, Scotland, from bauxite obtained from Ireland, will shortly be in a position to place its products on the market on a large scale. For constructional work the company's specialties will be two alloys containing small quantities of tungsten and copper, and tungsten and nickel, respectively, and named wolframium and romanium. The specific gravity of the former is 2.74, and of the latter 2.75. In addition to these, aluminum bronzes containing 2 1/2% to 10% of aluminum, and ferro-aluminum containing 10% of aluminum will be supplied.

"In the metric system we find the kilogramme, half-kilogramme and quarter-kilogramme continually used in weighing. There is no obligation to always call the half-kilogramme 500 grammes, or the quarter-kilogramme 250 grammes. For smaller quantities the gramme is a thoroughly convenient measure. For distances traveled we have the kilometer, half-kilometer and quarter-kilometer. For measuring cloths, ribands and tapes, in retail shops, we have the meter and centimeter, which are thoroughly convenient and popular for all ordinary use. The centimeter (about four-tenths of an inch) is a thoroughly convenient smallest unit for most practical purposes; and for finer measurements the workman, under the metric system, has a great advantage in the millimeter and half or quarter millimeter over the British workman with his troublesome and fatiguing eighths, sixteenths, thirty-seconds and sixty-fourths of an inch.

"The great advantage of the metric system is its uniform simplicity, all measurements of length, area, volume and weight being founded primarily on the kilometer. The kilometer is very convenient for measuring great distances on the earth's surface, because a journey a quarter round the world is nearly enough 10,000 kilometers for almost all practical purposes. If our traveling was habitually, not on the earth's surface, but along diameters through the center, there would be some practical value in the merit discovered for the British inch by Sir John Herschel, that it is approximately one one-hundred-millionth of a diameter of the earth.

"The thousandth of the French ton is the kilogramme; and the cubic decimeter, or the thousandth of the cubic meter, is the liter, which is the common popular unit for liquid measure; so that anyone who has correct weights can verify for himself his liters or other measures for liquid. This particular merit of the metric system, which, so far as I know, has not been much, if at all, noticed by your correspondents, is of very great importance in mechanics and engineering. In virtue of it the weight of any quantity of material is found in tons, or in kilogrammes, or in grammes, simply by multiplying its volume in cubic meters, or in cubic decimeters, or in cubic centimeters, by its specific gravity; and thus a very great deal of labor which is entailed upon mechanical engineers, civil engineers and surveyors in England under the present system will be done away with when the metric system comes into use.

\* W. R. Smith, M. Inst. C. E.

"But now, considering the wants and the convenience of the whole population, think of the vast contrast between the practically valuable simplicity of the metric system and the truly monstrous complexity of British measurements in miles, furlongs, chains, poles, yards, feet, inches; square miles, acres, square yards, square feet, square inches; cubic yards, gallons, quarts, pints, gills; tons, hundredweights, quarters, stones, pounds, avoirdupois (7,000 grains), ounces avoirdupois (437.5 grains), drams avoirdupois (27.34375 grains), pounds troy (5,760 grains), ounces troy (480 grains), drams apothecaries' (60 grains), etc. Looking at the question from all sides, and considering all the circumstances, I believe it will be found that the thorough introduction of the metric system, for general use in Great Britain, will be beneficial to all classes; and that the benefit will, in the course of a few weeks, be found to more than compensate any trouble involved in making the change."

#### RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

**INJURY TO COAL MINER.**—In an action for injury claimed to result from the illegal negligence of a coal mining company, the burden of proof is on the miner, and he must show that the negligence complained of was the proximate cause of the injury. Where he willfully encounters a danger which is known to him, the employer is not responsible for the injury that may result.—*Massie vs. Peel Splint Coal Company* (24 Southeastern Reporter, 644), Supreme Court of Appeals, West Virginia.

**PLACES FOR WORK.**—Portions of the stope or room from which the ore is being taken, and which, as the work progresses, it becomes necessary to timber, are not, from the time it becomes necessary to timber them, places for work, within the rule requiring the master to furnish his employees a safe place to work. The court said: "As we understand, this stope or room starts from a drift at or near what is called the foot wall, which is the bottom, as distinguished from the overlying stratum of the vein of ore. Both foot-wall and top-wall depart from the level, and dip sharply, in this instance, so that in running the stope on a level it can go but a short distance until the top or overhanging wall is reached; and then the operation is repeated above the lagging, removing the lagging and caving down the roof, supporting the new roof thus formed by new sets placed upon the first. Thus, so far as the lagging is concerned, it has a temporary use merely to enable the miners to push the breast through to the overhanging wall, by supporting the roof. It is a part of the operation of mining, as much as a blast or a staging, and is not a part of the permanent structure."—*Petaja vs. Aurora Iron Mining Co.* (66 Northwestern Reporter, 951), Supreme Court, Michigan.

**STATUTORY RESTRICTIONS IN WEST VIRGINIA.**—The law of West Virginia provides that: No owner or tenant of any land containing coal shall open or sink, or dig, excavate or work in any coal mine or shaft, on such land, within 5 ft. of the line dividing said land from that of another person or persons, without the consent, in writing, of every person interested in, or having title to, such adjoining lands in possession, reversion, or remainder of the guardians of any such persons as may be infants. If any person shall violate such law, he shall forfeit \$500 to any person injured thereby who may sue for the same. The Court held that the statute is constitutional, and by the term injury means the wrong done the party by the violation of the statute. *Mapel vs. Hohn* (24 Southeastern Reporter, 608), Supreme Court of Appeals, West Virginia.

**Pig Iron Production in Belgium.**—The output of the Belgian blast furnaces in April was 66,750 metric tons of pig iron, showing a decrease of 14,825 tons, as compared with April of last year. For the four months ending April 30th the production was 268,520 tons of pig iron, showing a decrease of 35,655 tons, or 11.7% from the corresponding period in 1895.

**New Electrical Company.**—A new electrical manufacturing combination called the Walker Company has been formed. New York, Philadelphia, Boston and Cleveland capitalists are interested. Among them are ex-Governor Flower, Anthony N. Brady, J. W. Hinkley, Mr. Belmont, Dallas Sanders, William Rotch, Parker C. Chandler, Frank Billings and Jacob B. Perkins.

It is stated that the company has just secured the contract for furnishing the electric plant for the New York and Brooklyn Bridge, also for two railroads in Chicago and for some of the equipment for the elevated railway there, and for roads in Kansas City and Detroit and for the store of Jordan & Marsh in Boston. J. W. Hinkley, of Poughkeepsie, who organized the new company, says that no combination will be made with the General Electric and Westinghouse companies. He says the capital of the newly combined companies is only \$5,000,000 as against nearly 20 times that amount as represented by the stock and bonds of the General Electric and Westinghouse companies.

**Dry Amalgamation for Gold Ores.**—A new process of dry amalgamation for gold extraction has been demonstrated in London, according to our contemporary, *Engineering*. In certain districts, notably West Australia, water is so scarce that the ordinary process of wet amalgamation is entirely out of the question, and it is also commercially impossible to raise the ore and transfer it to some more favored locality. It has, therefore, become usual in such districts to treat the ore entirely in the dry, the most usual process being practically one of winnowing. The ore is finely ground and exposed to a rapid current of air as it falls from a hopper; the lighter gangue is more deflected than the heavier gold, and in this way a separation of the two is effected. When, however, the gold occurs in a very fine state of division, a large proportion of it passes over with the gangue, occasioning much loss. In the new method introduced by Mr. Hewitt this objection does not arise, as the crushed ore is fed into a hopper communicating at the bottom with a worm of iron tubing about 3 in. in diameter placed horizontally. At the bottom of each bend of the worm a quantity of mercury is introduced, but not enough to close the pipe. The crushed material fall-

ing from the hopper is met by a powerful blast of air supplied from a Root's blower, causing it to impinge violently on the mercury in the bends. The latter, moreover, is driven into spray by the action of the blast, with the result that nearly all the gold contained in the ore is absorbed by the mercury in the first bend, only a very small proportion passing over to be caught in the other bends of the worm. It is claimed that under favorable conditions fully 99% of the gold is recovered in the amalgam, which is retorted in the usual way. The loss of mercury is also said to be extremely small, being estimated at one-eighth of 1% on an average week's run. As regards the so-called refractory ores, much of the trouble is occasioned by the addition of water to the ore in the crushing process forming compounds which "kill" the mercury. This source of loss is, of course, completely avoided in the dry process, which can accordingly be made use of for many ores for which wet amalgamation proves unsuitable.

#### 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.

WEEK ENDING MAY 26TH, 1896.

- 560,661. **APPARATUS FOR CASTING INGOTS.** Johan O. E. Trotz, Worcester, Mass. Filed July 14th, 1893. Combination of an incased tube for conducting the molten metal from the usual ladle to the matrix, consisting of a horizontal part provided with a nozzle at its forward end composed of suitable refractory material, also having an elbow at the opposite end of the horizontal part and a vertical part extending up from the elbow terminating at the top in an enlarged or tunnel-shaped end; a moving matrix composed of a series of pairs of removable, sectional molds, with the two parts of each pair fitted and locked together laterally, and each successive pair fitted end to end over the horizontal part of the conducting tube; mechanism for conveying the sectional molds from suitable platforms or elevators and depositing them in their proper positions in the apparatus, and for feeding forward the molds; also for separating the molds from the completed ingot as fast as it becomes sufficiently cooled to be released, and mechanism for transferring the sectional molds after removal, back, and laterally onto suitable platforms or elevators preparatory to being reused when sufficiently cooled.
- 560,750. **COMBINED SEPARATOR AND AMALGAMATOR.** Lucius S. Pierce, Red Cliff, Colo. Filed February 12th, 1895. Combination of a flume provided with a bottom discharge opening, a grill or grating removably fitted in the bottom discharge opening, a discharge box arranged against the bottom of the flume directly under the bottom discharge opening therein and provided with an open top, an inclined bottom, and a gate controlled discharge opening at one end of the inclined bottom, securing bars arranged transversely under the discharge box and projecting at their extremities beyond the sides of the box, exteriorly arranged securing rods provided at their upper ends with hooks detachably engaging over the upper side edges of the flume, the rods being bolted at their lower extremities to the extremities of the transversely arranged securing bars, and a suitably arranged amalgamating device.
- 560,801. **ROCK-DRILL.** Reno D. O. Johnson, Isabella, Mo. Filed May 13th, 1895. Combination of a valve-chest whose interior is semi-cylindrical; a valve in the shape of a segment of a right circular cylinder, less than a semi-cylinder, seated in the chest; means dividing the space back of said valve on one side, from the space back of it on the other; means holding the valve to its seat; two openings through the valve; an opening connecting one opening with a space back of the valve on one side; another opening connecting the other opening with the space back of the valve on the other side.
- 560,855. **ORE-DRYING APPARATUS.** William A. Koneman, Chicago, Ill. Filed March 6th, 1894. Renewed October 24th, 1895. Combination with the rotatably-supported drum provided with the internal spiral flange conveyor, of a flue, at the discharge end of the drum for directing therein hot products of combustion, an outlet for the gases at the opposite feed end of the drum, a chute at the feed end, a hopper supported over the chute and a feed-regulating device for the ore comprising a rotatable shaft carrying a worm in a housing between the hopper-outlet and the mouth of the chute, and covering the latter, the housing having a discharge-opening in its base to one side of the plane of the hopper outlet.
- 560,856. **ORE-SCOURING APPARATUS.** William A. Koneman, Chicago, Ill. Filed March 6th, 1894. Renewed October 24th, 1895. Combination of a rotatably-supported drum divided internally by perforated partitions into chambers and having a discharge-outlet in one head and a hollow trunnion on its opposite head, an ore-mixer comprising a trough and head secured on the trunnion and connected by blades carrying paddles on their periphery, and a worm conveyor in the trunnion on a rotatably-supported shaft geared to the driving shaft of the apparatus.
- 560,876. **ORE-DRILL.** John E. Wetherill, South Bethlehem, Pa. Filed April 1st, 1895. Combination of an inclined flue and chute made up of two walls of masonry, each provided with a ledge below their top and a floor resting upon the ledge, forming a trough-like chute and a subjacent flue, the sides of the walls above the ledge being lined with wear-plates.
- 560,965. **PROCESS OF RECOVERING CYANOGEN COMPOUNDS FROM GAS LIQUORS.** Henry Bower, Philadelphia, Pa.; George R. Bower administrator of said Henry Bower, deceased. Filed December 3d, 1895. The process consists in adding to the liquor a soluble copper salt to form insoluble ferrocyanide and sulpho-cyanide of copper, and then adding metallic iron to decompose the precipitate and form a solution of sulpho-cyanide of iron.
- 560,997. **ART OF OBTAINING GOLD.** Henry A. Hunnicke, St. Louis, Mo. Filed December 11th, 1893. The process of separating gold from sea-water containing gold in solution in the presence of calcium iodate, consists in bringing the sea-water into intimate contact with an excess of carbon.
- 561,023. **MINING MACHINE.** Edward S. McKinlay and William A. McKinlay, Denver, Colo. Original application filed March 15th, 1884, Serial No. 124,318. Divided and this application filed June 15th, 1889. Renewed April 17th, 1896. Serial No. 588,049. Combination of the portable bed having side bars resting loosely on the ground, the carriage supported and sliding on the bed, the continuously-moving, transversely-mounted cutting apparatus at the front end of the carriage, the chain for imparting power to the cutting apparatus, the rotary electric motor permanently secured to the machine and uniformly substantially supported with respect to both of the side bars of the bed, and the gearing connecting the continuously-revolving armature of the motor with the chain-driving devices.

Great Britain.

WEEK ENDING MAY 9TH, 1896.

- 9,891 of 1895. H. R. Gregory, London, England. Methods of producing sulphate of lead pigments from galena.
- 10,399 of 1895. J. J. Christmas, Adelaide, South Australia. Extracting gold from antimony ores by mixing 25 per cent. of lead with the extracted antimony.
- 11,298 of 1895. E. Jordis, Munich, Germany. In the production of metals by electrolysis the use of lactic acid in the bath.
- 11,922 of 1895. H. Hardwick, Derby, England. Device for trimming wicks of miner's safety lamps.
- 12,102 of 1895. A. de Courcy Scott, London, England. Agitating slimes by means of compressed air.
- 2,062 of 1896. N. Greening, Warrington, England. In conveying belts for minerals, a special form of link for increasing their durability.
- 3,132 of 1896. J. Roger, Denver, Colo. Ore crushing rolls.



## PERSONAL.

MR. CHAS. O. THOMPSON, president, has been appointed receiver for the Maritime Coal Company, of New York City, whose mines are at Thacker, W. Va.

MR. LEWIS F. BOSTELMANN has accepted the management of the New York Diamond Drill Company, and has removed his offices to 474 West Broadway, this city.

MR. R. C. CANBY has been appointed superintendent of the El Paso Smelting Works of the Consolidated Kansas City Smelting and Refining Company, at El Paso, Tex.

MR. T. OKA, civil engineer, formerly of Kumamoto City, Japan, has his office at the Government Superintendent's Bureau of Engineering Works, Tosabori, Osaka City, Japan.

MR. WILLIAM DRAFT, engineer in the bridge and construction department of the Pennsylvania Steel Works, at Steelton, Pa., has resigned to accept a similar position in New York City.

MR. PEARCE ATKINSON, of Chicago, Ill., left for the West this week to be gone three months or more. He is interested in several mining properties and will spend a few weeks at each of them.

MR. GEORGE H. ELLIS, mining engineer and chemist, of Chicago, Ill., is at present in Idaho, where he is examining a gold-mining property near Elk City for Chicago people. He will be absent about two weeks.

MR. R. M. ATWATER, JR., Ch. E., of Syracuse, N. Y., a graduate of the Technische Hochschule of Berlin, has been appointed technical assistant to Mr. Hamilton Smith, of the Exploration Company of London, England.

MR. HENRY C. ALLEN, formerly city engineer of Syracuse, N. Y., who has been acting as assistant engineer in charge of Section 2 of the Oswego Canal, will resign his position on June 1st and devote himself to his private practice in the firm of Allen & Farrington, of Syracuse, N. Y.

MR. JAMES E. RODERICK, mine inspector of the Fifth Anthracite District of Pennsylvania, has resigned his position and will accept the superintendency of A. S. Van Wick's mines at Coleraine, Carbon County, and Milnesville, Luzerne County, Pa., as soon as his successor is appointed by the governor.

MR. WM. HOSKINS, of the firm of Mariner & Hoskins, of Chicago, Ill., has just returned to Chicago from Oregon, where he has been examining gold mines near Baker City for a Chicago syndicate. The firm of Mariner & Hoskins has recently enlarged its quarters, and its laboratory is now of ample size to take care of their increased business.

MR. T. C. HOPKINS, Assistant Professor of Geology at the Pennsylvania State College, State College, Pa., will investigate the famous oolitic limestones of Indiana during the present month. Upon the completion of this work he will begin a report on the coal deposits of the same state. Mr. Hopkins' report on the sandstones of Indiana, which was prepared last year, has recently been published.

MR. CHAS. MUNGER, late of the Sellers mine, at Hibbing, Minn., has left the Mesabi Range, and has taken the place of the late Mr. J. D. Day, as superintendent of the Metropolitan Land and Iron Company's properties at Ironwood, Mich. The management of the Sellers, which is destined to be one of the important mines of the Mesabi, has been taken by Mr. J. F. ARMSTRONG, who has had charge of the Canton mine, at Biwabik, Minn., on the same range.

MR. ROBERT E. PEARY, the Arctic explorer, is to sail from Sidney, Cape Breton, Canada, about July 15th for Greenland. The objects of the expedition are to secure the great meteorite, discovered by him last year, and landed near Cape York, and an attempt to penetrate Huron Straits to examine, if possible, some valuable mining prospects which have been reported in an uninhabited place on the north shore. PROF. RALPH S. TARR, of the Department of Geology of Cornell University, Ithaca, N. Y., and PROF. BURTON, of the Massachusetts Institute of Technology, Boston, Mass., will be among the party.

## OBITUARY.

MATTHEW GRAFF, at one time vice-president of the Carbon Steel Company, Pittsburg, Pa., and a pioneer in the iron business, died recently aged 61 years.

JOHN MORRIS WHITE died in Denver, Colo., May 24th. He was formerly recording secretary of the Consolidated Mining Exchange and at one time was a member of the firm of Bartlett, Wray & White.

MARK M. POMEROY, better known as "Brick" Pomero, died in Brooklyn, N. Y., on May 30th, aged 63 years. He was well known as a newspaper man, especially during war times. He achieved some notoriety a few years ago as the president and promoter of the Atlantic-Pacific Tunnel Company.

ROBERT GROAT EUNSON died in New York City on May 30th, aged 90 years. He was a constructing engineer by profession and invented many of the

improvements of marine engines. He made the model of the Monitor for Ericsson, and had a great deal to do with the vessel's construction and the arrangement of its machinery.

THOMAS MAIN, a well-known mechanical engineer, died suddenly in Arlington, N. J., on May 27th, aged 68 years. He entered the employ of John Roach, the shipbuilder in 1861, and remained with him until his failure, in 1885. He was appointed professor of mechanical engineering at Webb Institute, Fordham Heights, two years ago, but resigned six months ago on account of ill health. He was the author of the "History of the Steam Engine from the Time of Watts," a work which was recognized for its thorough treatment of the subject.

## SOCIETIES AND TECHNICAL SCHOOLS.

WESTERN FOUNDRYMEN'S ASSOCIATION.—The annual meeting of the association was held in Chicago, Ill., on May 20th.

Those present were as follows: John M. Sweeney, Chicago Consolidated Steel & Iron Company, Harvey, Ill.; C. A. Sercomb, of Schwab & Sercomb, Milwaukee, Wis.; W. M. Moore, Joliet Stove Works, Joliet, Ill.; A. W. McArthur, Rockford Foundry Company, Rockford, Ill.; G. H. Carver, E. N. Erwin, Plano Manufacturing Company, West Pullman, Ill.; F. M. Lyon, Burlington Route Foundry, Aurora, Ill.; Samuel Reid, American Well Works, Aurora, Ill.; G. M. Sargent, the Sargent Company; James Drake, O. T. Stantial, L. W. Lukens, Illinois Malleable Iron Company; H. S. Vrooman, Garden City Sand Company; A. Sorge, Jr., M. E.; B. S. Summers, Western Electric Company; F. G. Coffeen, Deering Harvester Company; D. L. Cobb, H. A. Forsyth, Sloss Iron & Steel Company; James Brady, J. W. Reedy Mfg. Company; R. F. Palmer, A. M. Thompson, Link Belt Machinery Company; William Ferguson, Gates Iron Works; D. De La Fontaine, Crane Company; S. T. Johnston, Whiting Foundry Equipment Company; B. M. Gardner, H. F. Frohman, J. M. Evans, S. Obermayer Company; R. J. Cleveland, R. C. Barr, Cleveland & Barr, and G. C. Batten, all of Chicago.

President Sweeney read his annual report, in which among other things he dwelt upon the increased growth of the association during the past year, its improved financial condition, etc.

Secretary S. T. Johnston reviewed the progress of the year, stating that the membership had increased from 64 to 114, being a gain of 50. He dwelt with special emphasis on the assistance given to the association by the trade press in publishing reports of the proceedings. The dues collected in the year amounted to \$1,021.25, and the average attendance was 38.

The secretary and the treasurer submitted their reports, which were accepted and ordered placed on file.

The following applications for membership were submitted and the applicants were elected: South Pittsburg Pipe Works, South Pittsburg, Tenn.; W. A. Jones Foundry & Machine Company, Chicago, Ill.; McDowell Steel Company, Chicago, Ill.; and Samuel H. Whitaker, of the Dayton Coal & Iron Company, Cincinnati, O. The election of officers for the ensuing year then proceeded. A. Sorge, Jr., M. E., was elected president, but declined in a short speech, in which he heartily thanked the association for the high compliment paid him, but stated that he thought he could serve the association better out of the presidential chair than in it. The meeting then adjourned and a meeting of the Board of Directors was held. At this meeting the officers were qualified as follows: President, A. W. McArthur, Rockford, Ill.; vice-president, Wm. Ferguson, Chicago; secretary, A. Sorge, Jr., Chicago; treasurer, O. T. Stantial, Chicago; directors, J. M. Sweeney, Chicago; W. N. Moore, Joliet; C. A. Sercomb, Milwaukee; S. T. Johnston, Chicago; G. H. Carver, West Pullman; Editing Committee, B. M. Gardner, J. K. Mackenzie and H. S. Vrooman, Chicago.

## INDUSTRIAL NOTES.

The Atlanta (Ind.) Steel and Tin Plate Company is hastening the construction of its new plate mill.

The Chattanooga Steel Roofing Company, Chattanooga, Tenn., is building an addition to its plant.

The Riverside Iron Works, Kansas City, Kan., have increased their capital stock from \$60,000 to \$100,000.

The Union Foundry and Manufacturing Company, of Dayton, O., has been incorporated, with a capital of \$50,000.

The Atlantic Iron and Steel Company, of New Castle, Pa., is now producing Bessemer iron, instead of gray forge, as heretofore.

The Alabama Rolling Mill Company, of Birmingham, Ala., states that there is no truth in the report that it will erect a steel mill.

The Aetna-Standard Iron and Steel Company, Bridgeport, O., has decided to put up an open-hearth plant to make steel billets.

The Wellsville Plate and Sheet Iron Company, Wellsville, O., has closed down its plant temporarily because of scarcity of orders.

The Iroquois Furnace Company has blown out its

blast furnaces at South Chicago, Ill., for the purpose of relining and making numerous repairs.

Plans are on foot for the erection of an open-hearth steel plant by the Reeves Iron Company at Canal Dover, O. Cleveland capital is interested in the project.

The Brown-Bonnell Iron Company, of Youngstown, O., has received a large order for 2,000 tons of channel iron, to go to Cincinnati, to be used for building purposes.

The Stewart Iron Company's works, at Sharon, Pa., have shut down for repairs. The suspension is only temporary, and the plant will probably be in operation again in a few days.

The Greensboro, N. C., Furnace Company's directors, held a meeting on May 23d. It was decided to at once fully equip the furnace, open the ore mines and blow in the furnace.

Wharton Furnace, at Port Oram, N. J., is in process of being enlarged from 15 to 17 ft. in the bosh. Frank C. Roberts & Co., of Philadelphia, are the engineers in charge of the work.

The Spearman Furnace, at Sharpville, Pa., has gone out of blast, owing to the depressed condition of the iron market. The Douglas Furnace, at the same place, will also be blown out in about a week.

The Electro-Cyanide Gold and Silver Extracting Company of New York City has been incorporated at Albany with a capital of \$25,000, and Henry Wetjen, of Brooklyn; John Meyer, of New York City, and others, directors.

The plate mill of the Mahoning Valley Iron Company, at Youngstown, O., is filling an order for the Daniels Steel Tie Company. Some improvements are being made upon the plate mill for the manufacture of heavy plate.

Application will be made on June 15th for the incorporation of the Iron City Fire Brick Company. The parties interested are William A. Scott, Jr., Geo. D. Blair, E. J. Pruner, Geo. W. McGaffey, O. Perry Jones and William P. Duncan.

The final discharge of Charles A. Sterling, receiver of the Cofrode & Saylor Company, has been ordered by Vice-Chancellor Stevens. The company went into the hands of the receiver three years ago. All the debts have been paid, and there is a balance of \$3,000.

The Colorado Iron Works Company, of Denver, is making one carload of steel jackets for the new copper furnaces of the Guggenheim Smelting Company at Aguas Calientes, Mexico. It has also recently made and shipped two silver-lead furnaces for the same company.

The New York office of the Brown Hoisting & Conveying Machine Company, has just received an order from the Pennsylvania Railroad Company for a 15-ton bridge crane, of 35 ft. span, for handling heavy freight in the Thirty-seventh street yard, New York City.

The Garden City Sand Company, of Chicago, Ill., has made a specialty of high-grade crucibles for the smelting departments of large mining companies and others who are in need of such supplies. This company is also importing high-grade German Portland cements.

Some necessary improvements are to be made at the Rosena Furnace, at New Castle, Pa., shortly. The stock-house which fell down recently is being rebuilt, and a new roof is to be placed on the casting house. The furnace is now turning out about 2,100 tons weekly.

The Chrome Steel Works, Brooklyn, N. Y., report a steadily increasing demand for their product from mining and milling plants requiring shoes and dies, cams, tappets, foss heads, crusher plates and other parts which it is desirable to have of the most durable metal.

At the annual meeting of the stockholders of the Pittsburg Meter Company, held in East Pittsburg, Pa., a short time ago, the following officers were elected: George Westinghouse, president; Lemuel Bannister, vice-president; A. G. Holmes, secretary, and A. L. McKaig, treasurer.

The citizens of Greenville, Pa., are endeavoring to raise \$40,000 for the establishment of a large tube works in that place. The Lozier Manufacturing Company, of Cleveland, O., is desirous of a good location, and efforts are being made to have this company locate at Greenville.

At a meeting of the stockholders of the Ohio Tube Company, at Warren, O., D. P. Wheeler, of Akron, O., was elected general manager, succeeding E. B. McCrumb, Jr., who resigned. F. M. Peete, of Alliance, was elected treasurer; T. J. Bray continues as secretary and superintendent.

At the annual meeting of the Ohio Tube Company, Warren, O., O. C. Barber was re-elected president. E. B. McCrumb, Jr., resigned as general manager, and D. P. Wheeler, of Akron, O., was elected his successor. F. M. Peete, of Alliance, O., was elected treasurer, and Thos. J. Bray, secretary and superintendent.

Blakeslee Brothers & Co., of Southington, Conn., under the reorganization which has been effected, will be known as the Blakeslee Forging Company, with capital stock of \$50,000. An addition to the factory building will be made and new drops put in.



S. Blakeslee, president; J. H. Pratt, secretary and treasurer.

The Colorado Iron Works Company, of Denver, is remodeling the W. J. Chamberlain & Co.'s sampling mill and is putting in a set of its 54 in. x 8 in. high-speed crushing rolls, with Cazin's patent end adjustment and self-adjusting main boxes. They have also put in a set of the same size rolls in the Nellie Bly Mill, near Boulder, Colo.

The Clifton Iron Company, of Ironton, Ala., is increasing the height of its four stoves from 55 to 60 ft. and putting in an entirely new stack in place of the old 55-ft. furnace, which will, when completed, make the furnace 70 ft. high by 15 ft. in the bosh. The company is also putting in two new Weimer engines and 8 new 34-ft. two-flue boilers, etc.

The Sharon, Pa., Iron Works Company will soon build a new steel mill, a new wire and rod mill and 50 additional coke ovens, giving employment to 2,000 men. It will be a mammoth structure, having a capacity of 150 tons daily, the product to be used in the puddling department. The works will be run under the supervision of a Pittsburg man.

The Sharpville furnace operators are figuring on the erection of two sets of large coke ovens, which, when completed, will give employment to about 900 men. The plan of the manufacturers is to make their own coke and not have to buy of the coke manufacturers. The Alice, Claire and Sharpville furnaces will erect one set and the Spearman, Mabel and Douglass the other.

The plans for the new buildings to be erected by Geo. B. Sennett & Co., of Youngstown, O., call for a foundry 175 ft. long by 75 ft. wide and the machine shop 22 ft. long by 60 ft. wide. The principal line of goods to be manufactured will be oil well and artesian well supplies. The capacity of the foundry will be 38 tons daily, and the capacity of the works two carloads of finished machinery in the same time.

The H. H. Scoville Company, of Chicago, Ill., has secured contracts for building a 10-stamp mill with concentrators for Farson & Gibbs for use at their gold mine at San Marcial, New Mexico, and for a large copper converter with hydraulic car for Queen Copper Mining Company at Bisbee, Ariz. The company is also at work on a new placer mining machine for a placer mine in Montana. The business was secured by the H. H. Scoville Company through its advertisement in the *Engineering and Mining Journal*.

The annual meeting of the Niagara Falls Power Company was held at Niagara Falls, N. Y., on June 1st, and the old directors and officers were re-elected. The principal officers are: President, Dr. Coleman Sellers, of New York; vice-president, Benjamin Flagler, of Niagara Falls; second vice-president, Charles Sweet, of Buffalo. Contracts were executed with the Westinghouse Electric Company for seven more 5,000 H. P. dynamos and the E. D. Smith Company, of Chicago, for the wheelpit and power house extension. The work will involve about \$3,000,000. The extension is to furnish power for Buffalo.

The Robert Aitchison Perforated Metal Company, of Chicago, Ill., has recently placed on the market a needle slot battery screen with slots  $\frac{1}{4}$  in. long by the various widths from Nos. 1 to 12, inclusive, and which has so far proven of much worth in performing services expected of it. The screen is made to any desired size of sheet and Russia iron and sheet steel are used mostly in its manufacture, though the sheet steel is undoubtedly more durable than the Russia iron. A great deal of perforated metal has been shipped recently to Canadian points by this company.

Plans for the erection of a new plant for the John Dunlap Company, Pittsburg, Pa., have been practically completed. Five acres of ground have been secured at Hays station on the Pittsburg, Virginia & Charleston road, where the present plant will be removed. The buildings to be erected will be on an extensive scale, and equipped with the most improved machinery. The company imports and manufactures tin and galvanized iron-ware and large lines of other goods, and is one of the oldest and most extensive concerns of the kind in the city, having been established about 60 years ago.

Among the recent shipments of the Frank-Kneeland Machine Company was a 34-in. reversing blooming mill, with tables, manipulator and ingot filter, for the Apollo Iron and Steel Company, also a 16-in. weldless tube mill for the Kellogg Weldless Tube Company, Findlay, O., and an 18-in. three-high bar mill for J. H. Sternbergh & Son, Reading, Pa. The company now has under way two monster roll lathes that will weigh about 100,000 lbs. each, one for the Carnegie Steel Company, and one for the Bethlehem (Pa.) Iron Company. The chilled and sand roll departments of the plant are running full single turn.

The Glens Falls Paper Company, of Glen Falls, N. Y., is making extensive alterations and additions to their plant, and on all its new buildings it is placing roofs supported by steel trusses. This form of construction is especially adapted for buildings devoted to the manufacture of paper of paper, and wherever new buildings are put up, or old ones remodeled, steel is almost invariably used. The trusses for the new work will be furnished by the Berlin Iron Bridge Company, of East Berlin, Conn. The new

buildings will consist of one machine room, 67 ft. wide and 217 ft. long; another 52 ft. wide and 167 ft. long, and a finishing room 50 ft. wide and 100 ft. long, and two boiler houses of somewhat smaller dimensions.

Jas. S. Brownell, Western agent Frue Vanning Machine Company, San Francisco, Cal., reports following sales: Eight 4-ft. patent lip flange corrugated belt Frue vanners, Golden Gate Mine, Sonora, Cal.; two 6-ft. plain belt Frue vanners, Kinkead Mining & Milling Company, Virginia City, Nev.; Jualin Gold Mining Company, Funter Bay, Alaska, four 4-ft. patent lip flange plain belt Frue vanners; Roanoke Mining Company, Mokelumne Hill, two 6-ft. plain belt Frue vanners; Dutch Mining & Milling Company, Quartz Mountain, Tuolumne Co., four 4-ft. patent lip flange plain belt Frue vanners; Gold Park Mining Company, Austin, Nev., one 6-ft. plain belt Frue vanner; New Citizens Gold Mining Company, Coarse Gold Gulch, Madera County, one 6-ft. plain belt Frue vanner; Parke & Lacy, Sydney, Australia, four 4-ft. patent lip flange plain belt Frue vanners.

Acting on the suggestion of a large Western smelting plant, the Parkhurst & Wilkinson Company, of Chicago, recently placed on the market a bullion truck for smelters, stamp mills, etc., built entirely of iron and steel. So successful have they been with this truck in the very short time it has been on the market that they have made a special department in their manufacturing plant for turning out the trucks. Its platform is 30 x 42 and made of the very best grade  $\frac{3}{4}$ -in. tank steel. The wheels are  $9\frac{1}{2}$  in. in diameter and 30 in. from center to center. Axles are  $1\frac{1}{2}$  in. square steel. The handle is  $4 \times \frac{1}{2}$  iron or steel. The entire weight of the truck is 300 pounds. The platform supports are  $2 \times \frac{1}{2}$  steel or iron. So strong is this truck that the manufacturers claim that a load of 10,000 lbs. or more can be easily carried with no fear of it giving away.

#### TRADE CATALOGUES.

The Phosphor-Bronze Smelting Company, Limited, of Philadelphia, Pa., manufacturers of the "Elephant Brand" phosphor-bronze and other alloys, have just brought out a neat little pamphlet which is tabulated in such a manner that it will prove of assistance to the users of this class of material. The Brown & Sharpe gauge is the standard for wire manufactured by this company. The pamphlet also contains tables giving the sizes and prices of phosphor-bronze, wire ropes, wire cloth, pump rods, gunpowder mill tools and specialties, etc.

Electricity has made great progress in the mining world within the last few years, and a catalogue specially devoted to coal-mining machinery operated by this power has just been issued by the Jeffrey Manufacturing Company, of Columbus, O. This catalogue contains instructive information regarding the use of the various "Jeffrey" coal-mining machines, drills, electric mine locomotives, elevating and conveying machinery; in fact, it is descriptive and illustrative of complete coal-mining equipments. As the best indication of the universal use of the "Jeffrey" coal-mining machinery a table has been included in this catalogue giving the number of plants which have been equipped by this company. The State that naturally shows the largest number of plants is Pennsylvania, with 39, while Ohio comes second with 28 installations. In addition to these and the other States may be mentioned the foreign trade, including India, Australia and South America, where the Jeffrey Manufacturing Company has placed its coal-mining machinery. The catalogue is clearly illustrated, and in many cases the coal-mine equipments are described in detail, with here and there a useful hint to users of this class of machinery. In short, the catalogue is worthy of perusal by all persons who are desirous of installing at their mines the best and latest improved machinery such as is manufactured by this company.

#### 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.

##### ALABAMA.

The coal companies have accepted the proposition made by the miners of 40c. per ton minimum, based on iron at \$8.50 per ton, and for every 50c. advance  $2\frac{1}{2}$ c. until the maximum price of \$10.50 is announced, after which  $2\frac{1}{2}$ c. on every dollar advance. The contract takes effect July 1st, and is for one year instead of two years, as heretofore.

##### ARIZONA.

###### GILA COUNTY.

BLACK.—The ledge on the surface of this copper mine, in the Globe district, is about 35 ft. wide, and the ore is of an average value of \$16.50 per ton. The daily output is about 6 tons.

OLD DOMINION COPPER MINING AND SMELTING COMPANY.—This company blew in another furnace recently, and now has three stacks running. Coke is arriving freely, and a large quantity has been ordered. Work in every department is being actively prosecuted.

###### COCHISE COUNTY.

COPPER QUEEN MINING COMPANY.—This company is making important improvements and additions to its works at Bisbee. At the Holbrook mine new ore bins, of 600 tons capacity, are being constructed. At the smelter two new boilers have been added to the power plant, making eight boilers in all, to furnish the power needed to run the engines, dynamos, smelters and converters. A new machine shop, 30 x 50 ft., is being built. The roasting capacity is to be trebled by the addition of two 25-ton rotary roasters to the one now in use, and provision is to be made for discharging the sulphur fumes outside the town limits.

###### PIMA COUNTY.

GOLD WEST MINING COMPANY.—This company is pushing the prospecting work on their property, 40 miles south of Casa Grande. There are about 70 men at work, and the shaft is down 500 ft., leaving still 30 ft. more to go, when they expect to tap the main lead. There is a 10-stamp mill up and 10 more stamps ready for use when required.

###### YAVAPAI COUNTY.

CONGRESS.—A crosscut drift is to be run in this mine from the 1,600-ft. level to tap a parallel ledge 700 or 800 ft. distant. Work on the main shaft is also pushed with vigor. About one carload of concentrates a day is now the output from the 40-stamp mill. High-grade ore is also being shipped.

GILLESPIE.—This mine, an extension of the Congress, has been sold to the Congress Gold Mining Company for \$30,000.

PLANET SATURN.—A strike of rich ore is reported in the Planet Saturn mine at Fool's Gulch, near Congress. It is on the lower workings, and is in sulphurets.

##### CALIFORNIA.

###### AMADOR COUNTY.

(From Our Special Correspondent.)

BELDEN.—This mine, in the Pioneer district, is working two shafts in the old shaft, which is being cleaned out to a depth of about 250 ft. A new hoist and other machinery is being put in position. Sinking will be continued from the bottom of the old shaft.

###### BUTTE COUNTY.

(From Our Special Correspondent.)

SPRING VALLEY.—Now that the litigation in regard to the bonds of this hydraulic mine at Cherokee Flat has come to an end, the company will resume operations on a large scale. At the time the mine was shut down, 250 men were employed and eight chiefs were kept going. Gardner Williams, now manager of the Kimberly Diamond Mines of South Africa, was then in charge.

###### CALAVERAS COUNTY.

(From Our Special Correspondent.)

GRAHAM.—This mine, on one of the branches of the mother lode, one mile south of Angels, has been bonded by Captain McFarland, of Utah, for one year. He will commence work at once. The vein is said to be 30 ft. wide. The ore is free milling.

LONE STAR.—This mine is located  $2\frac{1}{2}$  miles west of West Point. A contract has been let to sink a winze from the bottom of the shaft started by the late James Rule, on the lower level of the Reed & Hilary vein. The intention is to sink about 250 ft., at which point they will be about 600 ft. below the surface of the mountain. The ore from this mine is classed as free milling, carrying a large percentage of sulphurets.

MACHU.—At the old shaft of this mine, near West Point, the new hoist will be in position soon. The new shaft is down 30 ft. on a 4-ft. vein of ore, which assays about \$50 per ton. There are 30 men employed.

###### MONO COUNTY.

The following are extracts from the latest weekly official letters from the superintendents of the Bodie mines:

BODIE CONSOLIDATED.—The south drift from the upraise, 50 ft. above the 200-ft. level, has about 2 ft. of low-grade quartz in the face. The south drift from the west crosscut on the 200-ft. level shows 5 in. of low-grade quartz.

BULWER CONSOLIDATED.—During the week ending May 25th, the raise above No. 2 crosscut, 200-ft. level, was advanced 5 ft. on a narrow seam of ore. On the tunnel level we have been repairing the track and stoping ore as heretofore. Nine tons of ore were extracted during the week.

STANDARD CONSOLIDATED.—For the week ending May 26th, on the 100-ft. level, the north drift incline, ledge was advanced 6 ft., showing 10 in. of hard ore. South drift No. 1, incline ledge, was advanced 6 ft., showing 12 in. of fair-grade ore. On the 350-ft. level, the north drift from the incline raise shows 12 ft. of



medium ore. On the 700 level the north and south drifts from the winze in the east ledge each show 10 in. of ore. On the tunnel level we have opened through to the shaft and are preparing to place a small hoist for temporary purposes. We are stoping as heretofore, without changes. For the week 739 tons of tailings were treated at the cyanide plant.

NEVADA COUNTY.

**CHAMPION MINING COMPANY.**—This company has brought suit in the Superior Court of this county against the Providence Gold Mining Company, A. Walrath, R. C. Walrath and John V. Hunter. The action is brought to recover \$100,000, the value of ore alleged to have been taken out by the Providence Company from lands decided by the courts as belonging to the Champion Company.

TUOLUMNE COUNTY.

(From Our Special Correspondent.)

**CONFIDENCE.**—This old mine, located  $4\frac{1}{2}$  miles northeast of Soulsbyville, has been re-opened under the management of Chas. Swain. The milling plant is to be increased to 80 stamps. The pumping plant, which has a capacity of 500,000 gals. per day, will soon free the old workings from water. This mine is said to contain large bodies of low-grade ore.

**SOULSBY.**—This mine, at Soulsbyville, is being re-opened under the supervision of E. W. Hebard. He is sinking the shaft and is drifting north and south on the 100-ft. level. The hoist and air compressor are both run by water power. A large force of men is employed, working double shift.

COLORADO.

EL PASO COUNTY—CRIPPLE CREEK DISTRICT.

(From Our Special Correspondent.)

**CALEDONIA.**—The shaft has been sunk on an incline about 240 ft., and the vein is very encouraging indeed, having now attained a width of  $3\frac{1}{2}$  ft., and the grade of ore has much improved. Telluride of gold and free gold are often seen. Shipments from now on seem to be assured.

**CHICAGO & CRIPPLE CREEK TUNNEL COMPANY.**—This company has started its new machinery this week, and it is the intention to use four drills. The present length of the tunnel is a little over 1,100 ft.

**GOLD DOLLAR.**—This tunnel pierced Beacon Hill from the south slope 915 ft. The estimated distance before the vein was cut was 870 ft., but the dip of the vein changed. The vein where intersected was large, but carried no values. Drifts are being extended on the vein north with machine drills. The driving of this tunnel, it was supposed, would prove that Beacon Hill was a bonanza. The adjoining claim, the Prince Albert, is a large and steady shipper. The Gold Dollar was, at the upper workings, a fairly good shipper. It was here that in May, 1894, a small shipment netted \$37 per pound, the ore being taken from the 100-ft. level.

**IRON CLAD.**—At this mine, on Ironclad Hill, a shaft is down 214 ft., and at that depth the lessees are driving to strike the ore shoot. The ore is very pockety and needs much care in the assortment.

**JUBILEE.**—This property, on Globe Hill, presents rather encouraging features, but thus far the lessees have received no benefit from the claim. The shaft has been sunk 180 ft. and the vein is carrying itself much straighter and is fully 5 ft. wide. The vein exposed at a crosscut, extended 42 ft. west at a depth of 80 ft., carries considerable quartz and a little telluride.

**LINCOLN.**—This mine, near Gillette, has this week been equipped with a new steam hoist and work will shortly be resumed below the 150-ft. level. A small Cameron pump has also been added to the machinery. A carload of low-grade ore was recently shipped from a new vein found about 40 ft. from the main shaft; the ore was taken from an open cut or trench.

**PHARMACIST.**—At this mine, on Bull Hill, a new shaft has been started north of the old shaft. It will be sunk vertically to the 250-ft. level, where it will come on a shoot of ore, and from that depth to the lowest level, 600 ft. It is estimated that the ore taken from the sinking of the shaft will be more than sufficient to meet all expenses of sinking and timbering. The mine sold 42 tons of shipping ore, averaging about \$150 per ton, during the month of May. The low-grade ore is treated at the Gillette Chlorination Plant.

**PURITAN MINING COMPANY.**—The Minnie Lew, worked under lease by the Puritan Company, has a shaft sunk 165 ft. deep. It is the intention to put in a larger hoist. The ore in the shaft only assays from \$2 to \$8 per ton.

**REBECCA MINING COMPANY.**—The C. O. D. mine, in Poverty Gulch, owned by this company, is again a shipper, after a cessation of three months, consequent on the great influx of water necessitating larger pumps. The present pumping capacity is equal to 1,000 gals. of water per minute. The vein is opening up well, and two machines are constantly at work.

GILPIN COUNTY.

(From Our Special Correspondent.)

**ALVA ADAMS.**—A small station pump is being placed on this mine, the surface water being too much to hoist. Some good ore has been exposed in the bottom level, 350 ft. from surface.

**GETTYSBURG.**—The water has now been hoisted from this mine, on Bates Hill. The lowest level, 600 ft. from surface, is being drifted both ways.

**PACKARD-MAMMOTH.**—An English syndicate is working, under lease and bond, the portion of this vein on the west side of Packard Gulch. The section of ground includes the crossing of the Mammoth with the Gregory and Waterberry veins, and the surface shows large open workings where the decomposed outcrop has been stoped out, yielding, according to report, good results. Some good ore was also extracted from a shaft about 300 ft. deep, in the center of this ground, but it was not free-milling, and for many years it has been practically unworked. Two tunnels, some 50 ft. apart, are now being driven in from the gulch, all the stuff broken being tested at the concentrator at Black Hawk. Most of the ground passed through has been poor, but one shoot of pay-ore has already been passed through, and a winze has just been commenced on this, to open up ground for stoping.

**RIVALS.**—Under this name a Chicago company is working two undeveloped claims on Bobtail Hill. But little is known in Central City of the properties or of the parties operating them.

**TREASURY.**—Messrs. J. C. Jenkins and F. Brooks have commenced working this claim on lease and bond, continuing a tunnel from Packard Gulch, started by tributaries some time back. The vein is from 1 ft. to 3 ft. wide, very hard, with porphyry on both walls. As a rule it carries but little mineral, which, however, when it occurs, is of fair grade.

LAKE COUNTY.

(From Our Special Correspondent.)

**BIG FOUR MINING COMPANY.**—General Manager Woodward has returned from the director's meeting at Chicago, and states that his company is pleased with the report of work done. It is the intention to push new work vigorously; the present output is about 25 tons of high grade ore. The newly elected officers are: President, W. B. McCreery; vice-president, J. R. Case; secretary, R. K. Farwell; treasurer, L. Z. Farwell.

**BON AIR.**—The ore chute is widening and the drift at the 530 ft. level, is looking well. This drift is now in about 300 ft. Shipments amount to 2,000 tons a month of very good carbonate ore.

**CORONADO.**—About 800 gals. of water a minute are being handled. Iron shipments are regular, but a greater depth must be attained before a carbonate ore body can be opened up.

**LITTLE FLOY.**—The legal owners announce that they will at once resume work on this property lying near the Crown Point on Rock hill. A first-class plant of machinery is being placed in position.

**MAB MINING COMPANY.**—This is the new enterprise to sink a deep shaft after the Mahala ore chute. The machinery was put in place last week, and the contractors have commenced sinking.

**MAHALA.**—These people are sinking their winze and drifting to the east, to catch the old ore chute. Shipments have ceased for the time being.

**NEWELL.**—The management is running a drift from very good contact stuff reached by the shaft, and is expecting now to locate the ore body at any time.

**TAYLOR HILL SECTION.**—The snow has not melted yet in this locality enough to admit of a general resumption of work. From appearances considerable new work will be carried on there this summer. The first property to start up was the Evening Star. Chicago people are quite heavily interested in the Taylor Hill section.

PITKIN COUNTY.

**DEEP MINING AND DRAINAGE COMPANY.**—The property of this company, comprising the Homestake, the Big and Little Chief lodes, and all buildings, machinery, etc., as well as interest in leases upon the 1001, the Chance, Millionaire, Betsey Jane, Hidden Treasure and Banner lodes, was sold last week at auction by L. H. Eicholtz, vice-president of the Security Safety Deposit & Trust Company, of Denver, trustee. The sale was in accordance with the terms of a deed executed by the company, says the *Aspen Times*, to secure the payment of 10 promissory notes of \$5,000 each to D. R. C. Brown, president of the First National Bank, for himself and D. H. Moffatt, of Denver. The sum paid was \$75,000. It is probable this property will be opened up as soon as it is possible.

IDAHO.

ALTURAS COUNTY.

**RED CLOUD.**—Operations were resumed at this group of mines on June 1st with 26 men. The resumption of operations will probably be permanent, as there is a quantity of ore in sight.

ELMORE COUNTY.

**ALICE.**—A cross-cut tunnel is being run on this mine, the west extension of the Balbach mine at Neal, which is under bond to Denver parties. It is expected the tunnel will have to be run 600 ft. to cut the ledge.

**HIDDEN TREASURE.**—In this mine, near Neal, Mr. Howe has discovered a second vein, parallel with the original ledge. It shows a width of 10 ft. of good ore.

KOOTENAI COUNTY.

**JIM HILL.**—Work was started recently on this mine, in the Yait district. The second blast exposed a large body of free-milling gold ore. This is the largest discovery ever made in the district. It is said that \$30,000 was refused for a half interest.

OWYHEE COUNTY.

**DE LAMAR MINING COMPANY, LIMITED.**—The

strike is still on at this mine and mill, and all the buildings, including the mill and boarding house, are closed. Orders from the officers of the company are to hold out until the men yield. The trouble originated over the price of board and lodging, which amounted to \$36.50 per month, which the miners considered exorbitant, as they were working for \$3 per day.

ILLINOIS.

TREMONT COUNTY.

**CHESTER.**—Lead ore has been found at a depth of 30 ft. in a shaft now being sunk between Chester and Roseborough's coal bank, about 18 miles south-east of Redbud.

KANSAS.

CHEROKEE COUNTY.

(From Our Special Correspondent.)

**ARCHER & COMPANY.**—Archer & Company, on the Tennessee Mining Company's lease, on the Rush land, have struck a good lead prospect at 38 ft. in open ground, and went 12 ft. of lead dirt. In a drill hole near they struck a body of zinc ore at 59 ft. and at ft. were still in ore. This is one of the finest prospects near Galena.

**BATTLEFIELD CONCENTRATOR.**—Mr. A. J. Huff has nearly completed his steam-concentrating plant on the Battlefield lease, and expects to start up next week. Only two or three mines are being worked on the Battlefield lease on account of the recent rains.

**DANSINGBERG & COMPANY.**—Geo. Cooley & Co. have contracted with Dansingberg & Co. to build a first-class steam concentrating plant on the North Empire lease, to cost \$4,000 and to be completed in 40 days. The plant when completed will concentrate the ores from Christmas Gift, Lucky and Dansingberg shafts that are producing large quantities of both lead and zinc ores with a larger amount of crush ores. The fine dirt will be cleaned on the hand jigs and the crush ore will be saved until the plant is completed and will then be concentrated.

**MATTHEWS & CO.**—The new plant is running steadily on rich dirt, and the mine is producing 15 tons of zinc ore each shift. At the pump shaft they are drifting at 110 ft. over a 30 ft. face of zinc ore in soft ground, with just about enough water to run the plant. Last week they opened up a new zinc prospect at 105 ft. in open ground, and can run the ore down to the plant a 150 yards distance.

MICHIGAN.

COPPER.

**WOLVERINE MINING COMPANY.**—This company's output of mineral for May was 100 tons against 86½ tons for the same month in 1895.

**QUINCY MINING COMPANY.**—At the annual meeting of stockholders of this company, held in New York City, on June 3d, the articles of association relating to the authorized increase in the capital stock of the company were formally amended. The annual report, which was published some time ago was presented and approved. The following ticket was elected: T. F. Mason, George T. Bliss, T. Henry Mason, Nathan H. Daniels and Samuel B. Harris.

MINNESOTA.

(From Our Special Correspondent.)

Shipments for May, from Duluth, were 241,000 tons, a larger total than ever before for that month. Two Harbors during the same time shipped about 275,000 tons. The ore is going forward more rapidly now, and the rates paid vessels are dropping, and are very weak at 95c. from the head of the lakes, so that vesselmen who accepted the pool rates of \$1 to September, made earlier in the season, have reason to congratulate themselves. Enough ore has been contracted for at the lower rate to make that the standard for some time at least.

In accordance with the decision of the state's attorney-general, the county auditor, St. Louis County, is putting on the tax lists the properties of the various iron companies of the county. They will be called on to pay the amounts, will refuse, their properties will be advertised for sale and they will apply to the courts for redress, which will bring the matter up for action.

IRON—MESABI RANGE.

(From Our Special Correspondent.)

**AUBURN MINING COMPANY.**—This company has resumed work at its mine south of Virginia. It was closed but a week or ten days.

**BIWABIK BESSEMER COMPANY.**—This company has laid off its night mining shovels, and will get out its full allotment of 350,000 tons with two shovels working days only. It has not yet determined on its stripping for this year, but the amount is not likely to be large. At this mine, one day last week, one crew handled with one shovel 421 dump cars of material.

**COMMODORE MINING COMPANY.**—This company is seeking the sale of its product, guaranteeing, so it is claimed, 64.5% iron and .035% phosphorus. It is pushing the work of getting in readiness to mine with all possible speed.

**LAKE SUPERIOR CONSOLIDATED.**—This company is exploring about four miles west of Hibbing, near the Sheridan, recently bought by the Carnegie interests, and where the indications are excellent. The company is mining with one shovel at its Mountain Iron mine, and is putting out 100 25 ton cars a day of 10 hours with one shovel.



**LAKE SUPERIOR MINES.**—About 40 men have been put at work at the Burt mine, testpitting and doing general surface work, preparatory to resuming operations. At the Hull mine both shafts have been sunk as deep as they will be put this season, and drifting has begun. At the Rust an extra pump and boiler have been received and sinking has again been started. The Consolidated Company is testpitting with two crews on Section 12, south of Hibbing.

**LONGYEAR.**—The drill which is being put down at the find in 28, 58-20, and which was 230 ft. in ore a week ago, has now reached a depth of 274 ft., and is still in ore. With two exceptions this is the deepest drilling yet done in ore on the Mesabi. In 17, of the same township, where Longyear did some drilling last year, and reached a depth of 100 ft. in ore, the work has been resumed. This is about half a mile east of the find just above mentioned, in 28.

**MAHONING ORE COMPANY.**—At this mine about 30 men are employed, and 85 cars of ore are shipped daily.

**MESABI IMPROVEMENT COMPANY.**—In the same section where Longyear has sunk to 274 ft. in ore this company has a crew at work and has uncovered good ore at a depth of about 70 ft.

**OLIVER MINING COMPANY.**—A third steam shovel has been put at work in this mine, and there will probably be some record-breaking operations there in the next few weeks, if there can be cars and boats to handle the output.

**OPEN-PIT MINES.**—In all the open-pit mines of the range great difficulty has been experienced the past week or two on account of the rains, which have filled the pits and delayed work. There has been no serious loss, however, at any of them, which is somewhat surprising, under all the circumstances.

**WALKER EXPLORATIONS.**—On these lands, about three miles east of the diamond properties, at the extreme west of the range, good ore is said to have been discovered, but little is known of its exact quality as yet, however. The discovery, if of the grade stated, is of considerable importance, as it is from 10 to 12 miles west of any previous finds of merchantable ores.

**WILLIAMS IRON COMPANY.**—This mine is closed down, but only temporarily.

#### IRON—VERMILION RANGE.

(From Our Special Correspondent.)

**CHANDLER IRON COMPANY.**—This company is now loading from its stock piles by steam shovel, the frost having gone sufficiently to permit this. Its daily shipments are thereby increased. It is hoisting at such a rate that its entire allotment of ore will have been raised by August 1st, and there is a probability that its force will be curtailed very soon unless there is a decided change in the ore outlook. The company has 300,000 tons in its stock pile and will ship all of this the present season.

**MINNESOTA IRON COMPANY.**—This company, at its hard ore mines at Soudan, has started its steam shovels loading and shipments are now about 4,000 tons a day.

**SOUTHALL MINING COMPANY.**—This is the name of a company, incorporated this week, to handle a lease in section 4, town 62-13, S. S. Smith, of Duluth, and J. H. Southall, of St. Paul, are at the head of the company. They have at a depth of but a few feet eight pits bottomed in an excellent specular ore said to assay. In some places, as high as 60% iron and .022% phosphorus. The property is about five miles west of Ely, near the line of the Duluth & Iron Range Railroad, on Robinson Lake, and is leased at a 16c. royalty.

**ZENITH IRON COMPANY.**—This company is loading its 10,000-ton stock pile and is sinking its shaft to the 500-ft. level, 100 ft. below the present. It is being thoroughly developed, and all ore shipped comes from the developments.

#### MISSOURI.

##### JASPER COUNTY.

(From Our Special Correspondent.)

**JOPLIN ORE MARKET.**—The output of ore was less this week than last on account of the rains and wind storms and will be light for several weeks, as a large number of the mines are flooded and cannot be worked for several weeks, and the price of zinc ore is rising at the rate of \$1 per ton a week. The sales this week were larger than last, as considerable of the surplus ore was bought and shipped and several of the large operators are holding their ore for better prices, as it still continues to raise. The top price paid for zinc ore was \$21.50 with an average \$18.50 per ton. The price of lead ore was the same as last week—\$16 per thousand and 50 cents added for hauling. There is a large amount of lead being held in the different camps for a rise in price. The following was turned in by the different camps: Joplin, zinc, 1,037,870 lbs.; lead, 175,630 lbs.; value, \$11,427. Webb City, zinc, 648,050 lbs.; lead, 14,550 lbs.; value, \$6,723. Cartersville, zinc, 1,276,370 lbs.; lead, 337,280 lbs.; value, \$18,329. Galena, Kan., zinc, 2,840,000 lbs. lead, 411,000 lbs.; value, \$23,616. Zincite, zinc, 8,250 lbs.; value, \$82; Oronogo, lead, 7,040 lbs.; value, \$93. Totals for the district, zinc, 5,870,540 lbs.; lead, 945,550 lbs.; value, \$63,271.

**LA FAYETTE COMPANY.**—This company is driving a drift from the old Republic shaft, a distance of 80 ft., to catch the old run of ore and avoid the caved ground. It expects to get back to the ore body in a short time and will hoist the dirt from the Republic shaft.

**MCKINLEY LEASE.**—Wise & Connor made a rich strike of high-grade zinc ore on the McKinley lease of the Connor land, near Cartersville, this week. They have been working an upper run of rich lead ore in black limestone at 104 ft., but started to sink last week, and at 113 ft. they broke through the cap rock into a body of zinc ore. The strike is one of the richest that has been opened up for several years.

**SILVER SHIELD.**—Kenyon & Merrill have a good prospect at the Silver Shield on the Leonard land, where they have leased four lots. The company is composed of Sid Kenyon, of Joplin, Mo., and I. H. Merrill, of Ithaca, N. Y., and they have a shaft down 142 ft., with the fine ore in the bottom. The have strong water, which they beat with an 8-in. lift-pump. They are now drifting at 125 ft. to strike a run of lead in open ground. Merrill & Kenyon are also interested in the Bootleg mine on the Wright lease and are drifting 95 ft. in a rich vein of lead ore in open ground and no water.

#### LAWRENCE COUNTY.

(From Our Special Correspondent.)

**CYCLONE MINING COMPANY.**—This company, on the Weygrand land, held a meeting this week and decided to sink a shaft 95 ft., in the belief that before reaching that level a good lead prospect, already indicated by the drill holes, will be opened up.

**SPRINGFIELD MINING COMPANY.**—The Baker plant, which is now run by this company, has been making a steady run this week, and the bins are rapidly filling up with high-grade zinc ore. The ground boss is Riley Stevens and the manager is George W. Fricke. Several improvements have been made at the plant in addition to enlargement and remodeling of the crusher and jigs. About 25 men are employed working the day and night shifts in the ground.

#### MONTANA.

##### JEFFERSON COUNTY.

**EVA MAY.**—This mine, on Cataract, is working day and night shifts, and shipping more concentrates than ever before.

**HOPE.**—The water has been lowered 80 ft. below the 100 level in this mine, and it is hoped before the week is out to get to the 200 level, where the bodies of the six unfortunate miners are supposed to be.

**UNCLE SAM.**—W. O. Climo & Co. have purchased two one-sixth interests in this mine on Cataract. They have a lease and bond on the property for \$8,000, which expires January 1st, when they will probably purchase it.

#### MEAGHER COUNTY.

**OLD AMBER MINING COMPANY.**—Prof. J. H. Kerr, of this company, reports that they are employing 30 men in the mine and mill and are milling about 50 tons of ore daily. The concentrates run from \$12 to \$70 and are being stacked awaiting the time when they can be shipped at less expense than at present.

#### NEVADA.

##### STOREY COUNTY—BRUNSWICK LODGE.

**BRUNSWICK EXPLORATION COMPANY.**—Following is a copy of the official letter of Patrick Kervin, superintendent of this company. Shaft No. 1 has been sunk 12 ft. on the incline, passing through clay, porphyry and quartz showing some value; total depth, 443 ft. In the 200 level the north drift from the station has been extended 10 ft., passing through porphyry and quartz showing some value; total length, 185 ft. We have been timbering and repairing the south drift during the week. In grading the bottom of the track we found that the ore which now shows in the face extended back along the bottom for 32 ft. Shaft No. 2—The south drift started in the west crosscut No. 1, 45 ft. from main south drift. This drift has been advanced 15 ft. through hard porphyry and stringers of quartz; total length 85 ft. From the end of this drift we have started an east crosscut No. 3 and advanced it 9 ft., face in porphyry and quartz. Gould & Curry Company's tunnel—From the end, 750 ft. from the main north drift, we have started a west crosscut No. 4 and advanced it 12 ft.; face in quartz giving fair assays.

**OCCIDENTAL.**—In the 550 level the east crosscut from the lower tunnel, which is being run to connect with the Edwards shaft, is now in 70 ft. The face of the crosscut is in porphyry, from which there is a strong flow of water. 650 level—West crosscut No. 2, which was started 25 ft. south of the main winze, is in 300 ft. The face is in soft porphyry. 750 level—The north drift from the west crosscut has been extended to a total length of 58 ft. and is in ore assaying \$29 in gold. The east crosscut from the south drift is in 24 ft. and is in low-grade ore.

##### STOREY COUNTY—COMSTOCK LODGE.

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

**BELCHER.**—The yield of the mine for the week was 47 mining carloads of ore, the average assay value of which was \$23.64 per ton.

**CONSOLIDATED CALIFORNIA & VIRGINIA.**—In the 1,650 level we are timbering, making repairs and easing timbers in the south drift on the ninth floor. 1,750 level—From the 14th to the 21st floor, at the north end of the stopes in old ground of former workings, we have extracted during the week 162 tons of ore, the average assay value of which per samples taken from the cars in the mine was \$59.88 per ton. From the north end of the stope on the 19th and 20th floors—on the east side of the old stope

timbers—there is 2½ ft. in width of ore assaying \$50 to \$60 per ton. From the uprise which was carried up from the northwest drift from the main west drift from the C. & C. shaft 50 ft. above the sill floor of this level a west crosscut has been advanced 50 ft. through porphyry and quartz formation, assaying from \$2 to \$7 per ton. One thousand level—West crosscut No. 2, started at a point in the north drift, 550 ft. north from the Consolidated Virginia shaft station, has been advanced 23 ft., total length 312 ft., passing through porphyry and clay and some quartz, assaying 50c. and \$1 per ton. The total extraction of ore for the week amounted to 162 tons, the average assay value of which, per samples taken from the cars when raised to the surface, was \$66.44 per ton.

**CROWN POINT.**—We have stopped work in west crosscut No. 3 on the 700-ft. level, and have started west crosscut No. 4, which is out 14 ft. in porphyry. The raise from the south drift on this level is up 70 ft. The top is in porphyry and clay. The east crosscut from the end of the seventh floor south drift from the 1,100 ft. level raise has reached the east wall. The quartz encountered is somewhat higher in grade than that heretofore prospected, the face samples running from \$5 to \$7 per ton, principally gold.

**HALE & NORCROSS.**—In the 975 level, No. 4 upraise, we have been working north on 3d floor; also raised one set for 4th floor. The ore streak looks better than at date of last report. We are retimbering north drift on this level and making other necessary repairs. 1,100 level—Have been working north on the sill floor and 2d floor in old fills, from which we continue extracting some ore of fair quality. Have extracted from our openings on the 975 and 1,100 levels during the week 53 cars of ore assaying per mine car sample: Gold, \$19.55; silver, 21 oz. per ton. Forwarded to San Francisco office on May 19th 76 lbs. crude bullion—assay value, \$2,752—being the final clean-up of 106½ tons net of ore reduced at Dazet mill in May. We are now making a milling test on the ore belonging to the company at Combination shaft, extracted in 1886 from the 3,000 and 3,100 levels.

**OPHIR.**—On the 1,000 level, west crosscut No. 1, 70 ft. north of the Con. California & Virginia line is in 274 ft. The face is in porphyry, clay and quartz, the latter assaying \$1 per ton. West crosscut No. 1 from the north drift, 230 ft. south of the Mexican line, is in 409 ft. The face is in a similar formation. In the old Central tunnel workings of the Ophir, from the upraise started on the north side of the crosscut running west from the run northwesterly from the Mexican shaft at a point 194 ft. from the mouth of the crosscut, the south drift has been extended 27 ft. through porphyry and quartz assaying \$3 to \$7 per ton; total length, 37 ft.

**SAVAGE.**—On the 850-ft. level we are stoping upward to the fifth floor, following the ore in east crosscut No. 1. The ore is of good grade and shows about the same width as last reported. In east crosscut No. 3, we are stoping up to the fourth floor in ore of good quality, and the improvement mentioned in the last official letter continues. We have graded the main south drift and put in a track from the new station on this level to the stopes in No. 3 east crosscut, and are now hoisting the ore taken from this level from the new station. During the week we hoisted 96 mining carloads of ore, the average car sample assay of which was \$61.85 per ton. Shipped to the Nevada mill 225 tons of ore. The mill commenced crushing Savage ore on May 24th.

**SEGREGATED BELCHER.**—The mine during the week produced 24 carloads of ore, assaying \$25 per ton.

#### LINCOLN COUNTY.

**DE LAMAR GOLD MINING COMPANY.**—It is rumored that Capt. J. R. De Lamar, who is now in Europe, is negotiating with an English syndicate for the sale of his Nevada properties for a sum said to be \$2,750,000. No details are known, but it is reported that mining experts representing the syndicate are now engaged in an examination of the properties.

#### NEW MEXICO.

##### LINCOLN COUNTY.

**LADY GODIVA.**—A new and heretofore undiscovered vein of ore has been encountered on the 635-ft. level of this mine and 35 ft. west of the former workings. The vein is said to be 3 ft. wide and pass well.

##### SANTA FE COUNTY.

**ORTIZ MINE GRANT.**—Mr. S. H. Elkins, recently appointed receiver for the Ortiz mine grant, states that the mills and the miners now at work on the grant would be regarded as trespassers, and he thought they would have to go. He reports that a one-ton plant for testing the process of Prof. Geo. W. McGee, of Chicago, would soon be in operation on Cunningham mountain ore. If it is a success a contract for a 100-ton plant will be made. He also said that a Mr. Neustatter, of Montana, had succeeded Mr. Hebert Strickler as manager of the Ortiz mine, and that the property was now yielding about \$300 in gold per week. This property is under the control of Mr. Bigot and others, of St. Louis.

##### NEW YORK.

##### LIVINGSTON COUNTY.

**GREIGSVILLE SALT MINING COMPANY.**—J. B. Perkins, of Perkins & Hays, as attorneys for F. Stuart Gray, appeared before Justice Nash in special term



last week, and moved to eliminate certain sections and substitute more definite ones in the complaint in an action brought by their client against this company and others. The action involves property which is now in possession of the Retsof Mining Company, a rival concern. Gray alleges that he exchanged about 400 acres of land in the town of York, where the mines are located, for \$50,000 in shares of the Greigsville Company, and that later the company became bankrupt and that the bonds of the company were sold at auction for 9c. on the dollar to meet the judgments obtained against it.

**PENNSYLVANIA,  
ANTHRACITE COAL.**

**BUCK RIDGE.**—Five miners were fatally burned by an explosion of gas at the Buck Ridge colliery on June 1st. The men were employed in No. 9 vein, which was known to be full of gas at the time they entered. They proceeded cautiously and were using safety lamps while brushing the gas from the chamber when the explosion occurred. The mine is owned and operated by the Reading Coal and Iron Company and is located about four miles from Shamokin.

**SCHUYLKILL COAL EXCHANGE.**—The following collieries drawn to return the prices of coal sold in May, 1896, to determine the rate of wages to be paid, made the following returns, Bear Ridge, \$2.30; Boston Run, \$2.38; Elmwood, \$2.28; Potts, \$2.34; Mr. Hope, \$2.43. The average of these prices is \$2.347, and the rate of wages to be paid for work in last half of May and first half of June, 1896, is 5% below the \$2.50 basis.

**UTAH.**

**PIUTE COUNTY.**

**GREAT WESTERN.**—This mine, at the head of Bullion Canyon, owned by Henry W. Lawrence, shows a large amount of development and a large body of silver and lead ore.

**MORNING STAR.**—On this mine, owned by William Warnock, and situated a half mile west of the Bully Boy, considerable work has been done, and a large body of lead ore uncovered.

**NO-YOU-DON'T.**—In this mine, owned by E. Forsey, there is a large body of low grade silver-bearing ore, while Glen Miller and D. E. Giles have let a contract to run an incline 2,000 ft. into claims that show gold and copper ore.

**SALT LAKE COUNTY.**

**BINGHAM COPPER MINING COMPANY.**—Manager Hardy, of this company, reports that ore was encountered at a point 1,700 ft. distant from the mouth of the Benton tunnel at Bingham.

**DALTON AND LARK MINING COMPANY.**—This company, of Bingham, has just finished running a shaft from the 640-ft. level in the Lark mine to the Dalton parallel vein, 150 ft. distant, and at the point of connection has cut into a large body of high-grade galena ore. On May 13th the drift had been run 10 ft. into this ore body and the company began shipments from it. The company also began shipments last week from the Old Brooklyn mine, lately acquired by the company by purchase. Recent work in this mine is said to have uncovered large bodies of high-grade ore, and the Old Brooklyn will hereafter be a regular and steady shipper.

**TOOELE COUNTY.**

**MERCUR GOLD MINING AND MILLING COMPANY.**—This company has bought from the Utah & Montana Machinery Company a 25-H. P. flat friction hoist, complete, which was shipped to the mine last week. This makes the third hoist put in the Mercur mine by the company. The new plant will be placed near the mouth of the Resolute tunnel, where it will be employed in the sinking of the incline shaft, which is now down 190 ft., the face of which shows a breast of 12 ft. of milling ore, and no waste. This incline shaft will be continued, besides which drifts will be run both ways on the ore body.

**WEST VIRGINIA.**

**TYLER COUNTY.**

**VICTOR OIL AND GAS COMPANY.**—Another well has been driven on the Bullman farm, by this company, near Wick, making their second big strike on that farm. As soon as the pay was reached in the Bullman No. 2 it began to flow at the rate of 75 bbls. an hour.

**FOREIGN MINING NEWS.**

**ECUADOR.**

**PLAYA DE ORO MINING COMPANY.**—Deputy Sheriff Carragher in New York on June 4th received an attachment for \$24,304 against the Playa de Oro Mining Company, a Kentucky corporation, in favor of Russell F. Lord, for services and money disbursed on account of the company since November 1st, 1892, to date. The attachment was granted on the ground that the company is a foreign corporation. A levy was made on the company's bank account in the Corn Exchange Bank of New York.

**LATE NEWS.**

The output of the Atlantic copper mine of Michigan for the month of May was 258½ tons, against 275½ tons in May, 1895, and 233½ tons in May, 1894.

MR. ROBERT FORSYTH, second vice-president of the Illinois Steel Company, has resigned his position

and has retired from the service of the company.

**COAL TRADE REVIEW.**

**NEW YORK, Friday Evening, June 5.**

Statement of shipments of anthracite coal (approximated) in tons of 2,240 lbs., for the week ending May 30th, 1896, compared with the corresponding period last year:

Pennsylvania Railroad.....	1896.		1895.
	Week.	Year.	Year.
70,767	1,426,750	1,463,731	
<b>PRODUCTION OF BITUMINOUS COAL, in tons of 2,000 lbs. for week ending May 30th, and for years from January 1st, 1896 and 1895:</b>			
<b>Shipped East and North:</b>			
Allegheny, Pa.....	34,970	991,058	617,170
Barclay, Pa.....	.....	.....	.....
Beech Creek, Pa.....	68,832	1,331,664	1,264,103
Broad Top, Pa.....	5,367	182,331	.....
Clearfield, Pa.....	70,155	2,005,050	2,351,661
Cumberland, Md.....	60,949	1,222,685	1,037,256
Kanawha, W. Va.....	.....	.....	.....
Phila. & Erie.....	653	21,424	23,091
Pocahontas Flat Top.....	74,256	1,536,117	1,366,437
Totals.....	315,182	7,295,279	6,889,718

Shipped West:	1896.		1895.
	Week.	Year.	Year.
Monongahela, Pa.....	17,082	425,174	319,125
Pittsburg, Pa.....	29,580	738,129	686,204
Westmoreland, Pa.....	25,196	864,545	797,549
Totals.....	71,858	2,027,848	1,802,878
Grand totals.....	387,040	9,323,127	8,692,596

Production of coke on line of Pennsylvania Railroad for the week ending May 30th, 1896, and year from January 1st, 1896, in tons of 2,000 lbs.: Week, 79,082 tons; year, 1,905,402; to corresponding date in 1895, 2,327,283 tons.

**Anthracite.**

The month of June has opened fairly well when we consider the volume of business transacted this week in comparison with that which we reported previously. Generally speaking, the coal trade is in better condition now than a week ago, and some orders have been filled at the May circular. It is not expected that this month's business will exceed that for the same period in 1895; in fact, the conditions which govern the trade at the present time are indicative of a waiting policy among both buyers and sellers. The supply of coal is said to be about equal to the demand, and it looks now as if there will be an accumulation of stocks by dealers this month in consequence of a prospective advance in prices. The sales agents in this city intimate that this increase will be at least 25c. on the May prices. The belief is prevalent that the companies are striving to establish such rates as will bring the average price of coal up to \$4 before the end of the year.

The coal that is going forward to Western ports is being stocked up. There is a satisfactory volume of business doing in the Eastern market. It is stated that the May circular will not be shaded.

The f. o. b. prices now current are: \$4 for stove, \$3.75 for egg and chestnut and \$3.50 for broken, subject to the usual commission of 15c.

The coal stocks dealt in on the Exchange in this city have risen in value at the close of the week, and even Reading, against which foreclosure proceedings are being carried on, has regained much of its loss. The others have shown a fractional advance.

**Bituminous.**

The soft coal market is improving slightly, and in most cases it requires heavy shipments on the working days to supply the demand. Most of the producers are heeding the request of the Executive Committee of the Bituminous Coal Association to close down their mines three days in the week, and this is causing a call for coal that has been out of the ordinary in the trade of late. Sound business is very quiet. New York trade is somewhat active.

All-rail business is quiet, and tonnages are falling off slightly. Some of the smaller contracts have been taken, it is said, at "combination" figures and the "Association," it is claimed, is holding its own. There have been one or two meetings of the various sub-committees during the week, and as far as can be learned everything seemed to be satisfactory. Most of the producers are willing to wait for better times, and the impression is prevalent that there is a slight improvement already.

A few shipments are being made to South America, but these orders are generally going to the usual foreign commission houses.

The contract season this year bids fair to extend over a larger time than is usual. Formerly the year would open with low prices and consumers seemed willing to contract promptly; but this year when slight advances have been made, consumers are inclined to postpone placing their orders until the last moment. This inclination is also strengthened by the general condition of business throughout the country.

Transportation from mines to tide is fairly good, though there continues to be considerable coal along the main line roads, on the side-tracks and elsewhere. There is also a considerable quantity of coal at tidewater shipping ports. The car supply is fairly good.

In the coastwise market vessels are in a slightly better supply than last week, though they are still

scarce, and freights keep strong. One or two South American shipments have been cancelled on account of the difficulty in getting vessels to charter.

We quote current rates of freight from Philadelphia: To Boston, Salem and Portland, 65c.; Providence, New Bedford and the Sound, 60c.; Portsmouth, 70c.; Wareham, 80c.; Lynn, 80@90c.; Newburyport, 75@80c.; Dover, \$1.10 and towage; Saco, 90@92½c. and towage; Bath, 65@70c.; Gardiner, 70c. and towage; Bangor, 70c. For the lower shipping ports 5 and 10c. above these rates are asked by the trade.

The Association prices remain as follows: F. o. b. Philadelphia, Norfolk and Newport News, \$2.35; Baltimore, \$2.28; New York Harbor shipping ports, \$2.80, alongside; New York Harbor, \$3. There is a 20c. differential in favor of Clearfield and Beech Creek coals.

**Buffalo, N. Y.**

June 4.

(From Our Special Correspondent.)

The anthracite coal business continues to rule very dull; a few orders are being filled for family use, but the bulk of our consumers are waiting, expecting a reduction in quotations, although dealers assure them that there will not be any change except an advance. The movement by lake thus far this season is much larger than last year and at higher freight rates.

Bituminous coal is quiet and nominally unchanged in price. Manufacturers as a rule buy only for their immediate requirements as money is scarce and collections difficult.

News items are very scarce. Mine owners and carriers appear to be working in harmony. Wholesalers say that the market is in excellent shape to do a large business at profitable prices.

The first vessel of the Rockefeller's lake fleet, called the Bessemer, was launched last week at Cleveland. She is the first of 12 vessels, and 412 ft. long, will draw 15 ft. of water and carry 4,600 gross tons of freight.

The shipments of coal from this port westward by lake from May 24th to 31st, both days inclusive, aggregated 84,205 net tons distributed as follows: 35,450 tons to Chicago; 33,600 tons to Milwaukee; 6,100 tons to Superior; 1,950 tons to Racine; 1,750 tons to Manitowoc; 2,400 tons to Saginaw, and 2,895 tons to Bay City. The rates of freight were 50c. to 60c. to Chicago; 45c. to 55c. to Milwaukee; 25c. to Duluth and Superior; 35c. to Bay City and Manitowoc, 60c. to Racine and 40c. to Saginaw. It will be noted that these figures are higher than those of a week ago. Closing very firm with upward tendency.

The following statistics of the coal trade of Buffalo were compiled by Mr. William Thurstone, secretary of the Merchants' Exchange:

"Coal movement at Buffalo, N. Y., to June 1st, 1896. Receipts and shipments by railroads are not reported by request. Lake receipts for 1896 and two previous years none. Shipment by lake from opening of navigation to June 1st, 330,980 net tons as compared with 259,788 net tons in 1895 and 341,774 net tons in 1894. The receipts by canal thus far this season 3,586 net tons and in 1895 and 1894 none. The shipments by canal thus far this season none as compared with 806 net tons in 1895 and 461 net tons in 1894. The aggregate shipments this year to June 1st shows an increase of 71,201 net tons over 1895 and a decrease of 10,755 net tons under 1894.

"Lake freights from opening of navigation to June 1st were as follows: 40@60c. to Chicago; 40@55c. to Milwaukee; 25c. to Duluth and Lake Superior ports; 45@55c. to Green Bay; 25c. to Toledo and Detroit; 45@60c. to Racine; 35@40c. to Saginaw; 25@35c. to Bay City, and 25c. to Ashland. A year since the freights were: 30@40c. to Chicago; 30@35c. to Milwaukee; 15c. to Lake Superior Ports; 30@35c. to Green Bay; 25c. to Toledo; 40c. to Racine; 35c. to Saginaw and 20@25c. to Bay City.

"The distribution of coal by lake thus far this season was as follows: 119,595 net tons to Chicago; 103,075 net tons to Milwaukee; 29,700 net tons to Duluth; 6,950 net tons to Racine; 2,300 net tons to Green Bay; 900 tons to Kenosha; 200 tons to Escanaba; 2,895 tons to Bay City; 3,960 tons to Saginaw; 7,010 tons to Toledo; 1,200 tons to Lake Linden; 800 tons to Cheboygan; 600 tons to Ashland; 23,700 tons to Superior; 670 tons to Sault Ste Marie; 2,100 tons to Port Arthur; 5,434 tons to Manitowoc; 600 tons to Gladstone; 100 tons to Alpena, and 19,200 tons to miscellaneous ports by vessels from Tonawanda not reported at Custom House."

**Chicago.**

June 3.

(From Our Special Correspondent.)

An item of importance for the week is the advance in circular rates on anthracite coal. The prospective advance has driven a great many consumers into buying coal, and therefore the market conditions have very materially improved over the preceding week. The increased price went into effect Tuesday, June 2d, and in the haste to stock up before that day a great deal of coal has been sold. There is a great deal of speculation in regard to the increased prices, and opinions differ as to the results arising therefrom. Some contend that the higher prices will hold and that at present prices it is a good speculation to buy coal for next winter's supply, while there are others that say the bottom will fall out before very long. In regard to the present supply of hard coal in this city, a good authority places the amount at one-third more than the quantity held last year in May. June prices as made are for grate, \$5.25, and egg, stove and chestnut, \$5.50.



Bituminous coal has been in but small demand, the week having shown no improvement over its predecessor. Manufacturing concerns, etc., are buying only in limited quantities, and hesitate about placing contracts for entire year. Some of the office buildings have bought rather more than usual on account of the continued cold weather.

**Pittsburg.** June 4.

(From Our Special Correspondent.)

**Coal.**—There is a large amount of coal loaded ready for shipment as soon as the stage of water in the Ohio will permit of a movement of that kind. Many of the river mines are closed waiting the arrival of empties. The railroad trade continues in a rather unsatisfactory condition. There is but little coal being bought by the lake shippers, and many of the smaller mines are running but three days a week to fill summer contracts. The majority of companies are paying the 70c. mining rate, though several of the larger concerns and heaviest shippers continue to pay but 54 or 60c.

The wire men of Cincinnati have decided to shut Pittsburg coal out of the market. This new combination has control of all of the terminal facilities for the handling of coal in the city. There was great astonishment when it was discovered that the bids for supplying the water works was secured by Sol. Kincon, taking a \$90,000 contract at a price out of reach of other bidders.

When the bids were opened there were but three bidders and Mr. Brown, of W. H. Brown Sons Coal Company, the largest handler of river coal, sent in a bid. It is difficult to see how the railroad coal combination is going to shut out Pittsburg coal, as reported. Pittsburg coal is rarely sent to Cincinnati and this movement is hardly worth talking about, as there are markets in the South and West that will pay more money for our coal than any other.

A. F. Johnson, of West Newton, has optioned a large body of coal land in Franklin township surrounding Darnley Station and is having test holes made to locate and define the coal deposits.

**Connellsville Coke.**—It is reported that a substantial reduction is about to be made in the rates on coke from the Connellsville regions and Lake Erie. The condition of the furnacemen is precarious and railroad presidents are asked to do something to assist the manufacturers of iron in meeting the varying conditions that confront them. The officials decided to reduce the rates on coke between the Connellsville region and Cleveland 25c. a ton; the reductions for furnaces at Youngstown, New Castle and other points in the Mahoning Valley and at Sharon and points in the Shenango Valley, from \$1.35 a ton to \$1.10 a ton, the new rate to go into effect June 8th.

The coke trade made slight gains since our last, both in shipments and production; taken as a whole, there is little change perceptible. The reported blowing out of furnaces is not likely to affect trade very much. The week's summary shows 11,422 ovens in blast, 6,535 ovens idle. There was no change in the active or idle ovens. The production of the region, estimated upon the ovens drawn, amounted to 119,998 tons, an increase of 1,660 tons. In the running order of the 11,422 ovens in blast, 5,816 ovens made six days, 5,526 ovens made five days, and 70 ovens four days, an average of 5.53 days, as against 5.35 the week previous. The week's shipments from the region amounted to 6,823 cars, an increase of 38 cars. Shipments distributed as follows: To Pittsburg, 2,292 cars; to points west of Pittsburg, 3,525 cars; to points east of Pittsburg, 1,006 cars; total, 6,823 cars. Card prices show no change; there is, however, a good deal of coke selling below printed rates.

## IRON MARKET REVIEW.

NEW YORK, Friday Evening, June 5, 1896.

### Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending		From	
	June 7, 1895.	June 5, 1896.	Jan., '95.	Jan., '96.
Anthracite.	35	20,876	42	21,916
Coke....	121	130,794	138	172,480
Charcoal...	19	4,250	15	5,230
Totals....	175	155,920	195	199,626
			3,687,956	4,535,417

The general iron market shows no signs of improvement, and still refuses to respond to the numerous invitations to buy at high prices. It is very doubtful under present conditions whether even a general reduction in raw material would serve to stimulate business. The trouble is chiefly in the uncertain financial conditions which prevent people from putting their money into new enterprises.

The production of pig iron is gradually decreasing, as we hear of more furnaces going out of blast than starting up. A great many furnaces seem to need repairs about this time.

The steel combine is still waiting until the old contracts are cleared up, and the steel in the hands of middlemen disposed of. The market must be nearly bare of billets now, but buyers show no disposition to come forward.

The Wire Nail pool is holding a meeting in New York this week. The object is to see whether high enough terms can be offered to buy off the Pittsburg Wire Company and Baackes & Co., who have been operating outside the combine, and who threaten to break it down, if they continue to work independently. No conclusions have yet been reached.

### NOTES OF THE WEEK.

The *Etna-Standard Iron and Steel Company*, at Bridgeport, O., has had plans prepared for an open-hearth steel plant, and will begin work on it at once, intending to make its own steel hereafter. The plant will consist of three 30-ton furnaces and will have a capacity of 200 tons of steel a day.

The new scale adopted by the Amalgamated Association of Iron and Steel Workers at Detroit advances boiling on a 1 $\frac{1}{2}$ c. card from \$4 to \$4.50 per long ton. In the old scale, for each advance of 0 $\frac{1}{2}$ c. in the bar iron card puddling advanced 25c., while in the new scale an advance of 0 $\frac{1}{2}$ c. in the card carries with it an advance of only 12 $\frac{1}{2}$ c. in puddling. This makes the rate for boiling on a 1 $\frac{1}{2}$ c. card \$5, the same as in the present scale. For each advance of 0 $\frac{1}{2}$ c. above 1 $\frac{1}{2}$ c. in bar iron, boiling advances 10c. per ton, as in the present scale. Muck rolling is one-eighth of the straight price for boiling, as in the present scale. A conference with the manufacturers on the proposed scale will be held about the middle of June.

**New York.** June 5.

The local market is dull for the most part. The advertisement of the big Brooklyn pipe contract caused some excitement in that special line; but beyond that a few purchases of material by the Paterson locomotive builders have been the only break in the monotony. The absence of small orders is an unfavorable feature; most of the local shops still complain of short work; and some have had to reduce forces again. In the structural business several plans are again reported in suspense on account of the financial uncertainty. Even on such security as a New York building it is not too easy to get a long loan, and people are very much disposed to keep their money within close reach.

**Pig Iron.**—The market has been quiet, and a 500-ton order is enough to set all the furnace agents running. The prices of Northern iron have been pretty well maintained—at least we hear no reliable accounts of shading. On Southern pig there has been such a general concession to buyers that we have to reduce all prices at least 25c. There has been some reduction in rail and water freight rates, which has helped the sellers. If the present active competition for a small business continues, we may look for further reductions.

We continue to quote for Northern iron as follows: No. 1 foundry, \$12.75@13.25; No. 2 foundry, \$12@12.50; gray forge, \$11.25@11.75. For Southern irons we quote: No. 1 foundry, \$11.50@12; No. 2 foundry, \$11@11.50; No. 1 soft, \$11.25@11.50; forge, \$10@10.50. All prices are for large lots, tidewater delivery.

**Cast Iron Pipe.**—The Brooklyn Water Works have called for bids for 74,500 ft. of 48-in. pipe and the trade is excited over the contract, which will amount to more than 37,000 tons. Bids are to be received, however, for riveted steel pipe as well as for cast iron, and it is quite possible that a steel bid may get all or part of the contract. A 2,500-ton contract for Providence is also out, besides two smaller ones for New England cities, and a lot of gas pipe for New York.

**Spiegeleisen and Ferro-Manganese.**—Sales continue small, and quotations are unchanged at \$19.50@20.50 for imported spiegeleisen and \$47@47.50 for ferro.

**Steel Billets and Rods.**—There has been absolutely no business and we quote nominally the pool price, which is \$21.75 per ton for New York delivery. Rods are quoted nominally \$27, with light sales.

**Merchant Iron and Steel.**—Only a retail business is being done. We quote for common bars, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 0c.; for refined bars, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 5c.; soft steel bars, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 4c. Other quotations are: Steel hoops, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 0c.; steel axles, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 0c.; links and pins, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 7c.; tire steel, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 2c.; spring steel, 2 $\frac{1}{2}$ @2 $\frac{1}{2}$ 0c. Open hearth machinery steel is 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 0c.

**Plates.**—Business is dull, and there is a slight reduction in prices. If the Brooklyn Water Works order (referred to above) is finally placed for steel pipe it will make a demand for some 16,000 or 17,000 tons of plates. We quote for universal mill plates, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 5c. Other quotations are: Tank, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 0c.; boiler shell, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 0c.; good flange, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 0c.; firebox, 2@2 $\frac{1}{2}$ 0c. Charcoal iron plates are 2 $\frac{1}{2}$ c. for shell, 2 $\frac{1}{2}$ c. for flange, and 3 $\frac{1}{2}$ c. for firebox. Rivets are 3@3 $\frac{1}{2}$ c. for best iron and 2 $\frac{1}{2}$ @2 $\frac{1}{2}$ c. for steel.

**Structural Iron and Steel.**—One or two new buildings of some size are on the market for material, but there continues to be some uncertainty. No change in prices is noted. We quote for angles, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 5c.; channels, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 5c.; tees, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 5c.; beams (up to 15-n.), 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 0c. for large lots and 2@2 $\frac{1}{2}$ 0c. for small orders.

**Steel Rails and Rail Fastenings.**—The market here is perfectly quiet, and no sales have been made. Steel rails are quoted at \$23.75 per ton at tidewater for standard sections; girder rails at \$20@23 at tidewater.

Rail fastenings are quiet. Fish and angle-plates, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 3c.; spikes, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 7c. Pending the issue of the new lists no quotations for bolts are given.

**Scrap Iron.**—Demand for cast scrap is a little better and some sales are noted. We quote about \$10 @ \$11.50 for good machinery scrap; \$9@10 for ordi-

nary cast scrap, and \$6@7.50 for stove-plate and mixed.

**Old Rails.**—A good-sized lot of old iron rails was offered here this week, but no bid over \$13 was made and the rails are held for the present.

We hear of a recent sale of old steel rails, about 750 tons, at \$11.50 per ton, f. o. b. cars at Jersey City. Several lots of partly-worn steel rails, suitable to relay for light work, have been offered here recently, but no sales could be made over \$20 per ton, at which price some 300 tons were placed.

**Chicago.** June 3.

(From Our Special Correspondent.)

There has not been much change in the iron market here, buyers still being very conservative. The only improvement noted is in billet sales, nearly 8,000 tons having been contracted for. The Illinois Steel Company has closed down the works at Ashland avenue and Thirty-second street for an indefinite period, throwing 1,500 men out of work. Labor troubles are the cause of the shut down.

**Pig Iron.**—The market for pig iron remains yet in an inactive condition, the sales of the week not exceeding a few thousand tons, and this was mostly in Northern pig iron. Prices are weak, though there is no further depression in them since the fall of last week. There is now a tendency on the part of those who have contracts to ask for quicker shipments. Inquiry is limited. We quote Lake Superior charcoal, \$13.50@14; local coke foundry No. 1, \$12@12.25; local coke foundry No. 2, \$11.50@11.75; local coke foundry No. 3, \$10.75@11; Southern coke No. 1, \$11.85; Southern coke, No. 2, \$11.60; Southern coke No. 3, \$11.10; Southern No. 1, soft, \$11.60; Southern No. 2, soft, \$11.35; Jackson County silvers, \$14.50@16; Ohio strong softeners, \$15@15.50; Alabama car-wheel, \$16.85@17.35.

**Structural Material.**—There is a small amount of business going chiefly confined to bridge material. Building specifications are few though there are some contracts of fair size now in the market, chiefly for out of town projects. Quotations are as follows: Beams and channels, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 7c.; angles, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 5c.; plates, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 5c.; tees, 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 7c. Small lots from stock are quoted  $\frac{1}{2}$ c. to  $\frac{1}{2}$ c. higher.

**Billets and Rods.**—Sales of 8,000 tons of billets were made in this market during the week. A few sales of rods are noted though the quantity is small. Billets are quoted at \$21.25. Rods are not quoted.

**Bar Iron.**—There has been but little buying of bar iron, the agricultural implement houses having been the chief consumers for the week. Common iron is quoted 1 $\frac{1}{2}$  and muck bars 1 $\frac{1}{2}$ @1 $\frac{1}{2}$ 0c.

**Steel Rails.**—A number of small orders are coming in for rails, though there is nothing large in sight. Rails are quoted \$29 and upward according to specification.

**Old Rails and Wheels.**—A difference of a dollar or so in bidding and asking price keeps buyers out of the market and therefore the business for the week in both old iron rails and old wheels has been exceedingly light. Old iron rails are quoted \$13.50@14.

**Cleveland, O.** June 3.

(From Our Special Correspondent.)

**Iron Ore.**—The sales of iron are still slow in this market, but the dealers say they expect a revival soon. The transactions during the past week have been small in quantity, and, as one dealer expressed it, in quality also. The price demanded for a standard Bessemer is \$4, although it is said that a few sales were made a little above and below that sum. It is not the belief of the dealers, however, that the deviation from the price indicates anything but a slow market. Standard non-Bessemer hematites waver around the \$2.60 mark, although a few sales are reported below that figure. The sellers, however, say that the price must rise, as they cannot afford to sell at that price. But few Mesabi non-Bessemer have been sold during the week, and they were disposed of at the same price as named last week—\$2.40@2.45.

Lake freights remain firm, with the exception of Marquette. Last week the rate from that port was 85c., but it has been pounded down to 80c. Escanaba is still 55c., and from the upper lake ports to Ohio ports it is 95c., a decline of 5c. since the opening of the season. There is every indication, it is said, that the rate will go still lower, as the tonnage is increasing in greater proportion than the cargoes.

**Pig Iron.**—Six furnaces in the Valley are reported out of blast, on account of the dullness in the market. A few sales of foundry iron are reported at \$12.75 for No. 1, and \$12.25 for No. 2. Bessemer pig has dropped a few points; last week it was selling at \$12.75, but this week it is quoted at \$12.50. Ohio Scotch was selling last week at \$13.25 and \$12.75 for Nos. 1 and 2, respectively, but this week it is quoted at 50c. less by one of the largest firms of this city. Northern strong sells for the same price. Lake Superior charcoal finds a ready market at \$14 for No. 1, and \$13.50 for No. 2.

**Pittsburg.** June 4.

(From Our Special Correspondent.)

**Raw Iron and Steel.**—The business situation since our last has developed very little change. The sales were very much restricted, being principally for June delivery; business for later months was but little inquired for. The fact is the market for some time past has been a waiting one, with no immediate prospect of a change; buyers are very con-



servative and most of them show no disposition to extend their operations far into the future. The best that can be said of the iron and steel market is that it is no worse than it was a week ago. Orders continue to arrive for small lots; consumers who formerly made purchases of 5,000 to 10,000 tons content themselves with a few hundred tons; this shows that their belief in higher prices is not very strong. It seems to be conceded by most dealers that the time has been reached for many establishments to shut down rather than take business at lower prices. In pig iron there has been some irregularity, but considering the narrowness of the trade, it is no more than was to be expected, but there is so much iron piled up in the various yards that it is very difficult to maintain an appearance of firmness.

A short time since some of the heavy consumers entered the market, purchasing about 75,000 tons Bessemer, the deliveries extending to January 1st, 1897. This looked like business and gave rise to the impression that the time for activity had come, but such was not the fact. The market is still waiting for something to turn up that will revive trade, but just how long before that important event will arrive there is no way of finding out. With coke at \$2 and Bessemer ore at \$4, furnacemen contend that present prices cannot be reduced without losing money, that they barely cover actual cost of production, and that further concessions are out of the question. Before they would accept lower prices they would blow out and wait for better times.

The Sharon Iron Works will build a new steel plant, also a new wire rod mill and 50 additional coke ovens, giving employment to 2,000 men. The works will be under the supervision of a Pittsburg man.

At Sharon the Mabel furnace made a phenomenal cast of iron last Sunday, which, it is claimed, beat the world's record. The iron weighed 252½ tons. The average daily output for May was 220 tons.

Latest.—The market is dull, prices weak and irregular. Bessemer prices show a wide range, and are confined principally to June delivery, though consumers' supplies are known to be limited. For steel billets demand and sales are light. Extreme rates are \$18.90@20.25. There is no demand for scrap or old rails.

The following table gives the weekly prices of Bessemer pig at Pittsburg for May, the past two years; it will be found useful for comparison:

1895.		1896.	
May 1	\$10.75@10.9	May 1	\$13.00@13.40
" 8	11.00@11.35	" 8	12.75@13.00
" 15	11.35@11.70	" 15	12.65@13.25
" 22	11.55@11.75	" 22	13.00@13.25
" 29	11.65@11.75	" 29	12.40@12.75

The weekly prices of steel billets at Pittsburg in May the past two years is given below:

1895.		1896.	
May 1	\$15.50@15.75	May 1	\$19.35@20.00
" 8	15.50@16.65	" 8	19.50@20.00
" 15	16.50@16.75	" 15	19.30@20.25
" 22	16.75@17.40	" 22	15.65@20.25
" 29	17.00@17.50	" 29	19.15@20.25

COKE SMELTED, LAKE AND NATIVE ORE.		BLOOMS, BILLETS AND SLABS AT MILL.	
Tons.	Cash.	Tons.	Cash.
5,000 Bessemer, July, Aug., Sept., Pitts.	\$13.00	1,000 Billets, June, at mill	\$19.25
5,000 Bessemer, June to Dec., Valley	12.25	1,000 Billets, June, at mill	19.35
3,000 Bessemer, Aug., Sept., Oct., Valley	12.00	500 Billets, June, at mill	20.00
2,000 Bessemer, June, Pitts.	12.50	500 Billets, June, at mill	19.15
1,500 Bessemer, June, Pitts.	12.75	400 Billets, June, at mill	19.85
1,200 Bessemer, June, Pitts.	12.75	500 Billets, June, at mill	18.90
1,000 Bessemer, Spot, Pitts.	12.40	SKELP IRON.	
1,000 Bessemer, Prompt, Pitts.	12.45	500 Sheared, Pitts. 1.45 4 m.	
700 Gray Forge, June, July, Pitts.	10.75	400 Wide grooved, Pitts.	1.25 4 m.
500 Bessemer, June, Pitts.	13.00	300 Narrow grooved, Pitts.	1.25 4 m.
300 No. 2 Foundry, June, Pitts.	12.25	SKELP STEEL.	
250 Gray Forge, June, Pitts.	10.75	400 Sheared, Pitts. 1.35 4 m.	
200 No. 2 Foundry, spot, Pitts.	12.00	300 Wide grooved, Pitts.	1.20 4 m.
200 No. 2 Foundry, June, July, Pitts.	12.00	200 Narrow grooved, Pitts.	1.20 4 m.
200 Bessemer, June, Pitts.	12.50	MUCK BAR.	
125 No. 1 Foundry, June, Pitts.	12.50	500 Neutral delivered, Pitts.	\$21.50
50 No. 2 Silvery, June, Pitts.	13.00	STEEL WIRE RODS.	
50 No. 1 Silvery, June, Pitts.	14.30	600 5-gauge, at mill, Pitts.	\$27.90
CHARCOAL.		FERRO SILICON.	
100 Cold Blast, Pitts.	\$23.50	25 Bessemer silicon, Pitts.	\$20.50
75 No. 3 and 4 Foundry, Pitts.	16.25	BLOOMS, BILLETS, BAR ENDS.	
75 Blah Grade, Pitts.	17.00	500 Billet and bar ends, Pitts.	\$14.50
50 No. 3 Charcoal, Pitts.	15.00	SHEET BARS.	
		600 Delivered, Pitts.	\$22.25

Philadelphia. June 5. (From Our Special Correspondent.)

**Pig Iron.**—If there is any difference in the iron trade over last week it is that there is more figuring going on and more talking about buying. The actual improvement some of our people report is not apparent in dealings or orders. The fact that prices have reached lowest level argues that big orders are near. Pig iron sales have been unusually light. Nothing has come out of the organizing talk lately heard. Furnacemen and brokers recognize that something ought to be done, but what to do is the question. No 1 foundry is \$12.50; No. 2, \$12; forge, \$10.75@11.25. There is plenty of standard iron on call. Bessemer is worth \$13.50.

**Steel Billets.**—Holders of outside lots are in a position to command the market, and appear able to do so for some little time yet. There are a number of consumers who are willing to buy at \$21. The consumption continues about the same.

**Merchant Iron.**—This is the time when we expect more business, but it is not coming. Manufacturers report poor trade, and everybody is waiting for developments. Millmen say the present abnormal depression must be followed by a large demand. Steel bars are selling at 1'30@1'50. Store sales are fair.

**Skelp.**—Large sales of skelp have been made, and more are to follow because of the low quotations privately made to large prospective buyers. Groved is 1'25; sheared, 1'35.

**Sheets.**—The sheet mills keep busy by keeping prices at the lowest possible level. Future requirements of several large consumers are now being taken care of. Roofing material is an important item just now.

**Wrought Iron Pipes.**—In some sizes there is a little temporary improvement.

**Plates.**—Since Monday two or three good orders have been placed and more are promised. Prices show the anxiety of many manufacturers to secure business. Some July business has been stirred up, but purchasers are slow to believe that they can not buy to as good advantage then as now. Tank plate and universals, 1'45; shells, 1'55; flange, 1'60, and fire-box, 1'80 up.

**Steel Rails.**—The bulk of the business done is in small orders in both standard girders and rails.

**Old Rails.**—The tendency is to lower prices, but the buyers are not anxious enough to draw out offers from molders. Quotations are made at \$14.

**Scrap.**—Very little is being done.

METAL MARKET.

NEW YORK, Friday Evening, June 5, 1896. Gold and Silver.

Prices of Silver per Ounce Troy.

May and June.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.	June.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.
29	4'88½	31 3/8	68 3/4	.528	3	4'88½	31 3/4	68 3/4	.529
1	4'88½	31 3/8	68 3/4	.528	4	4'88½	31 3/4	68 3/4	.533
2	4'88½	31 3/8	68 3/4	.528	5	4'88½	31 3/4	68 3/4	.531

The present week has witnessed some revival in home speculation in silver based on the progress of the free coinage movement in the West and South. London in sympathy has advanced and the Eastern Exchanges are firm.

The United States Assay office in New York reports the total receipts of silver at 57,000 oz. for the week.

Gold and Silver Exports and Imports.

At all United States ports, April, 1896, and years from January 1st, 1896 and 1895:

	Specie and bullion.		In ores.		Total excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
GOLD					
April	\$3,782,266	\$1,142,502	\$5,426	\$95,119	E. \$2,550,071
1896..	16,916,572	23,747,264	80,319	453,022	E. 7,233,305
1895..	33,514,726	19,033,291	310,912	432,354	E. 14,359,963
SILV.					
April	5,139,978	568,662	14,665	1,490,055	E. 3,695,926
1896..	20,420,322	4,391,752	554,119	5,543,136	E. 11,039,543
1895..	15,254,315	2,595,517		3,810,759	E. 8,847,269

These figures are furnished by the Bureau of Statistics of the Treasury Department and include the exports and imports at all United States ports.

Gold and Silver Exports and Imports, New York

For the week ending June 4th, 1896, and for years from January 1st, 1896, 1895, 1894, 1893 and 1892:

	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
We'k	\$1,834,226	\$33,223	\$344,150	\$43,807	E. \$1,011,350
1896..	28,286,412	16,905,131	15,822,371	899,344	E. 26,364,338
1895..	32,521,622	19,767,141	14,881,456	684,911	E. 26,951,023
1894..	52,583,972	9,270,247	17,293,061	693,739	E. 59,910,047
1893..	68,844,985	5,816,102	13,823,456	1,176,039	E. 75,698,643
1892..	27,134,192	6,137,836	10,546,112	648,485	E. 30,893,983

Of the gold exported during the past week, this year, \$1,100,000 went to Germany, \$704,026 to France, and the balance to Central America and the West Indies; of the silver \$15,500 went to France, and the balance to London. The specie imported came chiefly from Central and South America.

Average Monthly Price of Silver

in New York and London, per ounce Troy, from January 1st, 1896, and for corresponding months, 1895 and 1894.

Month.	1896.		1895.		1894.	
	Lon-don. Pence.	New York. Cents.	Lon-don. Pence.	New York. Cents.	Lon-don. Pence.	New York. Cents.
January	30 69	67 13	27 36	59 69	30 81	66 63
February	31 01	67 67	27 47	59 90	29 18	63 43
March	31 34	68 40	28 33	61 98	27 28	59 49
April	31 10	67 92	30 39	66 61	28 95	62 92
May	31 08	67 88	30 61	66 75	28 69	62 96

FINANCIAL NOTES OF THE WEEK.

One feature of the market during the week has been the renewed demand for silver, resulting in an advance to 69c., which is a higher figure than has been reached for some time. The inclination to speculate in silver has been growing lately, but one check to this speculation has been met with in the practical disappearance of silver certificates from the Stock Exchange.

The listing of the certificates was advocated primarily to facilitate commercial transactions that are based upon the price of silver bullion; but even when the largest amount was on deposit the transactions were small and confined practically to withdrawals as the market was able to absorb the accumulation. A large percentage of the country's foreign trade is transacted with countries using exclusively a silver currency and is necessarily settled on the basis of the value of silver bullion. Its price daily enters into numerous and large transactions and is a matter not only of interest, but of absolute necessity to importers from and exporters to such countries.

The Western National Bank registers the certificates that are issued by the Mercantile Safe Deposit Company, and informs the Stock Exchange at 9.45 o'clock every day as to the amount of bullion in the vaults and of the depository certificates outstanding against it.

The speculation and rise in price is attributed to various, or perhaps more correctly stated, combined causes, a demand for account of the Japanese Government, a steady purchasing, to which we have referred before, by the French mint, probably on account of their contract with the Russian Government, and lastly a purely speculative movement on the bare possibility that the selection of Mr. McKinley for presidential nominee may help the price.

The following figures show the statistical position since January 1st:

Total exports, January to April,	1895.....	24,360,000 oz.
	1896.....	3,110,000 oz.
" imports, " " "	1895.....	10,300,000 oz.
	1896.....	15,040,000 oz.
" exports, U. S. product,	1895.....	14,060,000 oz.
	1896.....	15,070,000 oz.

Coin reduced to ounces.

The price of silver must depend, like that of everything else, on supply and demand. The supply is certainly not decreasing; in fact, the world's output in 1895 was somewhat greater than in 1894. On the other hand, the demand has been very greatly reduced. Not only is this country not now buying any for coinage purposes, but the Eastern demand, in China and Japan, fell off largely in 1895 and is still declining. No other country is increasing its consumption, so there is no visible reason for an increase in price, however much we desire to see it. There can, without international bimetalism, be no sufficient increase in demand to give any ground for the hope of increased price for the white metal.

It has been suggested by some that the present advance is due to speculative purchases, in anticipation of the United States adopting free coinage independently, and thus going onto the silver basis and making a market for very large amounts of the metal. Since, however, there cannot possibly be any legislation on that subject before the end of next year, and that then even should Congress pass a free coinage bill, the President, even if it should be McKinley, would be forced by public opinion and the condition of business which would precede such an event, to veto such a bill. A speculator who buys now in expectation of an advance two years hence would certainly be an extra sanguine man. Moreover, even if this country should adopt free coinage and go onto the silver basis, there is no reason to believe that it would advance the gold price of silver.

The Treasury Department issues the following estimate of the amount and kinds of money in circulation in the United States, June 1st. Comparison is here made, as usual, with May 1st, 1896, and June

1, 1895, and holdings of the Federal Treasury are not included:

	June, 1896.	May, 1896.	June, 1895.
Gold coin	\$455,876,439	\$434,225,658	\$483,770,430
Standard dollars	62,717,417	53,602,362	52,812,570
Subsidized silver	61,356,627	62,489,507	59,786,487
Gold certificates	42,961,909	43,052,559	48,539,569
Silver certificates	336,313,080	338,834,413	321,553,171
Treasury notes	96,080,506	100,921,025	117,054,807
U. S. notes	225,562,755	237,349,381	266,938,032
Cur'ncy certificates	33,430,000	32,930,000	48,245,000
Natl' bank notes	215,285,550	216,602,179	206,573,490

Total.....\$1,521,584,283 \$1,510,007,082 \$1,606,179,556

The net decrease of \$14,200,000 legal tenders in circulation during the month is due to the \$19,000,000 gold exports, to obtain gold for which legal tenders were paid by the banks to the Treasury, and to repayment of government bank deposits, this gross loss being offset by the net sum of legal tenders put in circulation as a result of the month's \$3,000,000 Treasury deficit. The net decrease of \$3,406,278 in silver dollars and certificates in general circulation reflects a rather decided movement of silver into the Treasury during May. It should be noticed, however, that this net amount of silver in circulation has increased, during the whole year ending June 1st, 1896, \$14,664,756. The slight increase of gold coin and certificates in circulation is due to the fact that increase in the circulating supply through new production was offset, last month, by payment of two or three millions net on the bond subscriptions.

Gold (coin and certificates) and legal tenders in general circulation, and total money circulating in the United States outside the Treasury, compare as follows with the June 1st date in other years:

June 1.	Gold.	Leg. tenders.	Total.
1896.....	\$498,838,348	\$357,073,261	\$1,521,584,283
1895.....	532,309,999	435,137,839	1,606,179,546
1894.....	566,173,701	479,914,779	1,675,699,401
1893.....	509,415,913	468,482,506	1,598,151,901
1892.....	566,206,866	439,251,974	1,620,910,229
1891.....	528,786,200	383,181,026	1,504,278,509
1890.....	506,034,755	336,788,217	1,431,194,651
1889.....	506,007,520	318,890,629	1,397,470,711

The Government debt statement, issued June 1st, shows a net increase in the public debt, less cash in the Treasury during May, of \$5,188,730. The interest-bearing debt increased \$3,176,450; the non interest-bearing debt decreased \$885,170, and cash in the Treasury decreased \$2,897,450. The balances of the several classes of debt at the close of business May 30th were: Interest-bearing debt, \$845,488,590; debt on which interest has ceased since maturity, \$1,645,970; debt bearing no interest, \$373,535,050. Total, \$1,220,669,610. The certificates and Treasury notes offset by an equal amount of cash in the Treasury outstanding at the end of the month were \$555,846,973, a decrease of \$1,947,280; the total cash in the Treasury was \$861,706,971; the gold reserve was \$100,000,000; net cash balance, \$167,193,210. In the month there was a decrease in gold coin and bars of \$17,139,316, total at the close being \$151,307,142. Of silver there was an increase of \$1,613,720. Of the surplus there was in national bank depositaries \$20,952,972, against \$26,698,500 at the end of May.

Mr. Robert E. Preston, director of the mint, issued orders on May 30th, reducing the premium on gold bars taken from the Assay Office at New York from  $\frac{1}{2}$  to  $\frac{1}{4}$ %. This reduction is made as gold coin in large quantities—\$25,000,000—has been taken for export within the last six weeks, and to keep the gold coin in stock in sufficient quantity to meet the drain the gold bars on hand—\$32,000,000—would have to be coined. The expenses of coining the gold bars is more than equal to the reduction of the premium on them.

The weakness in exchange and sale of securities abroad on a large scale has kept down the gold shipments to a moderate amount during the current week, the gold surplus now standing at about \$100,000,000.

The Treasury Department has refused to give checks payable in New York for gold deposited at the assay office in Denver, on the ground that by so doing it would give smelters free exchange on New York.

The Treasury Department has issued a call for the remainder of the money held by the depository banks on bond account, amounting to \$4,500,000. It must be paid on or before June 15th. The Treasury disbursements on July 1st are large, aggregating \$7,300,000, of which amount \$5,800,000 interest has to be paid on the government 4% bonds and \$1,500,000 interest on the Pacific Railroad bonds.

Total government receipts on June 4th were \$1,293,275; expenditures, \$1,190,000; excess of receipts, \$103,275. For the month to date: Receipts, \$4,442,385; expenditures, \$4,068,000; excess of receipts, \$374,385. For the fiscal year to date: Receipts, \$304,246,714; expenditures, \$330,854,680; excess of expenditures, \$26,607,966, against \$290,954,421 receipts, \$338,551,139 expenditures and \$47,596,709 excess expenditures for the same period in the fiscal year, 1895.

The statement of the United States Treasury on Thursday, June 4th, shows balances in excess of out-

standing certificates as below, comparison being made with the corresponding day of last week:

	May 28.	June 4.	Changes.
Gold	\$109,624,523	\$107,678,808	D. \$2,545,715
Silver	28,014,741	29,334,765	I. 1,320,024
Legal tenders	87,089,932	89,932,161	I. 2,842,228
Treasury notes, etc.	32,635,974	33,062,531	I. 426,557

Totals.....\$257,365,179 \$259,408,324 I. \$2,043,145

Govt bank dep.....22,352,796 19,826,877 D. 2,525,919

Total United States Treasury notes issued under act of July 14th, 1890, in general circulation and in the Treasury, \$131,446,280. Against these are held in the Treasury 11,880,994 coined standard silver dollars, and the silver bullion purchased at a cost of \$119,565,286, making a total of \$131,446,280.

The following statement from the Bureau of the Mint shows the coinage executed at the mints of the United States during the month of May, 1896.

Denominations.	Pieces.	Value.
Double eagles	127,860	\$5,557,200
Eagles	2,402	200,000
Half eagles	20,070	100,000
Total gold	149,332	\$5,857,200
Silver dollars	1,500,000	\$1,500,000
Half dollars	397,980	198,990
Quarter dollars	127,500	127,500
Total silver	2,425,480	\$3,226,490
Five cent	931,000	46,550
One cent	4,493,000	44,930
Total minor	5,424,000	\$91,480
Total coinage	8,096,812	\$1,775,230

The coinage for the month was large, and the number of silver dollars especially is to be noted.

Imports of specie at San Francisco by water for April, 1896, and for the first four months of the year were as follows:

	April.	Four Mos.
Mexico	\$269,040	\$87,593
British Columbia	20,222	63,811
Central America	.....	43,011
Miscellaneous	658	2,993
Total	\$290,920	\$967,408

The descriptions embraced in the total for the first four months of the year are annexed.

Gold bullion	\$364,870
Gold coin	31,221
Silver bullion	473,440
Silver coin	198,277
Total	\$937,408

In addition to these receipts a considerable amount of specie is received from Mexico overland.

The statement of the New York banks—including the 65 banks represented in the Clearing House—for the week ending May 30th, gives the following totals, comparisons being made with the corresponding weeks in 1895 and 1894:

	1891.	1895.	1896.
Loans and discounts	\$164,933,600	\$52,547,290	\$475,156,400
Deposits	572,138,400	506,229,400	498,874,100
Circulation	9,933,600	13,556,200	14,605,100
Specie	93,018,600	79,641,000	62,456,000
Legal tenders	121,981,100	112,137,600	84,493,200
Total reserve	\$220,999,700	\$182,778,600	\$146,949,200
Legal requirement	143,034,600	141,557,350	124,718,525
Surplus reserve	\$77,965,100	\$41,221,250	\$22,230,675

Changes for the week this year were increases of \$1,766,000 in loans, \$1,832,900 in deposits, \$75,300 in circulation, \$914,500 in specie, \$72,900 in legal tenders, and \$529,175 in surplus reserve.

The following table shows the specie holdings of the leading banks of the world at the latest dates covered by their reports. The amounts are reduced to dollars, and comparison is made with the holdings at the corresponding dates last year:

	Gold.	Silver.	Total.
Asso. Banks of New York	.....	.....	\$62,456,000
1895.....	.....	.....	70,641,600
Bank of England	\$239,172,750	.....	239,172,750
1895.....	185,109,380	.....	185,109,380
Bank of France	402,262,210	\$251,203,500	653,465,710
1895.....	409,737,424	250,211,343	659,948,367
Imp. Bank of Germany	.....	230,470,000	230,470,000
1895.....	.....	269,050,000	269,050,000
Austro-Hungarian Bank	136,710,000	64,130,000	200,840,000
1895.....	96,243,000	67,663,000	163,906,000
Netherlands Bank	13,175,000	21,466,000	34,641,000
1895.....	34,975,000	35,265,000	70,240,000
Belgian National Bank	.....	19,529,000	19,529,000
1895.....	.....	21,236,000	21,236,000
Bank of Spain	42,024,000	55,286,000	97,310,000
1895.....	40,021,000	62,503,000	102,524,000
Bank of Italy	62,625,000	10,495,000	73,120,000
1895.....	69,210,000	11,415,000	71,625,000
Imp. Bank of Russia	.....	410,774,400	410,774,400
1895.....	274,950,000	34,700,000	309,650,000

The return for the Associated Banks of New York is of date May 30th; all the others are of date June 4th, except the Bank of Italy, which is dated April 20th, and the Bank of Russia, whose return is dated April 16th-28th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England reports its gold only, not considering silver at all. The Imperial Bank of Germany and the Belgian National Bank do not report gold and silver separately.

Shipments of silver from London to the East for the year up to May 21st are reported by Messrs. Pixley & Abell's circular as below:

	1895.	1896.	Changes.
India	£1,562,230	£1,713,298	I. £151,068
China	1,064,573	442,000	D. 622,573
The Straits	274,605	399,032	I. 124,427
Totals	£2,901,408	£2,554,330	D. £347,078

Arrivals for the week this year were £126,000 in bar silver from New York, £19,000 from Chile, and £2,000 from Australia; also £15,000 in Mexican dollars from New York; a total of £192,000. Shipments for the week were £10,000 in bar silver to Japan, and £8,500 to Bombay; also £7,500 in Mexican dollars to the Straits and China—a total of £26,000.

While the demand for Indian exchange has been good, the applications for Coor cl bills in London having considerably exceeded the 60 lakhs offered, the bids were generally low and the average price was 13.82d. per rupee. Export trade in India is rather dull yet, and the chief demand for bills has been on Chinese and Japanese account.

Domestic and Foreign Coins.

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

	Bid	Asker.
Mexican dollars	\$0.53 1/4	\$0.54 1/4
Peruvian soles and Chilean pesos	.48 1/4	.49 1/4
Victoria sovereigns	4.88	4.92
Twenty francs	3.88	3.92
Twenty marks	4.75	4.80
Spanish 25 pesetas	4.74	4.85

Other Metals.

Copper.—The market remains exceedingly firm, but business has rather fallen off. This is more or less due to manufacturers having covered their wants, not only for present, but also for future, delivery for the next few months, and because of the higher prices now asked by producers, who are mostly well sold out for some time to come, and are consequently not looking for new business. The demand for export continues, and shipments, which were very large for the month of May, are likely to be so during this month as well as July. The prices which foreigners are paying are fully up to what can be realized here, and we quote Lake 1 1/2% electrolytic cakes, wire bars or ingots 1 1/2% and cathodes 10 7/16 @ 10%. The demand for casting copper continues limited, and it is comparatively neglected at 1 1/2% @ 10%. Most of the producers of Lake copper are entirely out of the market.

The foreign market has been very firm indeed; g. m. b.'s opened at £47 2s. 6d. @ £47 5s. for spot, and advanced on the 3d to £48. Subsequently, however, prices gave way slightly, and the closing quotations are £47 12s. 6d. @ £47 15s. for spot and £47 17s. 6d. @ £48 for three months prompt. Very large transactions have taken place from day to day. The visible supplies in Europe showed an increase for the second half of May of only 100 tons, which is a remarkable result, considering the heavy shipments from this side. For fine copper a good demand exists, and we quote: English tough, £30 15s. @ £31 5s.; best selected, £51 5s. @ £51 15s.; strong sheets, £57 10s. @ £58; India sheets, £54 10s. @ £55; yellow metal, 5d.

Chilean Copper Market.—Messrs. Jackson Brothers write as follows, under date of April 25th: More extensive sales than for some time past have taken place, owing to the extremely low rates of exchange. We quote for bar copper, \$56.31 (Chilean) per metric quintal, f. o. b.; regulus, 50%, \$23.80 per metric quintal, f. o. b.; copper ore, 10%, \$3.11 per metric quintal, f. o. b.

Tin has ruled quiet but firm, and the premium which existed for spot during the past few weeks has almost entirely disappeared, as the large arrivals have now come in, and others are expected next week. We quote for spot and future 13 1/2 @ 13 3/4.

The London market showed little life in spite of the rise in silver, and values are about the same as last week, viz., £90 7s. 6d. @ £90 10s. for spot and £91 @ £91 2s. 6d. for futures.

The New York Metal Exchange reports visible stocks of tin on June 1st at 30,843 long tons, against 30,836 tons on May 1st, and 25,671 tons on June 1st, 1895. The stocks in the United States on June 1st, including metal afloat for Atlantic ports, were 4,153 tons. Consumption for May is estimated at 1,600 tons, and for the five months ending May 31st at 7,500 tons.

Lead has been steady but dull, and only a limited business is reported. We have to quote 3 @ 3 1/2 %.

The foreign market is firm, and Spanish lead is quoted £11 1s. 3d. @ £11 2s. 6d. and English lead 5s. higher.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead continues unchanged with offerings for prompt and June delivery quite liberal on a basis of 2 7/8 % East St. Louis; the metal only salable in a retail way at this figure. For July delivery it is rather an easy task to sell at 2 7/8 %, but the majority of sellers ask 2 80.

Spelter continues rather irregular, and we are to quote nominally 4 @ 4 5c. Consumption still leaves a great deal to be desired.

The London market is again higher, and is now advised to be £18 10s., but this price is not obtainable for futures.

It is to be noted that a member of the Cherokee-



Lanyon Company (otherwise the Smelters Combination) sails for Europe this week, on a "short vacation." This may have some significance in connection with the reports of negotiations for the sale of American smelter abroad.

**Antimony.**—There is no quotable change; Cookson's, 7 1/2c.; Hallett's 6 3/4c., United States Star, 7c.

**Nickel.**—Demand is not active, but prices are firm at 34@35c. per lb. for iron lots and 36@38c. per lb. for smaller orders. London prices are 13 1/2@14d. for larger orders and 14 1/2@15 1/2d. per lb. for small lots.

**Platinum.**—The demand is somewhat in excess of supply and quotations are higher, \$14@15 per oz., New York, being asked. London prices are 55s. @58s. per oz.

For chemical ware, best hammered metal, Messrs. Eimer & Amend, New York, furnish the following quotation, the prices given being respectively for orders of over 250 grams; for orders of over 100 grams and less than 250 grams, and for orders of less than 100 grams: Crucibles and dishes, 50c., 51c. and 52c. per gram. Wire and foil are 47c., 48c. and 49c. per gram. The current retail price for crucibles is 60c. per gram.

**Quicksilver.**—The New York quotation continues unchanged at \$37 per flask. The London price is £6 15s. per flask, with £6 13s. 6d. @£6 14s. named from second hands.

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

Table listing prices for Aluminum, Bismuth, Phosphorus, Platinum, Tungsten, and Ferro-tungsten.

The variations in price are chiefly on size of order.

Imports and Exports of Metals.

Table showing New York imports and exports for various metals like Aluminum, Antimony, Brass, Copper, Iron, Lead, Magnesia, Nickel, Steel, Tin, and Zinc.

\* Metal Exchange Reports. † Week ending June 4.

Table showing Philadelphia imports for various metals like Antimony, Copper, Ferro-Manganese, Ferro-Silicon, Iron, Lead, Manganese, and Tin.

† From New York Metal Exchange Reports.

Table showing Baltimore imports for various metals like Bismuth, Chrome, Copper, Ferro-Silicon, Iron, Lead, Limestone, Manganese, Steel, Tin, and Zinc.

\* From our special correspondent.

Average Monthly Prices of Metals

In New York since January 1st, 1896, and for the corresponding periods in 1895, 1894, 1893 and 1892, in cents per pound.

Table showing average monthly prices for Copper, Tin, Lead, and Spelter from 1892 to 1896.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, June 5.

**Heavy Chemicals.**—This market shows no important change from our last report; it has been very quiet. Caustic soda has been featureless, while prices are a shade lower. Of the alkali trade few new features can be reported. Business in this article has been very dull during the past week. Soda ash was traded in a little more freely. Sal soda remains in the same position that we reported in our last issue.

Bleaching powder continues quiet, the market abroad having ruled dull. Our quotations this week are: Caustic soda, 60%, \$2 22 1/2 @ \$2 42 1/2; 70% @ 74%, \$2 12 1/2 @ \$2 22 1/2 per 100 lbs. Alkali, 58%, 80@85c. for 50-ton lots and over, and 90@95c. for smaller quantities. Bleaching powder, prime brands, \$1.87 1/2 @ \$1.95; Continental, \$1.70 @ \$1.80 per 100 lbs. Sal soda, English, 70@72 1/2c.; American, 62 1/2 @ 65c. per 100 lbs. The Mathieson Alkali Company, with works at Saltville, Va., has a capital of \$2,500,000, and owns about 131,000 acres of land and works for making about 80 tons of soda ash and 10 tons caustic soda per day, and about 500 tons a week of table salt, and within three months it is expected to be producing 200 tons of ash and caustic per day. This company has purchased the American patent rights to the Castner electrolytic process for making caustic soda and bleach, and is about to build a plant on leased ground contiguous to the Niagara Power Company's property at Niagara. Electrical plant to the value of \$50,000 has been contracted for with the Westinghouse Company and it is hoped to have this in operation by next November.

The Mathieson Company is preparing to issue some part of \$200,000 6% bonds, which have been authorized. The company appears to think some arrangement with the Solvay Company may be made and that a new Republican Congress may increase the tariff on imported alkali and thus permit of an advance in prices here. No grounds for either of these hopes have been given.

**Acids.**—The volume of business done in the acid market during the past week has been somewhat greater, especially in the way of deliveries on contracts, which consumers have been taking rather more freely. While there is no quotable change in prices for current deliveries the market shows an upward tendency, due to the higher cost of raw materials. We quote as follows per 100 lbs. in New York and vicinity, in lots of 50 barrels or over: Acetic acid (in barrels), \$1.25 @ \$1.40; muriatic acid, 18%, 70@80c.; 20%, 75@85c., according to make and quantity. Nitric acid, 36%, \$3.25 @ \$4.25; 40%, \$4 @ \$4.50; 42%, \$4.50 @ \$5.50. Oxalic acid, \$7.25 ex-dock and \$7.50 ex-store. Mixed acids, according to mixture. Sulphuric acid, 66%, 75@95c.; 10@15c. higher for small quantities; chamber acid, \$6 @ \$6.50 per ton at factory. Blue vitriol, \$3.87 1/2 @ \$4, according to size and order.

**Brimstone.**—It is reported that steps are being taken to organize a so-called association of the brimstone mine owners in Sicily for the purpose of regulating prices. The advance in the price of Sicilian brimstone, which has already taken place, has renewed interest in the Louisiana sulphur deposits, which have a few thousand tons of sulphur, but are not at present producing. The development of the Louisiana brimstone deposits is being watched with great interest by local manufacturers. We quote as follows: \$16.75 @ \$17 for best unmined seconds, future delivery, and \$16.37 1/2 @ \$16.50 for thirds; spot, \$16 for seconds, and \$15.75 for thirds.

**Fertilizing Chemicals.**—The spring trade is about over now, and little is doing in this market. There has been a slight demand for some of the ammoniates, but on the whole business has been quiet. Our quotations are as follows: Sulphate of ammonia, gas liquor, \$2.30; bone, \$2.20 @ \$2.30. Dried blood, high grade, \$1.35 @ \$1.45; low

grade, \$1.25 @ \$1.35 per unit, f. o. b. Chicago. Azotine, \$1.80. Concentrated phosphate (30% available phosphoric acid), 70@71 1/2c. per unit. Acid phosphate, 13% to 15%, av. P2O5, 54@55c. per unit at seller's works in bulk. Dissolved bone black, 17% to 18%, P2O5, 90@92c. per unit. Acidulated fish scrap, \$10 @ \$11 and dried scrap with few or no sales, nominally \$16.50 @ \$17.50, f. o. b. fish factory. Tankage, high grade, \$18.50 @ \$19.50; low grade, \$18 @ \$19. Bone tankage, \$21; ground bone, \$22. Bonemeal, \$19.50 @ \$23.

Sulphate of Potash: 90-95%, New York and Boston, \$1.96 1/2; Philadelphia, Baltimore and Norfolk, \$1.98; Southern ports, \$2.

Double Manure Salts: 48-53%, New York and Boston, \$1.01; Philadelphia, Baltimore and Norfolk, \$1.02; Southern ports, \$1.03 1/2.

Muriate of potash does not show much improvement from our last advices; the inquiries are small in number and amount to but little business. The new prices are 1.78c. at New York and Boston; 1.79 1/2c. at Philadelphia, Baltimore and Norfolk, and 1.81 1/2c. at New Orleans for 80@85% (basis of 80%), in lots of 50 tons and upward.

**Kainit.**—Quotations for 1896 are as follows: New York, Boston, Philadelphia and Baltimore, \$8.80 per ton; Norfolk, \$9.15, and New Orleans, \$9.30 per ton, for 25 tons and upward. Sylvinit at the same ports is quoted at 36 1/2c., 37 1/2c. and 38c., respectively.

**Nitrate of Soda.**—The unexpected arrival of a cargo and the early landing of a steamer have weakened the market somewhat for nitrate of soda. We quote, per 100 lbs., as follows: 1.80c. for spot, and 1.77 1/2 @ 1.80c. to arrive.

Messrs. Mortimer & Wisner, the well-known nitrate brokers of this city, send us the following statement issued under date of June 1st:

Table showing import and stock statistics for nitrate of soda from 1896 to 1894, including bags imported and stock on hand.

Liverpool, May 26.

(Special Report of Joseph P. Brunner & Co.) The dullness in chemicals is more accentuated than ever, owing to this being Whitsuntide holiday week.

Soda ash is in very moderate demand, while quotations are unchanged, the spot range for tierces, according to market, being still about as follows: Leblanc ash, 48%, £4 @ £4 5s.; 58%, £4 5s. @ £4 10s.; Ammonia ash, 48%, £3 2s. 6d. @ £3 10s.; 58%, £3 7s. 6d. @ £3 12s. 6d. per ton, net cash; bags 5s. per ton less. Soda crystals are quiet, at £2 7s. 6d. per ton, less 5% for barrels and 7s. per ton less for bags. Caustic soda is dull at late rates, and we quote spot range, as to market, as follows: 60%, £6 5s. @ £6 10s.; 70%, £7 5s. @ £7 10s.; 74%, £8 5s. @ £8 10s.; 76%, £9 @ £9 5s. per ton, net cash. Bleaching powder receives little attention from buyers, while £7 @ £7 5s. per ton, net cash, is about nominal range for hardwood packages. Chlorate of potash is nominally quoted at 4 1/2d. @ 4 3/4d. per pound, but nothing is doing. Bicarb. soda is in fair request, and firm at £6 15s. per ton, less 2 1/2% for the finest quality in one cwt. kegs, with usual allowances for larger packages. Sulphate of ammonia is not brisk, but values are fairly well maintained at £8 5s. @ £8 7s. 6d. per ton, less 2 1/2% for good gray, 24s. for 25% in double bags, f. o. b. here, as to quality. Nitrate of soda is dull, at £8 5s. @ £8 7s. 6d. per ton, less 2 1/2% for double bags, f. o. b. here, according to quality. Carb. ammonia, lupap, 3 1/2d. per pound; powdered, 3 1/2d. per pound, less 2 1/2%.

Valparaiso, Chile, April 25.

(Special Report of Jackson Brothers.)

**Nitrate of Soda.**—Up to the 22d the advices from consuming markets in Europe were more encouraging, and a fair interest was shown to operate at our last quotations, both for June sailings and season shipment. Some of the English companies, which were the principal sellers, soon raised their limits by 1/2d. for all deliveries, which at once restricted business. Several cargoes of May and June shipment have been placed at 5s. 7d., with combined freight of 2s. to 2s. 6d., but vessels now hold out for 2s. 9d., the rise preventing further sales. Lu



the refined, one or two parcels have changed hands for European destination, there being no demand from the United States. We quote, 95%, May, 5s. 4½d.; June, 5s. 8½d.; July, 5s. 9½d.; August, 5s. 10½d.; September and November, 5s. 11d.; and 96%, May, 5s. 10d.; June and July, 5s. 11d., all sellers. The price of 5s. 7½d., with 23s. 9d. all round freight stands in 7s. 6½d. per cwt. net cost and freight without purchasing commission. Reported sales for the past fortnight are 1,270,000 quintals.

**MINING STOCKS.**

Complete quotations will be found on pages 558 and 559 of mining stocks listed and dealt in at:

New York.	Aspen, Colo.	St. Louis.
Boston.	Colorado Springs.	Paris, France.
Philadelphia.	Duluth, Minn.	Mexico.
Baltimore.	Helena, Mont.	Shanghai, China.
Pittsburg.	Salt Lake, Utah.	Valparaiso, Chile.
Denver, Colo.	San Francisco.	London, England.
Chicago and Cleveland,	page 556.	

NEW YORK, Friday Evening, June 5.

The mining stock market this week as regards prices has been somewhat more favorable than we last reported, although the volume of business done does not exceed that of a week ago.

The San Francisco mining stock market showed a steady advance in many stocks.

Sales of mining stocks on the Consolidated Stock and Petroleum Exchange and the New York Stock Exchange amounted to 20,350 shares.

The Comstocks were dealt in more freely, and sales of 4,900 shares of Comstock Tunnel were made at 8c. Among others are 1,000 shares of Comstock Tunnel bonds at 8%; 400 shares of Chollar at \$3@ \$3.30; 400 shares of Ophir at \$1.55@ \$2; 600 shares of Savage at \$1.60@ \$1.80; 250 shares of Consolidated California & Virginia at \$2.90; 300 shares of Mexican at \$1.05@ \$1.20, and a like number of shares of Sierra Nevada at \$1.10@ \$1.15. There were also sales of 1,000 shares of Consolidated Imperial at 4c.

Of the California stocks Standard Consolidated shows sales of 900 shares at \$1.75. Another California stock to show a moderate number of transactions is Bulwer, with 800 shares at 35c. The largest number of dealings were in Brunswick Consolidated, 1,400 shares having been sold at 14c. An official of the Brunswick Consolidated Mining Company states that 127 tons of ore were recently run through the mill, yielding \$3,750.

The Colorados were dealt in as follows: 1,800 shares of Creede & Cripple Creek at 5c.; 1,300 shares of Cripple Creek Consolidated at 14c.; 1,000 shares of Leadville Consolidated at 13@14c.; 1,000 shares of Little Chief at 18@19c.; 900 shares of Mount Rosa a 9c.; 700 shares of Pharmacist at 8c., and 100 shares of Victor at 8s.

The following is an abstract from a letter recently received from the superintendent of the Victor Gold Mining Company: "The seventh level, to which we have just crosscut from the shaft, shows up \$60 to \$250 per ton, and the veins are from 4 to 5 ft. wide. We have opened since January 1st, the fifth, sixth and seventh levels, all of which show well-defined veins of ore, besides large veins of low-grade ore that we are sending to the mill. We are doing considerable development work. The statement of the receipts and disbursements of the company for the month of April, 1896, shows: Receipts: Balance cash April 1st, 1896, \$47,371; ore sales, \$35,479; insurance account, \$234; total, \$83,134. Disbursements: Operating expenses, \$16,672; dividend paid, \$20,000; balance cash May 1st, 1896, \$46,461; total, \$83,134. There is still on hand at smelter, unsettled for one lot of ore produced in April, value estimated at \$2,000. The ore statement was as follows: Ore mined, 236 tons; ore from stulls, 1,505 tons; silver from ore mined, 447 oz.; gold from ore mined, 1,071 oz., and from stull ore, 1,193 oz. The average net value of ore mined was \$77.81; stull ore, \$6.67.

The Consolidated Stock and Petroleum Exchange will hold its regular annual meeting on June 8th. An independent ticket has been nominated. The candidates for executive officers are the same as on the regular ticket. Different candidates are named for directors, to serve one and two years, and for members of the Arbitration Committee.

The opposition candidates for governors for two years are G. Weinberg, W. C. Stout, A. R. Hawley, S. C. Williams, H. L. Joeckel, S. A. Luther, H. G. Romaine, C. E. Thornburn, J. F. Scott, C. R. West, H. E. Jenkins, C. C. Jacobus, J. E. Harrington, A. N. Lawrence and M. H. Wagar; for directors for one year, T. A. Ennis and H. E. Montgomery; for Arbitration Committee, H. L. Brazen, W. B. Hotchkin, W. J. Merritt, W. J. Currie, W. J. Alpers, Frank Wilson and W. T. Callaway. The reason for the appearance of the opposition ticket is that some of the members believe a stronger anti-bucket shop ticket should be put up; the independent ticket stands a good chance of being elected.

The managing committee of the proposed Mining and Industrial Exchange announces that suitable quarters have been leased in New Street, and a start will be made June 15th. Shares and securities of every mining and other company not listed by the New York Stock Exchange will be eligible for listing, providing that a statement be filed setting forth details for investors. A clearing house will be organized for completing payments and deliveries in connection with all purchases and sales. There will be two kinds of membership, governing and ordinary, the annual fee

being \$100 and \$60 respectively. The former class, limited to 200, will meet once in every three months to receive and pass upon a report from the managing committee and to vote upon the by-laws and all matters connected with the practical conduct of the business. In order to provide the necessary funds for maintaining the enterprise, a registration fee on every purchase or sale will be payable to the clearing house. This proposed new exchange is being fathered by some of the old members of the defunct New York Mining Exchange, which went into the hands of a receiver.

**Boston.**

June 4.

(From Our Special Correspondent.)

The speculation in copper stocks since our last report has been very tame, outside of the two leading specialties, viz., Boston & Montana and Old Dominion. The former declined in early dealings from \$57½ to \$86½, and has sold as high as \$88½, but at this figure a good deal of stock was met, and it sagged off to \$87½, with a slightly firmer tone at close to-day. The latter (O. D.) has been very active with good buying by parties supposed to be well posted on the merits of the company. The lowest price for the week was \$20½, from which it rallied to \$22½, and has ruled steady between \$21½ and \$22, closing to-day at \$21½ bid, \$21¼ asked. In these two stocks the dealings aggregated about 20,000 shares. Calumet & Hecla sold at \$310, same as last week. Quincy holds steady at \$118 to \$119. The scrip declined to \$80. Tamarack was heavy, and declined from \$95 to \$86, with free selling by inside parties. Osceola has held quite firm, with sales at \$28½ to \$29½, closing at \$23.

Kearsage was steady at \$13@ \$13½ on small sales. Franklin advanced to \$11½, losing the fraction in later sales. Atlantic declined from \$21½ to \$19½, recovering in part to \$20½. Butte & Boston sold at \$2½, Wolverine at \$7 to \$7½, and Tecumseh at \$3 and \$2½. Centennial (unassented stock), sold at 10c. and we note sale of Bonanza at 20c.

In the gold stocks, Pioneer has taken the lead with large sales from \$6½ down to \$4. The decline is due to litigation involving the ownership of about 20,000 shares of the capital stock of the company, Merced, advanced to \$14½, but lost a part in later dealings, selling down to \$13½ and closing at \$13½. Santa Ysabel sold to-day at \$13, a decline from the last sale (May 21st) of \$11½.

Gold Coins sold at 60c. and declined to 55c. later. Napa Quicksilver sold at \$7, an advance of \$½.

**BY TELEGRAPH.**

(From Our Special Correspondent.)

BOSTON, June 5th.—The Tamarack trustees meeting has declared only \$3 dividend instead of \$5 as was expected. President Bigelow published the statement that "owing to uncertainty as to the future we thought best not to draw on our high-grade reserves and thought best to erect two new stamps to treat a greater quantity of ore so as to obtain the same results as before. We think in about six months to know better what the future of the mine will be and we believe that if the present price of copper is maintained, that we shall be able to pay the same dividends as heretofore."

To-day's quotation of Tamarack is \$80, ex-dividend, a drop of \$12 to \$16 within a week. Such are the results of the modern Bigelow management.

**Colorado Springs, Colo.**

May 29.

(From Our Special Correspondent.)

This was a short week, owing to the holiday to-morrow and the aggregate volume of business was not as great as had been expected. Trading in mining shares at both the local exchanges was not very active, and prices were generally unsatisfactory, though they strengthened somewhat at the close. Some outside buying orders were received by certain brokers this week, but, as usual, they were for the better class of stocks, particularly the dividend payers. It is believed that some of the promising prospects will also be in better demand before very long.

Messrs. Gardner & Co. furnish the closing quotations of the Colorado Springs Mining Stock Exchange for the week ending May 7th, as follows.

Name of Company.	May 29	May 30	June 1	June 2	June 3	June 4
Alamo	.04½	.05	.04½	.04½	.04½	.04
Anaconda	.61	.61	.61	.61	.61	.61
Argentum-Juniata	.50	.50	.50	.50	.50	.51
Blue Bell	.05	.05	.05	.05	.05	.05
Cripple Creek Con.	.13½	.14	.14	.14	.14	.14½
Golden Fleece	1.65	1.67	1.65	1.65	1.65	1.65
Isabella	.60	.59	.61	.59½	.59½	.59½
Mollie Gibson	.66	.66	.66	.66	.66	.66
Mount Rosa	.10½	.09	.10½	.10½	.10½	.10½
Pharmacist	.07	.07	.07	.07	.07	.08½
Portland	1.87	1.85	1.87	1.87	1.87	1.82
Silver State	.01	.01	.01	.01	.01	.01
Union	.33½	.33	.33	.33	.33	.32
Work	.10	.10	.10	.10	.10	.10

In addition to the above quotations Messrs. A. Pick & Co., of New York, furnish the following:

Name.	May 29	May 30	June 1	June 2	June 3	June 4
Bankers	.12½	.12½	.13	.13	.12½	.12½
Des Moines	.20½	.20½	.20½	.20½	.20½	.20½
Gold & Globe	.09	.09	.09	.09	.09	.09
Gold Standard	.18½	.17	.17	.17	.19	.20
Jefferson	.18½	.17	.17	.17	.19	.20
Keystone	.18½	.17	.17	.17	.19	.20

\*Holiday.

**Chicago.**

June 3.

(From Our Special Correspondent.)

The business for the week closing to-day has been remarkably light, which is partly explained by the holiday on the 30th. There has been no disposition, however, to cut prices and the market may be said to be a strong one. Sunnyside Gilpin has been the favorite in the trading, and, as we predicted last week, advanced several points, mounting steadily from 7½ to 11c., and closing strong at 10c.

Finance, recently considerable of a favorite, has been neglected, owing to internal dissensions among some of the stockholders. The price fluctuated between 4½c. and 3c., closing at the inside figure. Peerless was in fair demand and advanced from 12½c. to 13c.

The following table gives the highest prices with sales of the stocks recorded on the Chicago Mineral and Mining Board for the week ending June 2d:

Stocks.	May 27	May 28	May 29	May 30	June 1	June 2	Sales.
Alchemist	.08½	.08	.08	.08	.08	.08	7,500
Boston & C. C.	.08	.08	.08	.08	.08	.08	6,000
Capazone	.08	.08	.08	.08	.08	.08	6,000
C. C. & C. C.	.08	.08	.08	.08	.08	.08	6,000
C. C. Golden Group	.10	.10	.10	.10	.10	.10	15,500
C. C. G. M. B. & L. Co.	.08	.08	.08	.08	.08	.08	28,500
Chl. & G. Mt.	.08	.08	.08	.08	.08	.08	18,200
Cosmopolitan	.08	.08	.08	.08	.08	.08	7,000
Delaware Cf.	.08	.08	.08	.08	.08	.08	12,000
Finance	.08	.08	.08	.08	.08	.08	12,000
Great Fissure	.08	.08	.08	.08	.08	.08	12,000
Hawkeye	.08	.08	.08	.08	.08	.08	14,500
Imperial	.08	.08	.08	.08	.08	.08	14,500
Investors' and Prospectors'	.08	.08	.08	.08	.08	.08	4,500
Little Gem	.08	.08	.08	.08	.08	.08	19,200
Lucille	.08	.08	.08	.08	.08	.08	3,000
Medina G. M. Co.	.08	.08	.08	.08	.08	.08	24,500
Peerless G. M. Co.	.08	.08	.08	.08	.08	.08	9,000
Rhyolite	.08	.08	.08	.08	.08	.08	30,500
Sumpter	.08	.08	.08	.08	.08	.08	47,100
Sunnyside-Gilpin	.10	.11	.10½	.10	.09½	.10	47,100

Total shares sold, 245,000. \*Holiday

**Cleveland, O.**

June 3.

(From Our Special Correspondent.)

The movement of iron ore stocks during the past week was somewhat slower than during the preceding ten days. Although there is more money in sight in Cleveland now than for six months, the brokers report that other stocks are being purchased in preference to iron ore securities. Notwithstanding this fact, the owners of the stocks still demand a higher price than is bid. Following are the quotations:

Name of Company.	Par val.	June 3.	
		Bid.	Ask.
Aurora	\$25	88	88
Chandler	25	38	40
Cleveland-Cliffs Iron Co.	100	43	46
Jackson Iron Co.	25	70	75
Lake Superior Iron Co.	25	30	31
Lake Superior Consolidated	100	26	21
Minnesota Iron Co.	100	70	71
Pittsburg & Lake Angeline	25	80	85
Republic Iron Co.	25	17	18

**Denver, Colo.**

May 29.

(From Our Special Correspondent.)

The Colorado Mining Stock Exchange, the oldest in the State, continues to do a good business in mining securities, considering the dullness in this line reported by exchanges in other cities. The local exchange's list includes stocks from other States than Colorado, and its admirable clearing system makes it popular with brokers and public alike.

**Los Angeles, Cal.**

May 29.

(From Our Special Correspondent.)

The Los Angeles Mining & Stock Exchange was formally opened May 26th. Addresses were made by Mayor Rader, President Patterson, of the Chamber of Commerce; President A. H. Judson, of the Exchange, and others. The exchange will commence business at once and will permit operations in all kinds of legitimate securities. Letters of congratulation were read from the Colorado Mining Stock Exchange, of Denver, the Gold Mining Exchange, of San Francisco, and the Colorado Springs Mining Stock Association.

**Salt Lake City, Utah.**

May 30.

(Special Report of James A. Pollock.)

The market during the past week was hardly all that was expected and some of the stocks showed early in the week a tendency to weaken, due to an absence of buying orders. There were some exceptions, notably Mercur, Silver King, Swansea, Ontario, Galena and Utah among the investment stocks and Lucky Bill and Tetro in the speculative. The close was fairly strong, with orders more numerous.

Ajax showed some signs of strengthening. Alliance did nothing. Anchor was in fair demand at the previous week's figures, but there were few sellers. The properties are now closed down entirely with the exception of a few men who are on



development work. Bogan did some business at about the quotations which have ruled for some weeks past.

Centennial Eureka continued strong, there being very few holders willing to sell under the option price. There is still an absence of official news as to the outcome of the deal, and it is hardly likely that anything will be known before July. Dalton & Lark just about held its own. Daly did some business at about the previous week's quotations. Day-West showed no special activity, but there were few sellers.

Eagle remained practically stationary, as did also the Four Aces. Galena was stronger and at the close not offered under \$2.10. Geysler did some business, there being quite a number of investors who do not fear the outcome of the suits with the Marion Company.

Mammoth fluctuated wildly again, selling up to \$3.40 and then back to \$3 at the close. The only reason for this seems to be the fear that the company will have some trouble with its miners when the new eight-hour law goes into effect. Mercur was stronger and considerable business was done in the stock, though the number of sellers was limited. Mercur Gold Dust is improving daily. There was considerable inquiry for Malvern.

Ontario paid its regular monthly dividend of 10c. per share May 29th. Silver King was strong with little stock offered. There was little doing in Sunshine. Swansea continued strong and sold at its highest figure at the close of the week. Utah held its own, with considerable business done in the stock.

**San Francisco.** May 30.

(From Our Special Correspondent.)

At the opening the market was quite active and strong. The announcement that the Hale & Norcross had come to an understanding with the other companies interested as to future work on the Brunswick lode had a very favorable effect. On the other hand, the delay in giving out further information with relation to the Chollar find influenced the market in the opposite direction. As the week went on the activity disappeared, and at the close matters were quiet, with prices weaker.

The holiday can hardly be said to count, as it came on Saturday and did not break into the week's business.

Some closing prices are: Consolidated California & Virginia, \$2.65@2.75; Hale & Norcross, \$2.85; Chollar, \$2.60@2.70; Ophir, \$1.65@1.70; Gould & Curry, \$1.40@1.45; Occidental, \$1.40; Potosi, \$1.35@1.40; Savage, \$1.35; Bess & Belcher, \$1.30. The Bodies were a little lower, Bodie Consolidated selling to-day at 65c.; Bulwer, 38c.; Mono, 6c.

It is understood that J. W. O'Donoghoe, assistant accountant in the Virginia City office of the Consolidated California & Virginia Mining Company, will be promoted to the position of chief accountant, which was made vacant by the death of W. H. Lowell, and that Fred L. Patton will become Mr. O'Donoghoe's assistant.

**THE NEW EXCHANGE.**

Business has been quite active on the Gold Mining Exchange, and a good many sales were recorded. Outside of the call board the officers and experts of the Exchange are kept busy inspecting the various properties offered.

Some quotations noted at the close are: Champion, \$25; Amalie, \$2.50; Edna, 52c.; Sebastopol, 50@51c.; Savannah, 40@44c.; Lockwood, 34c.; Grant, 14c.

The holiday and the consequent short week affected business very little. A good deal of the buying is reported to be for investment.

The Gold Mining Exchange has arranged with Prof. Harold W. Fairbanks to deliver next week the first of the series of free popular lectures on gold mining in California. The mother lode, the occurrence of gold bearing quartz veins, and their causes will constitute the principal part of his theme. The lecture will be illustrated by stereoscopic views. One of the examining engineers of the exchange will also speak on the examination of mines.

**London.** May 23.

(From Our Special Correspondent.)

The West Australian market has completely eclipsed South Africans during the past week. Both on the Stock Exchange and in the street, the cry has been "Great Boulders," "Brownhills," and other West Australian stock, and those who continue to devote themselves solely to the South African market have been looking on idly. A large number of new West Australian companies have come out lately, including several new parent or promoting companies, so that events point to a great expansion of interests in this market.

The South African market has been dull and lifeless, but prices have remained steady. The release of many of the political prisoners at Pretoria and the reduction of sentences all round, has had a cheering effect both in chartered and in Transvaal stocks. No item of news, however, has been available for use in initiating speculation.

New Zealand mining stocks have received a strong impetus from the introduction of the shares of Consolidated goldfields of New Zealand into the speculative arena. These shares have been dealt in largely before, but not in so systematic a manner as this week. The quotation has been put up to £3. The Indian section has been very active, Mysore and Champion Reefs running a neck-to-neck race for first place. At both mines discoveries of considerable importance have recently been made, and at both the current profits are much greater than a

year ago. The quotations of the £1 shares in both companies stand at about £7 10s. and are likely to go higher.

In the American section great interest has been evinced in the coming requirement by the Exploration Company of another 300,000 shares in the Anaconda Mining Company. This further instalment is intended chiefly for French buyers. It is stated that the Exploration Company will actually acquire a further small interest so as to make their total holdings over one-half of the whole stock and thus to obtain control of the Anaconda Company. If this deal comes off satisfactorily, the output of copper will be slightly reduced and at the same time the expenditure watched more closely, so that the dividends shall not be reduced and the life of the mine prolonged.

The Golden Gate of California, Limited, has just undergone a new reconstruction for the purpose of providing funds for completing the purchase of the Rock River claim. The new company has a capital of £80,000 in £1 shares, 17s. paid, which will leave 3s. per share to be paid up. The river bed property cannot be worked until the Golden Feather Company have worked their part of the property, so that the Rock River mine will receive the sole attention of the company for some time. I have before given details of this new property, so that nothing need be said of it now, except that the production is quite up to expectations.

British Columbia continues to receive attention, and from the way promoters talk it will come to the front in the London mining market at no distant date. A company has been formed privately, without asking the public to subscribe, for the purpose of working a number of placer claims in Wild Horse Creek. Messrs. Skerthley and Beaton reported on the property, and Mr. A. E. Walton is one of the directors. The company was promoted by the Transvaal Exploring Company people.

**Paris.** May 24.

(From Our Special Correspondent.)

The most notable points this week have been the continued strength of the metallurgical stocks, the activity of the speculation in the copper shares, and a rise in the stocks of the zinc companies, based on fresh reports of a new convention among the producers. As to the truth of these rumors I can say nothing; they have been circulated several times before. The African gold shares are generally lower, but the business in them has been very small.

The movement of the precious metals in Italy showed some remarkable changes last year, which throw some light on the present financial condition of that country. The imports and exports of gold and silver, which were reported together, have been, for two years:

	1894.	1895.
	Lira.	Lira.
Imports.....	108,135,760	7,293,400
Exports.....	31,517,700	21,302,160

Excess..... I. 76,618,060 E. 14,008,700

The lire is equivalent to the French franc.

The ceremonies of the coronation at Moscow are to be followed by the opening of the great National Exposition at Nijni-Novgorod. This affair is intended to show the progress made industrially by Russia, and great pains have been taken to present the resources of the country. While the Russians are not by nature a manufacturing people, a great deal has been done to forward certain important industries, notably the manufacture of iron and steel, for which the raw materials exist in great abundance. Thus the statistics, which have been published in advance of the Exposition by the *Journal du Commerce et de l'Industrie* of St. Petersburg, show that in 1895 the production of pig iron reached 88,784,954 pounds (1,451,298 metric tons); 28,376,630 pounds (464,810 tons) of wrought iron, and 35,049,546 pounds (574,112 tons) of steel. Of the pig iron 92.4% was made in the private works and the remaining 7.6% in the government plants in Finland, Poland, the Oural and Siberia. Last year there were 180 private plants at work, of which 88 were in the Oural, 43 in the Moscow district, 32 in Poland, 6 in the North, 6 in South Russia and 5 in the South-eastern district. The production and imports of pig iron for three years are given below in metric tons:

	1893.	1894.	1895.
Production.....	1,160,737	1,312,760	1,454,298
Imports.....	162,145	154,644	132,776

Consumption..... 1,322,882 1,467,404 1,587,074

It will be a long time before Russia is able to export iron, but she is evidently making great progress toward supplying fully her own needs.

I may add that the coal mines in 1895 produced a total of 461,000,000 pounds (7,551,180 metric tons), which is a great advance.

I have given a great deal of space to Russia this week, because these figures are new, and because they illustrate the fact that Russia, whose military strength and aggressive policy have occupied our minds so much of late, is also advancing industrially to a degree which some of us have hardly suspected. Russia is the one country in Europe which can grow without colonizing outside of her own borders; but she is, nevertheless, apparently bent on extending those limits.

In very many respects here conditions resemble yours. You have still plenty of room to grow at home; and yet our Spanish neighbors accuse you of coveting Cuba, probably not without reason.

Well, it is natural and to be expected. A nation cannot stand still; it must grow or decay. I hope it will be centuries yet before you reach the latter stage—but Spain entered it long ago. AZOTE.

**MEETINGS.**

Name of Co.	Location of office.	Date.	Time.
Big Johnny Gold.	117 Mining Exchange, Denver, Colo.	June 18	2 p. m.
Con. Night Hawk & Nightingale Gold.	1525 18th St., Denver, Colo.	" 24	3 " "
Leon Gold.	415 1/2 Mon'g'm'ry St., San Francisco, Cal.	" 24	11 a. m.
Lucky Bill.	Park City, Utah.	" 9	11 " "
Minnesota Iron.	Duluth, Minn.	" 8	11 " "
Roesler & Hasselbacher Chemical.	73 Pine St., New York, N. Y.	" 20	1 p. m.
St. Paul & Butte Silver Bow Gold & Precious Stone.	37 East Broadway, Butte, Mont.	" 15	10 a. m.
		" 17	2 p. m.

**ASSESSMENTS.**

Name of Co.	Loc'n.	No.	Dlnq.	Sale.	Amt.
Alta.	Nev.	52	June 9	June 30	.10
Bogan Silver.	Utah	3	" 16	July 6	.05
Burlington.	Cal.	2	May 27	June 17	.03
*Central Eureka.	"	1	June 22	July 18	.05
Channel Bend.	"	2	May 22	June 13	.05
Eureka Con.	Utah	5	July 8	Sept. 5	.10
Flint Creek.	Mont.	9	May 22	June 12	.0056
*Gibraltar Con.	Cal.	9	June 25	July 10	.01
Granite Hill.	"	14	May 20	June 10	.10
Horseshoe Bar.	"	4	June 22	July 14	.50
Lady Emma.	"	1	May 25	June 25	.20
Leo.	Mont.	1	" 28	" 19	.004
Lucky Bill.	Utah	19	June 13	July 11	.02
Mexican Gold & Silver.	Nev.	54	May 28	June 18	.20
Mohawk Con.	Utah	1	June 1	" 29	.01 1/2
New Era.	S. D.	3	" 1	" 19	.07 3/4
*North Banner.	Cal.	30	" 23	July 14	.05
North Eureka.	Utah	1	May 30	June 27	.06 3/4
Overman.	Nev.	75	June 5	" 25	.10
Peabody.	Cal.	6	" 3	" 24	.10
Peruvian Con.	Utah	1	" 22	July 8	.02
Ruby Bell.	S. D.	13	" 1	June 19	.03
Savage.	Nev.	89	" 3	" 23	.20
Silver King.	Ariz.	14	" 16	July 14	.25
Siskiyou Con.	Cal.	11	" 8	June 29	.01
Skagit Cumb'd.	Cal.	1	" 12	July 11	.03
Surprise.	Cal.	1	May 30	" 1	.20
Thorpe.	"	2	June 22	" 13	.10
Wide Awake.	"	31	" 8	June 29	.05

\*New assessment.

**DIVIDENDS.**

NAME OF COMPANY	Current Dividends.		Paid since Jan. 1, 1895.	Total to date.
	Date.	Amount.		
Aetna Con.			\$10,000	\$50,000
Alaska-Mexican.			34,200	137,031
Alaska-Treadwell.			150,000	2,825,000
Anaconda.			750,000	.....
Aurora Iron.			50,000	700,000
*Big Six.			2,500	2,500
*Boston & Mont.			600,000	4,025,000
*Bullion Beck & Ch.			80,000	2,030,000
*Calumet & Hecla.			1,500,000	44,850,000
*Centennial Eureka.			16,000	79,000
C. O. D.			189,000	1,680,000
*Dalton & Lark.			5,000	25,000
Dominion Coal.			50,000	50,000
*Elkton Con.			600,000	.....
*Florence.			10,000	10,000
*Galena.			64,336	89,348
Gold Coin.			11,000	31,000
*Golden Fleece.			45,000	60,000
*Gold & Globe Hill.			90,000	491,179
Hecla Con.			17,250	26,625
Highland.			30,000	2,130,000
*Homestake.			25,000	3,159,918
Horn Silver.			156,250	5,868,750
Iron Mountain.			50,000	5,130,000
*Isabella.			30,000	40,000
*Le Roi.			90,000	112,500
*Mercur.			75,000	150,000
Minnesota Iron.			100,000	450,000
*Mont. Ore Pur. Co.			247,500	2,932,500
*Moon-Anchor.			200,000	380,000
Moose.			12,000	12,000
Napa Con.			6,000	186,000
Ontario.	June 1	\$15,000	30,000	770,000
Osceola Con.			75,000	13,250,000
Otaqueachy.			75,000	2,022,500
*Portland.			1,000	1,000
Quincy.			90,000	713,000
*Silver King.			40,000	8,070,000
*Slocan Star.			225,000	675,000
Small Hopes.			100,000	100,000
Smuggler-Union.			25,000	3,275,000
*Union.			50,000	50,000
*Utah.			12,500	62,000
*Victor.			10,000	142,000
Victor M. & L.			100,000	505,000
War Eagle.			9,000	34,000
Totals.....			\$15,000	\$6,504,580

\* May dividend paid.

This table does not give all the dividends paid by mining companies, as it is impossible to obtain a complete list of dividends declared. Many companies are close corporations and refuse to give the information. Readers of the *Engineering and Mining Journal* will confer a favor on the publishers if they will notify the *Journal* of any errors or omissions in the above table.

STOCK QUOTATIONS.

BOSTON, MASS.\* Table with columns for Name of Company, Location, Par value, and dates from May 29 to June 4. Includes companies like Alouez, Arnold, Atlantic, etc.

NEW YORK.\* Table with columns for Name of Company, Location, Par value, and dates from May 30 to June 5. Includes companies like Adams, Ajax, Alamo, etc.

\* Official quotations Boston Stock Exchange. † Ex-dividend. ‡ Holiday. Total sales, 57,206.

\* Official quotations New York Stock and Con. Stock & Petroleum Exchanges. ‡ Holiday. Total shares sold, 20,350.

INDUSTRIAL COAL AND COAL RAILROAD.\* Table with columns for Name of Company, Par value, and dates from May 31 to June 5. Includes companies like Balt. & Ohio, Ches. & Ohio, etc.

Table with columns for Name of Company, Location, Par value, and dates from May 30 to June 5. Includes companies like Adams, Ajax, Alamo, etc.

\* Official quotations N. Y. Stock Exchange. ‡ Holiday. Total shares sold, 39,700.

\* Official quotations New York Stock and Con. Stock & Petroleum Exchanges. ‡ Holiday. Total shares sold, 20,350.

COLORADO SPRINGS, COLO.† Table with columns for Name of Company, Par value, and dates from May 25 to May 31. Includes companies like Ajax, Alamo, Am'ric'n C, etc.

ST. LOUIS, MO., STOCKS. Week ending June 2. Table with columns for Name of Company, Company's Office, Par Value, Bids, Asked, and Last Dividend. Includes Central Lead, Con. Coal, etc.

\* Official telegraphic quotations, San Francisco Stock Exchange.

Table with columns for Name of Company, Location, Par value, Bids, and Asked. Includes companies like Balt. M. & S., Conrad Hill, etc.

BALTIMORE, MD.\* Week ending June 3. Table with columns for Name of Company, Location, Par value, Bids, and Asked. Includes Baltimore & S., Conrad Hill, etc.

\* Official quotations Baltimore Stock Exchange.

MISCELLANEOUS SECURITIES. June 4. Table with columns for Name of Company, Location, Par Value, Bids, and Asked. Includes American Coal, Mahoning Coal, etc.

\* Official quotations and sales Colo. Springs Mg. Stock Assoc. \* Board of Trade Exchange. ‡ Holiday.



LONDON. May 22.

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

DENVER, COLO. May 25, 26, 27, 28, 29, 30.

Table with columns: NAME OF COMPANY, Par val, May 25, May 26, May 27, May 28, May 29, May 30, Sales. Lists mining companies like Anaconda, Bunker, etc.

PARIS. Week ending May 22.

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

PHILADELPHIA, PA. Official quotations Philadelphia Stock Exchange.

Table with columns: NAME OF COMPANY, Loc'n, Par Val, May 28, May 29, May 30, June 1, June 2, June 3, Sales. Lists companies like Acety. L.H. & P., etc.

MEXICO. Week ending May 28.

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

SALT LAKE CITY, UTAH. Week ending May 30.

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

PITTSBURG, PA. Week ending June 2.

Table with columns: NAME OF COMPANY, Location, Par val, Bid, Ask, Selling price. Lists companies like Mansfield, etc.

VALPARAISO, CHILE. May 21.

Table with columns: NAME OF COMPANY, Capital, Share value, Last Dividend, Prices. Lists companies like Arturo Prat, etc.

HELENA, MONT. Week ending May 28.

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

SHANGHAI, CHINA. May 1.

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

DULUTH, MINN. Week ending May 30.

Table with columns: NAME OF COMPANY, Par value, Bid, Asked, NAME OF COMPANY, Par value, Bid, Asked. Lists companies like Adams Iron, etc.

Special Report of J. P. Bissett & Co. The prices quoted are in Shanghai taels. Special Report of S. E. Smith.



DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns for Name and Location of Company, Capital Stock, Shares (No., Par Val), Assessments (Total Levied, Date and Amount of Last), Dividends (Total Paid, Date and Amount of Last), and Name and Location of Company, Capital Stock, Shares (No., Par Val), Assessments (Total Levied, Date and Amount 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.

+ Prior to the consolidation in August, 1884, the California had paid \$31,320,000 in dividends and the Cons. Virginia \$42,390,000.

NOTE.—Corrections to this table are made monthly. Correspondents are requested to forward changes or additions so as to reach us before the end of each month.



CLASSIFIED LIST OF ADVERTISERS.

**Air Compressors and Rock Drills**  
 Bullock, M. C., Mfg. Co.  
 Burlington Rock Drill Co.  
 Clayton Air Compressor Works.  
 Fraser & Chalmers.  
 Ingersoll-Sergeant Drill Co.  
 Laidlaw-Dunn-Gordon Co.  
 (See Diamond Drills)

**Air Hoists.**  
 Whiting Foundry Equipment Co.

**Aluminum Bronze**  
 Fairbanks Co.

**Amalgamators**  
 Bucyrus Steam Shovel & Dredge Co.  
 Fraser & Chalmers.

**Amalgam Plates.**  
 Western Plating and Mfg. Co.

**Anti-Friction Metals**  
 Besley, Chas. H., & Co.  
 Chester Steel Cast. Co.

**Architects and Builders**  
 Berlin Iron Bridge Co.  
 Pittsburgh Bridge Co.  
 Pollock, Wm. B., & Sons.  
**Assayers' and Chemists' Supplies**  
 Newarth, Wm.  
 Baker & Adamson.  
 Baker & Co.  
 Becker, Christian.  
 Bullock & Crenshaw.  
 Denver Fire Clay Co.  
 Elmer & Amend.  
 Henry Hill Chem. Co.

**Attorneys, Corporation**  
 Emig, C. H., & Co.  
 Hamersley, Hamilton & La Malstre.  
**Automatic Hoiler Feeds**  
 D'Este & Seelye.  
 Penberthy Injector Co.

**Babbit's Metal**  
 Besley, Chas. H., & Co.

**Bankers and Brokers**  
 Arkell, E., & Co.  
 Bartlett & Co.  
 Benright, W. P., & Co.  
 Breitung, E. N.  
 Carnaud, A.  
 Crandell & Huff.  
 Crisp, Cr. Syn. Inv. Co.  
 Decker, L. G.  
 Duer, G. A. G.  
 Dorsey, H. C.  
 Edsall, Clarence & Co.  
 Farnsworth, C., & Co.  
 Fitts, G. W., & Sons.  
 Fletcher, C. S., & Co.  
 Freyschlag, Kirby & Co.  
 Gardner & Co.  
 Grant, E. R.  
 Handy & Harman.  
 Harriott, W. M.  
 Hendrickson, W. J.  
 Heron Bros.  
 Hodgins, L. W.  
 Hicks & Benzie.  
 Johnson, L. L.  
 Keith, F. M.  
 Kenrick, W. F.  
 Key, J. J.  
 Kinney, M.  
 Kellander, C. F. & Co.  
**Belt Lacing.**  
 Bristol Co.  
**Blasting Caps.**  
 Metallic Cap Mfg. Co.  
 Rhenish Westphalian Explosive Co.  
 Schroeder, Fr.  
**Blasting Batteries Caps and Fuse**  
 Climax Fuse Co.  
 Lan, J. H., & Co.  
**Blowers, Pressure.**  
 Connorsville Blower Co.

**Boilers**  
 American Engine Co.  
 Denver Eng. Wks. Co.  
 Enterprise Boiler Co.  
 Fraser & Chalmers.  
 Heine Safety Boiler Co.  
 Philadelphia Eng. Wks. Ltd.  
**Brattic Cloth**  
 Besley, Chas. H., & Co.  
**Brewers.**  
 Fabst Brewing Co.  
**Brick Machinery**  
 Prosser, E. H., & Co.  
**Bridges**  
 Berlin Bridge Co.  
 Pittsburgh Bridge Co.  
**Buckets**  
 Scaife, Wm. B. & Sons.  
**Car Wheels.**  
 Whiting Foundry Equipment Co.  
**Carbons**  
 Bishop, Victor, & Co.  
 New York Diamond Drill Co.  
 Lawlor, Theodor.  
**Chain and Link Belting (See Belting.)**  
**Chemicals**  
 Baker & Adamson.  
 Bullock & Crenshaw.  
 Elmer & Amend.  
 Henry Hill Chem. Co.  
**Coal**  
 Beswind-White Coal Mfg. Co.  
 Cather & Curran Consolidation Coal Co.  
**Chemists.**  
 Simonds & Wainwright.  
**Chilled Castings.**  
 Whiting Foundry Equipment Co.  
**Coal Cutters**  
 Ingersoll-Sergeant Drill Co.  
 Jeffrey Mfg. Co.  
 Leyner, J. Geo.  
 Link Belt Machinery Co.  
**Compressors**  
 Clayton Air Compressor Works.  
 Norwalk Iron Works Co.  
**Concentrators, Crushers, Pulverizers, Separators, Etc.**  
 Allis, F. D., & Co.  
 Beckett Foundry & Machine Co.  
 Blake, Theo. A.  
 Boston Ore Machinery Co.  
 Bradley Pulverizer Co.  
 Colorado Iron Works.  
 Denver Eng. Works Co.  
 Dodge Mining Machinery Co.  
 Engelbach Mach. Mfg. Co.  
 Fraser & Chalmers.  
 Heine Safety Concentrator.  
 Hendrie & Bolthoff Mfg. Co.  
 Joplin Mach. Co.  
 Krom, S. B.  
 Krupp, F.  
 Link Belt Machinery Co.

McCully, R.  
 Scotch, H., & Co.  
 Stedman Foundry & Mach. Co.  
 Walburn-Swenson Mfg. Co. See Machinery Contractors. (See Machinery.)  
**Copper Dealers and Producers.**  
 American Metal Co.  
 Arizona Copper Co.  
 Atlantic Mining Co.  
 Balbach S. & Ref. Co.  
 Baltimore Cop. Wks.  
 Bath, H., & Son  
 Boston & Mont. Mfg. Co.  
 Bridgeport Copper Co.  
 Butte & Boston M. Co.  
 Canadian Copper Co.  
 Copper Queen Mfg. Co.  
 Detroit Copper Mfg. Co.  
 Elliott & Metal Co., Ltd.  
**Corrugated Iron**  
 Berlin Iron Bridge Co.  
 Cincinnati Corrugating Co.  
 Sikes Steel Roofing Co.  
**Cranes.**  
 Whiting Foundry Equipment Co.  
**Crucibles, Graphite, Etc.**  
 Denver Fire Clay Co.  
 Stedman's Foundry & Machine Works.  
**Damper Regulators**  
 D'Este & Seelye.  
**Cyanide.**  
 Roessler & Hasslacher Chemical Co.  
**Diamonds**  
 Bishop, Victor, & Co.  
 Lexow, Theodor.  
 New York Diamond Drill Co.  
 Sullivan Machinery Co.  
 (See Air Compressors and Rock Drills.)  
**Draughtmen.**  
 Young, W. B., & Co.  
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Board of Commissioners.

DECKERTOWN, N. J., June 8, 1896.

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TREASURY DEPARTMENT, OFFICE SUPER-vising Architect, Washington, D. C., June 10th, 1896.—Sealed proposals will be received at this office until 2 o'clock p. m., on the 15th day of July, 1896, and opened immediately thereafter, for all the labor and materials required for the joinery work, marble work, iron stairs, plastering, etc., for the U. S. Court House, Post Office, etc., at Detroit, Mich., in accordance with drawings and specification, copies of which may be had at this office or at the office of the Superintendent at Detroit, Michigan. 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 or to waive any defect or informality in any bid should it be deemed in the interest of the Government to do so. All proposals received after the time stated will be returned to the bidders. Proposals must be enclosed in envelopes sealed and marked "Proposal for the Interior Finish of the U. S. Court House, Post Office, &c., at Detroit, Michigan" and addressed to W. M. MARTIN AIKEN, Supervising Architect.

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LOUNSBERY & CO., Transfer Agents.

### VICTOR GOLD MINING COMPANY OF

Cripple Creek, Colo., has declared a dividend (No. 38) of TEN CENTS A SHARE on its capital stock (200,000 shares), amounting to \$20,000, payable June 15th. Books close at the New York office, 66 Broadway, June 9th; reopen June 16th. Total dividends to date, \$585,000.  
H. A. KIRKHAM, Transfer Agent.

### ASSESSMENT NOTICE.

**SILVER KING MINING COMPANY,**  
Location of principal place of business, San Francisco, Cal.; Location of Works, Pioneer Mining District, Pinal County, A. T.

Notice is hereby given that at a meeting of the Board of Directors, held on the 7th day of May, 1896, an assessment (No. 14) of TWENTY-FIVE CENTS (25c.) per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, No. 310 Pine street, Rooms 15 & 17, San Francisco, Cal.  
Any stock upon which this assessment shall remain unpaid on the 16th day of June, 1896, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Tuesday, the 14th day of July, 1896, to pay the delinquent assessment together with costs of advertising and expenses of sale.  
By order of the Board of Directors, J. W. PEW, Secretary; Office, No. 310 Pine street, Rooms 15 & 17, San Francisco, Cal.

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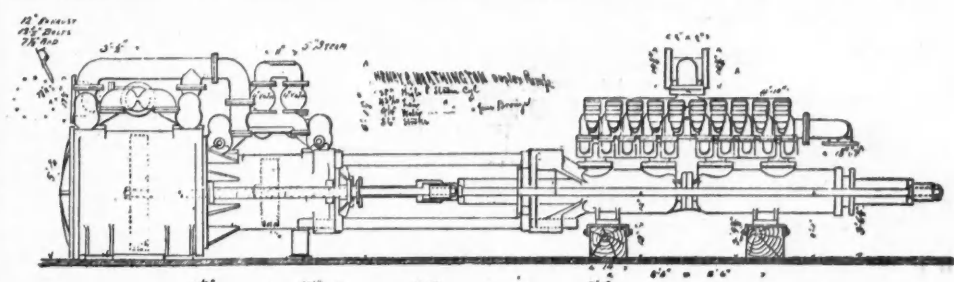
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No. 17,434, June 27.

**CHEMIST DESIRES POSITION AT BLAST**  
furnace, steel works or mines. Address L. P. N., ENGINEERING AND MINING JOURNAL.  
No. 17,435, June 29.

**A NO. 1 MILLMAN WISHES POSITION.**  
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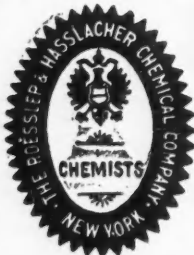
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