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THE friends of silver cannot be the enemies of all the other industries of the country. Those who would see all the industries prosper cannot be the enemies of silver.

THE enemies of silver are those who would depreciate it by limiting its use to this and a few of the less important countries like Mexico, South America and Japan. The friends of silver are those who would have it circulate in a universal bimetalism where its price would be assured and the industry of producing it could be carried on safely, and with certainty as to the value of product.

SOME of our Western miners think that the ENGINEERING AND MINING JOURNAL is the enemy of silver and of mining. It is their best and most steadfast friend. We are bimetalists. We seek to secure both gold and silver in circulation, not one or the other. We are on the ground and in the fight for the mining industry and for bimetalism. These critics are standing a long way off, out of sight of the battlefield, yet they would tell us how to parry the blow of the adversary or where to strike him.

THE free coinage of silver would give us monometallism, silver only and no gold in circulation, as any one can see, for every country that has free coinage has no gold. One country cannot establish bimetalism; no country has or can get enough gold to redeem the silver that would be offered to it; and unless the holder of silver dollars can exchange them, without premium, for gold dollars, and vice versa, the metals would not circulate together, no matter what the laws may say.

It is estimated that there is invested in this country, in one form or another, something like \$900,000,000 of foreign money, all gold or its equivalent. This money has done much toward the development and building up of our mining and other industries; without it a large part of the country would still be a wilderness. The use of this money is worth to us much more each year than the entire value of either our gold or our silver product. One effect of the doubt of our ability to maintain gold payments which the continued purchase of silver engenders has been, and would continue to be, the withdrawal of this foreign money, and this has been in large part the cause of the present financial crisis.

THE letters, which we publish in another column, from some of the leading smelting companies of the West, probably outline the general policy which will be followed by all of these concerns. While they do not feel encouraged at the present prospect, they will keep at work as long as possible, pursuing a waiting policy, in the hope that some improvement in the prices of silver and lead, and some reduction in expenses, will enable them to avoid a complete shutdown. To do this, some reduction in wages will be necessary, and it is on this point probably that there is most likely to be trouble. At present, while nearly all the plants have reduced production, the only one entirely closed is the Arkansas Valley Smelter, at Leadville, and these works would have continued to run had not their workmen refused to accept any reduction.

It is not merely to the interest of every civilized country that there should be a common standard of value, and that none of the existing money of the world should be suddenly destroyed, but it is clearly essential that this money should be subjected to a control that would effectually prevent such pernicious financial practices as have frequently brought great loss and injury on the industries of nations.

Under the Clearing House plan all existing money would be retained in use, without possibility of either metal going to premium as compared with the other. The price in the open market of either could not rise materially above its value in money, and any large over-production of either would be effectually prevented through a flexible ratio which would also permit, without disturbance or sudden loss, the gradual evolution toward the use of a single metal, or of some still better measure of value, if that should ever be found desirable.

THE Denver Daily State Mining Journal and the Salt Lake Tribune still do us the honor of their abuse. We have had on many occasions to expose the dishonest schemes the former was booming, and its enmity is easily accounted for. We do not now recollect on which of the Tribune's horns we may have stood. It is an able and useful paper and we regret to see it descend to such a level. In advocating what we are convinced is for the benefit of our mining industry, regardless of temporary and personal interests, and in frank denunciation of the frauds and wild-cat schemes which bring discredit on mining, we have, of course, antagonized all the promoters and beneficiaries of such enterprises. Their animosity is a tribute of which we feel proud, and we trust they will continue it. Mosquitoes and gnats may annoy a man who is merely seeking his comfort, but they are neither felt nor noticed by one who is straining every nerve in an effort to rescue a friend from danger or by one who is heaving the life line to a drowning man.

THE reports from the new Coolgardie gold district in Western Australia would seem incredible did they not come to us from a reliable source. A

yield of 2,000 ounces of gold to the ton seems almost fabulous, but the fact is well authenticated. It is not to be expected that any such output will be continued, but there is no doubt that the new district is of extraordinary richness, and may be expected in time to add largely to the Australian gold supply. The conditions of working are exceedingly unfavorable at present; the difficulties of reaching the remote region where the mines are, and of procuring supplies, may be overcome in part, but the almost total lack of water is a drawback which there is no apparent way of removing, unless indeed deep borings reveal the existence of underground supplies. The wonderful richness of the finds is drawing many miners and prospectors to the district, however, and while some may prosper, the usual amount of disappointment and suffering will probably follow this, as it has other, "booms."

WHAT would happen if the United States should enter the market to buy even \$100,000,000 of gold; the Indian Government and the native Indians \$200,000,000; Mexico, South America, Japan, China and the rest of the silver world even only \$300,000,000 of gold; or in all say \$600,000,000, should no European country join in the "scramble"? What would be the effect of an urgent new demand, in the already bare market, for \$600,000,000 of the yellow metal? Where would it come from and to what price would it go? Who can say it would not double its present value, and who can estimate the effect of such an advance in the purchasing power of the then sole standard of values? Would it not close the workshops of the world and bring commerce to a stand? Can any man conceive the horrors and the barbarisms which would be the outcome of destitution and starvation caused by the general stoppage of the wheels of industry? The policy of allowing such a problem to "work itself out" is barbarous; its consequences are far too momentous to allow of such ignorant experimenting.

THIS year natural causes seem to have aided in the work of depriving the Pittsburg coal operators of their control of the Ohio and Mississippi river coal trade, which was begun earlier by the strike of the men in the Monongahela pool mines. The long continued dry weather has prevented the operators from making shipments down the river; the usual June rise in the Ohio did not come, and there has been none since, while the present prospect is that none will come before fall. The mines which serve the river trade are practically stopped, for the reason that every thing available is loaded, and they have nowhere to put their coal. This state of affairs has given the West Virginia operators an opportunity, of which they have not been slow to take advantage, and Kanawha coal is finding its way down in sufficient quantities to supply the lower markets. Moreover, the completion of the Norfolk & Western extension to the Ohio has brought Pocahontas coal to the river towns, where its excellent quality is appreciated, and will give it markets from which it cannot be dislodged. It is evident that, while Pittsburg will doubtless continue to claim a share of the river trade, its exclusive hold is gone and cannot be recovered.

THE abstract of the reports made to the Comptroller of the Currency, showing the condition of the National banks on July 12th, has been made public and shows, as nothing else can so well do, the frightful shrinkage in credit and currency which has been brought about by the distrust and fear originated chiefly by the operation of the Sherman Silver Purchase Act. The following table shows some items of the banks during the last year. This is an eloquent appeal for the repeal of the act, but since this is not the sole nor at present the chief cause of the depression its simple repeal will not bring an immediate revival:

MILLIONS OF DOLLARS.						
Resources.	Jul. 12, '92	Sep. 30, '92	Dec. 9, '92	Mar. 6, '93	May 4, '93	Jul. 12, '93
Loans and discounts...	2,127	2,171	2,113	2,138	2,141	2,005
Due from reserve ag'ts.	252	236	204	202	174	159
Due from Nat'l banks.	137	149	142	124	121	111
Clearing House exch'gs.	90	165	110	125	124	107
Gold coin and certs.	...	174	174	174	168	146
All other.....	...	681	717	696	...	...
Total.....	3,493	3,510	3,480	3,459	3,432	3,213

MILLIONS OF DOLLARS.						
Liabilities.	Jul. 12, '92	Sep. 30, '92	Dec. 9, '92	Mar. 6, '93	May 4, '93	Jul. 12, '93
Deposits.....	1,753	1,755	1,764	1,751	1,749	1,556
Bank notes circulation	111	143	145	149	146	155
Surplus.....	233	238	239	245	246	249
Undivided profits.....	84	192	114	103	106	93
Due National Banks.....	367	352	333	304	275	239
All other items.....	96	510	895	907	...	...
Total.....	3,493	3,510	3,480	3,459	3,432	3,213

#### THE MONETARY QUESTION.

THE business of the country is almost universally suspended by the panic. The mining interests and the many branches of manufacturing that supply the mines and miners have been extremely dull for many months past. The sudden drop in silver brought things to a crisis in the West, while the general cessation of orders in the East has closed many of the iron ore mines and not a few of the furnaces. No doubt the silver States, being more dependent on a single branch of the industry

have felt the stroke most severely, but every part of the country is suffering acutely.

There is an almost universal conviction in the East that the trouble originated with the silver purchases, which occasioned a loss of confidence in our ability or willingness to maintain gold payments, induced the withdrawal of capital and stopped investment, and many believe that the depression will disappear with the repeal of the Sherman Act. On the other hand, many, though by no means all, Western men think or say that the free coinage of silver would cure the trouble, while every one in the East believes that this would largely aggravate it.

No doubt each has some truth and some error in the foundation of his belief, and it behooves the prudent men on each side to stop wrangling and to agree upon a fair, just and safe measure that will restore confidence and set the wheels of industry moving. The country is undoubtedly in a critical condition, and no precious time should be wasted in foolish denunciation nor in stupid, ignorant inaction, waiting for "things to work themselves out," as some of the single gold standard advocates would have us do. It is time for the fanatics, the lunatics and the cranks of both sides to stop their foolish bluster, step to the rear, and allow reasonable and prudent counsels to prevail.

It is evident that free coinage, which the vast majority of our people are convinced would mean absolute ruin, is out of the question. Tinkering with a change of the ratio is no solution of the problem, and is altogether too trifling an amelioration to be seriously considered—a mere chip thrown to a drowning man.

All civilization and humanity would revolt at the bare suggestion of suddenly exterminating a whole race because, forsooth some impracticable theorist had evolved the idea that being weaker or less intelligent than another race, the law of the survival of the fittest required its immediate disappearance. It would be useless to argue with such a philosopher, that nature acts slowly and but rarely by cataclysms; and that possibly, under conditions of freedom and education, the less fit race might in time become, if not as robust physically as the other, yet strong and helpful members of the community, while the race of warriors might ultimately decimate itself in the continued pursuit of the idea of the survival of the fittest, and the land might become again a howling wilderness. No: to the theorist the survival of the fittest is a law of nature and nature's laws are inflexible. The brutal and sanguinary instincts of the stronger race should not be checked or interfered with: the law of the survival of the fittest should be allowed "to work itself out," and the weaker race be promptly exterminated.

The law of civilization, however, restricts the exercise of the strength and liberty of the strong by the rights of the weak, and brings about changes gradually.

As practical business men, who see and know the critical condition of this country, it is our bounden duty to urge on each side the recognition and observance of the rights of the other by adopting measures which, while, perhaps, not conceding to either all it asks, will unite all in a common and harmonious effort to restore confidence and prosperity.

Such a reasonable, practical and beneficent solution of the question now before Congress we believe can be consummated.

#### THE CRISIS IN SILVER AND THE PRODUCTION OF LEAD.

The price of silver has now declined to about 70 cents per ounce, and a further depreciation is anticipated upon the repeal of the Sherman Act which seems assured. The effect of this has been to close most of the mines in several States, especially Idaho, Colorado and Utah, which are the ones most directly affected. California and South Dakota are gold mining States, with only a small interest in silver mining; Montana and Arizona have a great copper mining industry, which is independent of the price of silver, although their copper ores are argentiferous; in Nevada the Comstock has been the only mining district of importance, for many years; its ores have 40 per cent. of their value in gold, and we are informed that they will continue to be worked, a reduction in wages and other expenses having been effected; but in Idaho, Utah and Colorado everything hangs on silver, which has been the metal of paramount importance in their mining industry. These States are the chief producers of lead, with which the silver is for the most part associated, but under present conditions the ores cannot be worked profitably for lead alone.

It seems on the face of things that the closing down of the mines in these States, especially those of the Cœur d'Alene in Idaho, the Bingham district in Utah, and Leadville in Colorado, must have a serious effect upon the production, and consequently the price, of lead in the United States. How important this may be is shown by the statistics for 1892 in the volume of "The Mineral Industry" for that year. The total output of domestic lead in 1892 is reported as 178,892 short tons (of 2,000 lbs.), of which 61,500 tons came from Colorado, 30,000 tons from Utah, and 36,500 tons from Idaho and Montana. The production of Idaho and Montana was not divided, but the former State should be credited with the major portion. In addition to the domestic production 39,608 tons of lead in or



and bullion were brought into the United States from Mexico, all of which came from argentiferous ores. The total production of lead from non-argentiferous ores in the United States in 1892 amounted to 37,000 tons only, or less than 21 per cent. of the total production of our mines and 13 per cent. of that of the smelting works, the latter including the Mexican ore reduced and bullion refined in bond and exported. If the mines of the silver States remain idle, therefore, it is apparent that there will be a great deficiency in the output of lead in this country within a very few months. The London and other European markets will be influenced in the same manner, since much of the foreign lead, especially the Australian and Mexican, which reaches them is also reduced from argentiferous ores, and the mines in those countries are affected similarly to those in the Rocky Mountains; more so, of course, in Australia than in Mexico, where the decline in the price of silver has for a time at least lessened the cost of production, that country being on a silver basis already. We are informed that the great Broken Hill mine, the largest single producer of lead in the world, has already closed down, although there are probably some ulterior motives in this action, as we have shown previously that it can be operated at a profit with silver at 50 cents per ounce.

Notwithstanding this prospect, the price of lead has remained at the low level which has been ruling for a number of months, and which is far below the average price of 1872 or any year since 1878. This is due undoubtedly to two reasons, the first being that smelters are engaged in working up their stocks, so that no scarcity has been felt as yet in the markets; and the second, the dangerous financial condition of the country, whereby stocks have been forced to a sale and consumers fear to make purchases, as is shown also in the low prices of zinc and copper and the stagnation in those metals.

With the repeal of the Sherman Act, however, a different condition of affairs may be expected. The present trouble is undoubtedly due in great measure to apprehension solely. With the removal of this feeling of fear and uncertainty business will begin to improve—slowly, perhaps, but surely, the recovery being hastened by our magnificent crops, the prospect of large exports to Europe, where there has been a serious failure of the harvest, and the certainty of high prices for them. The importation of gold, which is already beginning on a large scale, even in the present state of things, seems to bear out this optimistic view.

When this improvement in business comes the price of lead is bound to rise, and we shall not be surprised to see it attain a higher figure than for many years. It may go so high that the silver-lead ores of the Cœur d'Alene and other districts will be in demand for their lead regardless of their silver. The Cœur d'Alene ore is shipped as concentrates, which carry as a rule about 60 per cent. lead and 30 ounces silver per ton, five or six tons of crude ore being reduced to one ton of concentrates. It occurs in large veins, which can be worked economically, not much pumping being necessary and water-power abundant. According to the official report of the Helena & Frisco Mining Company for 1891 its ore was mined at a cost of \$2.45½ per ton, and dressed for 45¢ cents per ton, figures which show how cheaply the work can be done even with labor, which is the largest single item of expense, ruling at \$3.50 per day (this report having been made before the wages of shovelers and trammers were reduced to \$3).

The present crisis in silver is felt keenly in the Rocky Mountains and will continue to be so felt for many months, but the mining industry of those States is not going to be stopped forever. Many men will continue to be employed in those silver mines which can be operated profitably at a lower price for the metal than now rules; many will be absorbed in gold mining, working the lodes which offer only a small return and have been neglected hitherto for that reason, and, finally, many of the silver-lead mines will be reopened as lead mines alone, and worked profitably for their lead contents without respect to the price of silver, the latter being regarded as a bye-product, as in the case of the argentiferous copper ores of Montana. The readjustment of the wages of labor in those regions, which have long been out of proportion to the cost of living, and which is certain to come about, will help to make this possible. Then will operations in the Rocky Mountains be re-established on a sounder business basis than heretofore, and the fever of the industry which has led to the making of so many great fortunes and the loss of so many more will have been allayed.

#### NEW PUBLICATIONS.

**THE METALLURGY OF LEAD AND THE DESILVERIZATION OF BASE BULLION.** THIRD EDITION. By H. O. Hofman, E. M., Ph. D., Associate Professor of Mining and Metallurgy in the Massachusetts Institute of Technology. New York: The Scientific Publishing Company. Pages, 414, with 275 illustrations. Price, \$6.

A really good book on the metallurgy of lead has been needed for a long time. Many able American metallurgists have keenly felt the lack of literature on lead, and several of the more prominent European lead smelters have expressed a desire to learn more fully about the American practice in the treatment of lead ores, particularly the treatment of argentiferous lead ores by the smelters in the western portion of the United States.

It is, indeed, gratifying to learn that Dr. Hofman has met this want, and has given to the world a very good book on this subject. Viewed as a whole, it is a remarkably able work, and it is a pleasure to state that some of the best Western smelters esteem it very highly. An able lead refiner has said that Dr. Hofman's article on the "Desilverization of Base Bullion" was the finest thing he has seen in the English language. This book from beginning to end bristles with new and good thoughts, and the drawings alone are worth to those actively engaged in the smelting of lead ores ten times the cost of the book.

Chapter I. is a condensed statement of historical and statistical facts intended chiefly for the student, and giving him a compendium of information, with appropriate references to other metallurgical authorities, should he have time or opportunity to extend his reading. Nowhere else can this information be found in such accessible or well-digested shape.

Chapter II. treats of the properties of lead and some of its compounds. In this chapter we learn the fact that Dr. Hofman is careful and very painstaking; he has accumulated and given to the reader the foundations of lead metallurgy. A man can be an excellent chemist and a very poor metallurgist; but to be even a fairly good metallurgist he should be a very fine chemist. Dr. Hofman clearly appreciates this fact, and in order not to make this article unduly long, he has given us remarkably valuable footnote references.

All true lovers of scientific pursuits, who are in any way connected with the metallurgy of lead, must deeply thank Dr. Hofman for the fullness of his footnotes. Aside from the valuable working drawings already referred to, we think the footnote references to other books, journals and similar sources of knowledge are the most characteristic and valuable feature. The reader of this book feels, somehow, personally grateful to Dr. Hofman for his footnotes, since they have pointed out the way to much useful knowledge.

Chapter III., on "Lead Ores," is not intended as a metallurgical treatise, but is a practical and necessary introduction to the subject for the student, who requires the general statements given on this point as an introduction to the further study of the subject.

Chapter IV., on the distribution of lead ores, is a most excellent article, and shows care in its writing; the references are very valuable. Chapter V. treats of the receiving, sampling, assaying and purchasing of ores, fluxes and fuels. This chapter is full of new, fresh thought, and ought to be prized by all who are practically engaged in working lead ores, and who have, in many cases, but little knowledge of business details, however expert they may be as metallurgists.

In Chapter VI. there is treated the smelting in reverberatory furnaces. Dr. Hofman says in his preface: "The main object has been to make it a guide for Americans." He states also that "Reverberatory furnace practice, on the other hand, has not made much progress as yet in this country." While not advocating this type of furnace for the usual run of Western ores, the author believes that its use for the pure galena ores of the Mississippi Valley would be desirable. He gives an interesting summary of English and European practice in this direction, with particulars that are essential to a proper understanding of the subject, making a concise account; and he adds some late data from Tarnowitz, not to be found in any other book on the subject. The description of the Moffet ore-hearth furnace on page 114 is very interesting; so also is the description on page 122 of the modern slag-eye furnace, used formerly by the Lone Elm Works, now the Picher Lead Company, at Joplin, Jasper County, Mo. The article on the recovery of flue dust by the Lewis-Bartlett bag process is not found in any other treatise.

Beginning with page 132 and ending with page 294 we have smelting in the blast furnace. There is nothing on this subject in the English language so fine; here we have the cream of this book, and every page is worth the cost of the book. Every student of lead metallurgy should look up and procure the books and papers referred to in Chapter VIII.

Chapter X. gives the Parke process, and this is another gem of this book. Those who have had most experience with the Parke process unhesitatingly pronounce it very valuable. The concluding article on cupellation is also a credit to Dr. Hofman.

In conclusion, it may be truthfully said this book of Dr. Hofman contains very much to admire and little to condemn in its 420 pages. Especial attention is directed to the valuable drawings which Dr. Hofman collected during his extensive trip through the western portion of the United States, and much credit is also due the publishers of this volume for the elegant execution of these engravings.

#### BOOKS RECEIVED.

In sending books for notice, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review in another page of the Journal.

*Programm der Königlichen Technischen Hochschule zu Aachen für das Studienjahr 1893-94.* Aachen, Germany; Published for the school. Pamphlet, pages 120.

*A Select Bibliography of Chemistry: 1492-1892.* By Henry Carrington Bolton. Washington; Published by the Smithsonian Institution. Pages 1,212. Price \$2.50.

*Zeitschrift des Königlich Preussischen Statistischen Bureaus: 1893, Vierteljahrheft I. und II.* E. Blenk, Direktor. Berlin, Germany; Published by the Bureau. Pages 268.

*An Inquiry Into the Nature and Causes of the Wealth of Nations.* By Adam Smith. New Popular Edition. London and New York; George Routledge & Sons. Pages 780; price \$1.

*Iowa Society of Civil Engineers and Surveyors: Fifth Annual Convention Proceedings.* Edited by Seth Dean, Secretary. Des Moines, Ia.; Published by the Society. Pages 80; price 50 cents.

*The Science of Mechanics.* By Prof. Ernst Mach, Ph. D. Translated from the second German edition by Thomas J. McCormack. Chicago; T. Open Court Publishing Company. Pages 540, with 250 diagrams and illustrations; price \$2.50.

## CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.

All letters should be addressed to the MANAGING EDITOR.

We do not hold ourselves responsible for the opinions expressed by correspondents

## The Orford Nickel Process.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: Referring to the communication of Mr. Vaughan and Mr. Thompson in the "Engineering and Mining Journal" July 8th and 15th, I wish to state that I have worked for seven years at the Hafod Isha works of Vivian & Sons, and have had charge of almost every nickel furnace there, including softening, separating and roasting furnaces. The separating furnace is charged with about 3,000 lbs. of a mixture of salt cake, carbon and matte; after smelting they skim the slag and tops of the bottoms, or "white," as it is called there. The slag and tops contain the copper and iron and other impurities, and the "white" or bottoms would be clean of copper. There is pure nickel oxide free from copper made at the Hafod Isha works. Most of the shotted nickel has copper put with it in the granulating furnace, according to the grade of nickel shot required. The salt cake and car-

that "the Denver address states that every ounce of silver produced in Colorado has cost, and is costing, \$1.29." You go on to say: "Why should they make such a fuss over closing this industry that has been losing money for 20 years, if their statements are true, or if they believe them."

What the address of the Colorado silver convention did say was "that reliable statistics prove that, including but legitimate items in the account, the silver of Colorado costs, by the time it is on the market, not less than \$1.29 per ounce. Like gold, some silver is produced for much less than its market value, but the average cost of silver is fully the highest price it ever brought in market."

I submit to you that your statement is inaccurate and misleading. It is particularly noteworthy, as appearing in your "Journal," which, throughout these troublous times has maintained a dignified, fair and intelligent position in regard to the silver question.

You satirize the hot-headed speeches of the silver men. Your position is strong without misrepresentation. The business men of Denver realize the absurdity of the ravings of the silver advocates as deeply as you do, they denounce as bitterly as you ever can the wild rant and the silly frothings of so foolish a man and so dangerous a crank as the individual who happens most unfortunately to be at the present time the governor of the State of Colorado. Your "Journal"



THE SILVER STATUE OF JUSTICE IN THE MONTANA EXHIBIT.

bon process is carried on there to-day, the copper being separated from the cobalt metals in same way in the final operation with salt cake flux and carbon.

GREAT FALLS, MON., August 8, 1893.

GEORGE MITCHELL, Metallurgist.

## "Universal Bimetallism."

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: I have read Mr. Rothwell's book entitled "Universal Bimetallism" with great interest. I have already expressed the opinion that the plan for an International Monetary Clearing-House contains all the necessary factors for the reasonable adjustment of the silver question, and for the more harmonious international relations which our higher civilization demands; and I am especially pleased to find such an array of facts and statistics in this volume in support of the plan which, more than any other that has been proposed, appears to me to tend to the material improvement of the monetary interests of the entire human race.

NEW YORK, August 17, 1893.

M. L. MUHLEMAN,  
Cashier U. S. Sub-Treasury.

## The Cost of Producing Silver.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: In an editorial note appearing in your issue of July 15th you say

has done yeoman service in the thoughtful and intelligent discussion of the great financial and economic question of the day, you have proposed a solution of that question which commends itself for its fairness and simplicity—all this your correspondent takes pleasure in stating, but, he would add, remember the serious nature of the trouble which has overtaken the men of Colorado, and do not add to the difficulties of the situation by abandoning your previous position of fairness and impartiality.

T. A. RICKARD.

DENVER, Colo., July, 1893.

(Our correspondent does not seem to have remembered that our object was to discourage the use of wild statements by the silver men. It is not true that the legitimate cost of silver has exceeded its market value in the past 20 years, though no doubt much money has been lost in fruitless search for bonanzas. If all this money were included, the cost of silver probably exceeded \$1.29 per oz.; but if such items are a necessary part of the cost of silver, then the industry had better be abandoned, for it will always be unprofitable; and if the market price should go to \$2 per ounce, the business figured up in this way would be still more unprofitable, for every one knows that the larger the prize in the lottery the more money will be lost in buying tickets with the hope of drawing it.—Ed. "Engineering and Mining Journal.")



## MINING AT THE COLUMBIAN EXPOSITION.

Specially Reported for the Engineering and Mining Journal.

## THE MONTANA STATE EXHIBIT.

Unquestionably the most popular exhibit in the Mining Building is that of Montana. Attracted first by the silver statue of Justice, for which inquiries are made at all points, the crowd is held by the many interesting specimens of ore and of metallurgical products. To see the exhibit one must follow the crowd, and patiently worm his way in and about the cases, for at no time is there room to spare.

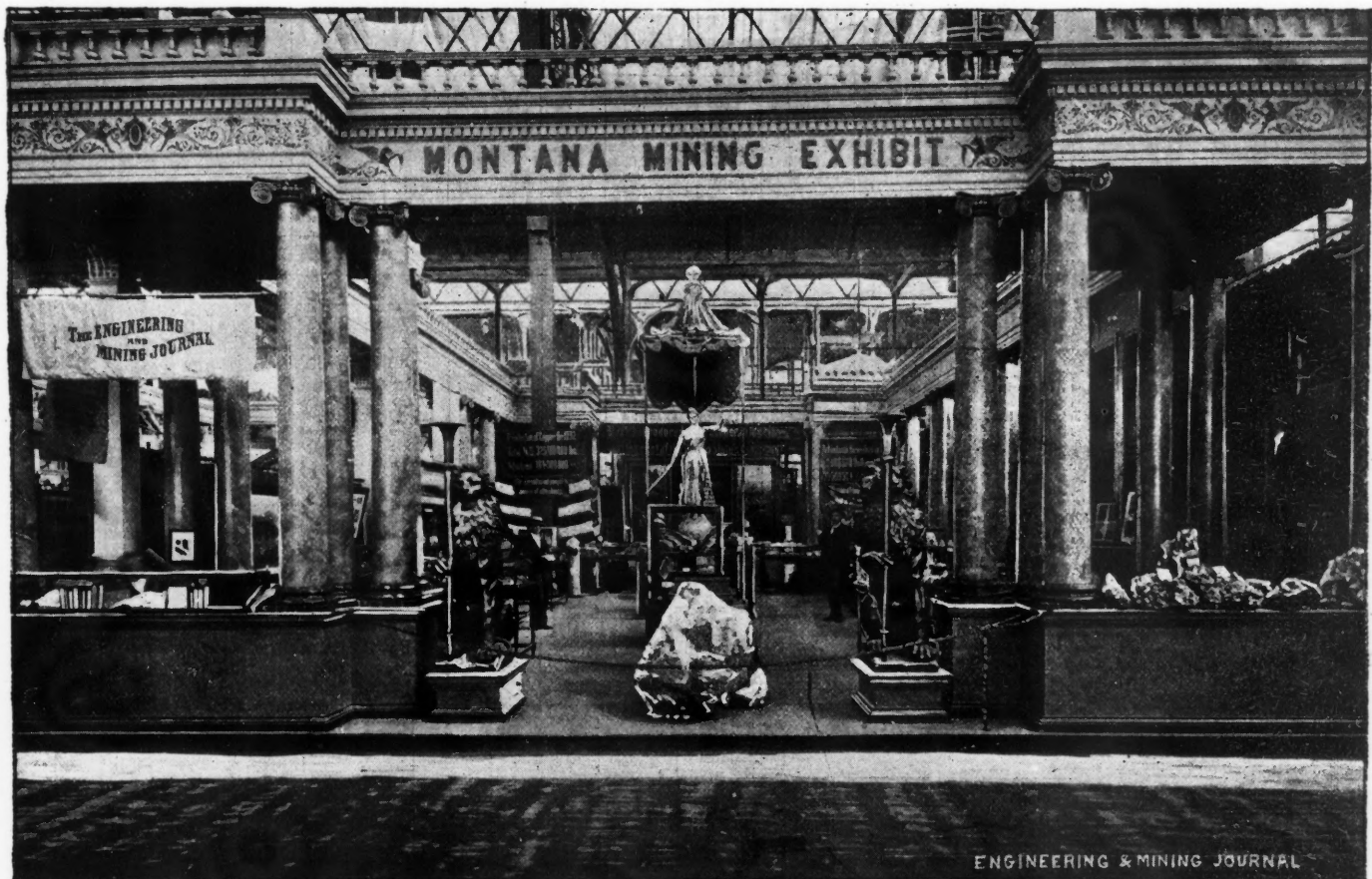
The silver statue is valued at \$75,000, and rests upon a plinth of gold valued at \$225,000. The statue represents Justice with her eyes wide open, poised with one foot upon a silver globe 2 ft. in diameter; the globe in turn is supported on the back of a large eagle. In one hand Justice holds a sharp two-edged sword, in the other a balance equipoised with silver and gold coins, showing the sentiment of Montanians on the silver question. The silver, 999 fine, was refined by the National Smelting and Refining Company, and is from the mines of ex-Gov. St. Hanser and Hon. W. A. Clark. The design is the conception of R. H. Parks, of Chicago, who is the sculptor. The casting was done by the American Bronze Company, of Grand Crossing.

serpentinellike nugget from Bivin's Gulch, and also the placer gold from California Gulch and Alder Gulch.

The Atlantic Cable Mine, of Deer Lodge County, contributes a large number of remarkably rich pieces of gold quartz. This collection is loaned by J. C. Savery, John McCormick, S. E. Larabee and Mrs. H. S. Showers. Pieces of native gold as large as a man's thumb stick out from the quartz on all sides, and pieces thickly sprinkled with native gold are common. Perhaps the most interesting specimen in this exhibit is the large piece of spongy gold from which the calcite, which is a common matrix, here has been dissolved. A piece of pyrrhotite containing free gold will attract the attention of mineralogists.

The associates of the gold here are tetradymite, montanite, pyrite, chalcocopyrite, malachite, limonite, magnetite and the minerals mentioned above. Two large specimens of several hundred pounds each show the occurrence of the gold and its associates very well.

Some remarkable quartz crystals, wire silver and interpenetrating selenite crystals, blende and pyrite, together with the different grades of ore, show up the Lexington mine. This mine is also represented by the tin pail encrusted with selenite crystals which so many find of interest. The Alice and Moulton mines are illustrated by many samples of their ore, nearly all of which is characterized by the predominating pink manganese which is so common in these mines. A cluster of rhodochrosite crystals, certainly the largest ever found, is



THE MONTANA STATE EXHIBIT AT CHICAGO.

Miss Ada Rehan, the leading lady of Augustin Daly's troupe, posed as the model. The statue is of heroic size. The gold in the plinth was produced by the Spotted Horse Mine, of Maiden, Mont. After the Fair the statue and plinth will be remelted and the bullion returned to the owners.

At the entrance to the Montana space is a beautiful lot of crystals of native silver from the Elkhorn mine, undoubtedly the finest ever found; they were discovered in the 1,400-ft. level of the mine, and are arranged in beautiful arborescent shapes.

The display of Montana sapphires, rubies and garnets is excellent and attracts great interest. The shades are usually light, but the stones possess a far greater brilliancy than do the Oriental stones. In this connection it may be interesting to note that the Montana Sapphire and Ruby Company, Limited, of London, has made its first shipment of precious stones. This lot contained 33,000 carats.

In the same case with the precious stones is a superb display of placer gold, containing some nuggets, fine and coarse dust and crystals. The nuggets range in value from about \$1 upward. One of especial interest is exhibited by the First National Bank of Helena; it weighs 47.7 troy ounces and is 957 fine in gold and 35 in silver, making the precious metals 99.2% of the piece. The values are in gold \$943.80 and \$2.16 silver, the figures being from the U. S. Assay Office at Helena. Beside these the same bank displays a number of larger and smaller nuggets.

A fine collection of gold crystals, displayed by Mr. T. H. Kleinsmidt, of Helena, is far superior to any other collection of the sort on exhibition both in variety and beauty. The Montana National Bank displays both nuggets and coarse placer gold, as does also Henry Elling, of Virginia City; noticeable in this last collection is a peculiar

exhibited through the courtesy of Mrs. J. K. Clark, who owns them. They were found in the Moulton mine.

The exhibit from the Blue Wing is highly crystallized and very beautiful. Rich sulphide of silver is shown from the Amy-Silversmith, and two very fine specimens of wire-silver are from the Wapelo lode of the Butte & Boston Company. A fine and large collection of very rich silver ores from the Benton group of mines in Meagher County is exhibited by J. C. E. Barker.

The Granite Mountain, Bi-Metallic Combination and Champion companies, of Deer Lodge County, show very interesting exhibits of silver ores. One piece of ruby silver from the Granite is nearly solid ruby assaying 10,000 oz. per ton. A very large piece of Bi-Metallic ore weighs 4,300 lbs. and assayed 937 oz. silver per ton. The Champion company shows some high-grade ore and some of ordinary grade, together with a set of samples illustrating the treatment from ore to bullion. The ore from the Combination contains much native silver. Among lead-silver properties having exhibits are those of the Moulton, Iron Mountain, Emery, Galt, Cumberland, Hecla, Tilden, Queen of the Hills, Eureka, H. & H. and many others.

Montana's copper exhibit is unsurpassed. The Anaconda company shows only one lot, but most of this is of very high grade and contains much native silver. The mines of this company having ore on exhibition are the Anaconda, Wake Up Jim, High Ore, Green Mountain and Mountain Consolidated. The Gagnon, Mountain View, East and West Colusa, Butte & Boston mines, Original, Gambetta and Stella all show very fine specimens.

The exhibit of the Parrot Silver and Copper Company is very fine and equally complete; all stages of the manufacture of copper from the raw ore to the finished wire, bar and ingots, and also manufac-

tured product, are shown and the fine quality of the material proven. The rapid growth of the copper production of Montana is shown by the accompanying table\* from the "Mineral Industry" for 1892, which gives the copper production of the United States for the 11 years 1882-1892, by States. In 1882, it will be seen, the output from Montana was very nearly 10% of the total; in 1892 it was 50.5%, and was very nearly 18 times as large as in 1882. Last year also Montana, for the first time, passed its great rival, Michigan, and produced more copper than any other State.

The production of the individual mines of Montana last year is reported in the "Mineral Industry" as follows, in pounds of fine copper: Anaconda, 100,000,000; Boston & Montana, 30,386,595; Butte & Boston, 10,641,269; Butte Reduction Works, 2,864,000; Colorado, 4,560,972; Parrot, 12,438,782; all others, 3,408,382; total, 164,300,000 lbs.

An extensive market for coal and coke is found in the mines and smelting works, besides which the railroads are large consumers. The coal of Montana is generally of good quality.

Besides the foregoing, bismuth occurs in a number of localities, as do also antimony; tin, thus far only in placer deposits; platinum also in placers; vanadium and many of the rarer metals.

Building stone of different kinds is found all over the State, granite of excellent quality being quarried only a few miles from Helena, while both Billings and Great Falls have large sandstone quarries.

Several very attractive paintings by Robert Swain of realistic mining scenes adorn the walls, two being especially noteworthy; one, entitled "Gold Prospectors," shows a couple of miners examining the contents of a pan with which they just washed some promising-looking dirt; the other represents two quartz miners who have just

COPPER PRODUCTION IN THE UNITED STATES, IN POUNDS OF FINE COPPER.

	1882.		1883.		1884.		1885.	
	Pounds.	Long Tons.	Pounds.	Long Tons.	Pounds.	Long Tons.	Pounds.	Long Tons.
Arizona.....	17,984,000	8,029	23,874,000	10,658	26,734,000	11,935	22,706,966	10,137
California.....	827,300	369	1,601,000	715	876,000	391	469,000	209
Colorado.....	1,494,000	667	1,153,000	515	2,013,000	899	1,146,000	512
Michigan.....	57,131,000	25,505	59,257,000	26,454	69,328,000	30,950	72,759,000	32,482
Montana.....	2,058,000	4,013	24,664,000	11,010	43,093,000	19,238	67,797,864	30,266
New Mexico.....	369,000	167	824,000	368	59,000	27	80,000	36
Utah.....	606,000	270	312,000	153	266,000	118	126,000	57
Eastern and Southern States	1,955,000	8.3	1,007,000	449	1,222,000	545	252,000	113
All others.....	870,000	388	2,358,000	1,053	1,330,000	594	1,150,000	513
Total domestic production	90,794,000	40,533	115,080,000	51,375	144,921,000	64,697	166,486,230	74,324
From foreign ores.....	1,473,169	638	1,635,742	726	3,228,966	1,442	3,607,952	1,610
Total production.....	92,267,169	41,191	116,705,742	52,101	148,149,966	66,138	170,094,182	75,934
Stock, Jan. 1.....					30,000,000	13,394	30,000,000	13,394
Imports of bars, ingots, & old	531,000	237	632,039	282	195,378	83	574,514	256
Total supply.....	92,798,169	41,428	117,337,781	52,383	178,345,344	79,618	200,668,696	89,584
Deduct exports*.....	6,245,363	2,788	50,691,487	22,630	105,830,439	47,245	114,163,112	50,966
consumption.....			36,646,294	16,359	42,514,905	18,979	51,505,584	22,998
Stock, Dec. 31.....			30,000,000	13,394	30,000,000	13,394	35,000,000	15,625

States.	1886.		1887.		1888.		1889.	
	Pounds.	Long Tons.	Pounds.	Long Tons.	Pounds.	Long Tons.	Pounds.	Long Tons.
Arizona.....	16,000,000	7,147	17,790,000	7,944	33,200,000	14,821	32,933,000	14,703
California.....	430,000	192	1,600,000	714	1,570,000	700	1,700,000	759
Colorado.....	409,000	182	2,012,000	898	1,621,000	724	3,100,000	1,384
Michigan.....	80,260,000	35,830	75,792,000	33,836	86,503,000	38,617	87,414,000	39,024
Montana.....	57,011,485	25,718	78,700,000	35,134	98,504,000	45,977	104,589,000	46,691
New Mexico.....	558,000	248	284,000	126	1,631,000	728	3,686,000	1,645
Utah.....	500,000	223	2,500,000	1,116	2,131,000	952	2,400,000	1,072
Eastern and Southern States	316,000	154	200,000	90	100,000	45	90,000	40
All others.....	1,332,000	594	2,433,000	1,086	3,241,000	1,446	3,625,000	1,618
Total domestic production	157,446,485	70,288	181,311,000	80,944	228,501,000	102,009	235,539,000	106,936
From foreign ores.....	4,755,050	2,140	8,935,000	4,014	5,218,000	2,329	5,190,000	2,317
Total production.....	162,201,535	72,428	185,246,000	82,700	233,719,000	104,338	244,729,000	109,253
Stock, Jan. 1.....	35,000,000	15,625	40,000,000	17,857	40,000,000	17,857	75,000,000	33,482
Imports of bars, ingots, & old	531,789	238	212,539	94	107,946	48	122,998	55
Total supply.....	197,773,324	88,391	225,458,539	100,651	273,826,946	122,243	319,851,998	142,790
Deduct exports*.....	66,315,661	29,605	43,000,000	19,190	80,000,000	35,714	73,000,000	32,589
consumption.....	91,457,663	40,918	142,458,539	63,598	118,826,000	53,047	181,851,998	81,184
Stock, Dec. 31.....	40,000,000	17,768	40,000,000	17,857	75,000,000	33,482	65,000,000	29,017

States.	1890.		1891.		1892.	
	Pounds.	Long Tons.	Pounds.	Long Tons.	Pounds.	Long Tons.
Arizona.....	34,900,000	15,580	39,700,000	17,723	38,000,000	16,964
California.....	1,600,000	714	3,750,000	1,673	3,200,000	1,430
Colorado.....	6,000,000	2,678	7,000,000	3,125	7,250,000	3,236
Michigan.....	100,695,000	44,953	114,400,000	51,071	107,428,160	47,960
Montana.....	110,996,000	49,553	113,200,000	50,536	164,300,000	73,348
New Mexico.....	870,000	388	1,600,000	714	500,000	223
Utah.....	600,000	268	1,700,000	759	2,000,000	893
Eastern and Southern States	4,200,000	1,875	1,300,000	580	1,300,000	580
All others.....			3,450,000	1,540	1,201,840	536
Total domestic production	259,861,000	116,009	280,100,000	127,732	325,180,000	145,170
From foreign ores.....	6,017,000	2,686	11,500,000	5,135	10,300,000	4,533
Total production.....	265,878,000	118,695	297,600,000	132,867	335,480,000	149,703
Stock, Jan. 1.....	65,000,000	29,018	101,000,000	45,089	76,000,000	33,929
Imports of bars, ingots, and old	663,676	296	3,154,557	1,408	1,552,515	693
Total supply.....	331,541,676	148,009	401,754,557	179,354	412,932,515	184,345
Deduct exports*.....	40,000,000	17,857	115,122,067	51,394	90,000,000	40,196
consumption.....	190,541,676	85,063	210,632,490	94,031	266,895,715	119,149
Stock, Dec. 31.....	101,000,000	45,089	76,000,000	33,929	56,000,000	25,000

\* Exports are calculated from official reports of exports, counting "ore" as averaging 55% copper in 1887 to 1890 inclusive; in 1891 and 1892 the actual contents is given accurately.

The Anaconda was thus in 1892 the largest single producer of copper in the world, its output of 45,372 metric tons exceeding by 50% that of the great Rio Tinto mine in Spain, which was 30,684 tons for the year.

Coal, coke, canal coal and iron ore of good quality show the possibilities of this State along a line which has received little attention. Coal is being mined extensively now, and coke is also produced. The increase of coal production since mining first began in the State in 1883 is shown by the following table, also from the "Mineral Industry," which gives the output in tons of 2,000 lbs.:

	Coal.	Coke.		Coal.	Coke.
1883.....	19,625		1888.....	10,202	12,000
1884.....	80,376	75	1889.....	363,301	14,043
1885.....	86,440	175	1890.....	517,477	11,427
1886.....	49,846		1891.....	541,864	29,009
1887.....	10,202	7,200	1892.....	648,701	

\* A slight correction is needed in the figures for Michigan copper in 1892, when the total should be 107,540,364 lbs.

"struck it rich." A large photograph of Butte City and many others of hoisting works, mills, smelters and other typical mining scenes are also shown.

A visit to this exhibit cannot fail to impress one very deeply with the great extent and variety of the mineral resources of Montana. Mr. L. W. Curtis is superintendent of the State Exhibit and Professor F. F. Traphagen was the commissioner under whose direction much of the exhibit was collected.

Prizes for Technical Research.—The Society for the Encouragement of French Industries offers the following prizes, which are open to the world: For a published work of use to the chemical or metal trade, \$300, to be awarded in 1894; a prize of \$300 for an experimental study of the physical and mechanical qualities of one or several metals or alloys, chosen from those in ordinary use, which will be awarded in 1894; a prize of \$300 for a scientific examination of any industrial process of which the theory remains imperfectly known.



ENGINEERING METHODS IN BOOKKEEPING.

Written for the Engineering and Mining Journal by Dr. Frederic A. C. Perrine.

The keeping and rendering of accounts, while undoubtedly one of the most essential details of the administration of a business, has become the ultimate though not the least burdensome or most essential portion of the art of record keeping. The growth of business has been so great that the books of accounts, stocks, quotations, financial and commercial reports, have become formidable in both size and complexity.

Nothing can be more interesting than the comparison of old methods with the convenience of letter files, press copies and all the modern completeness of records, with their convenience of access. These conveniences so far are derived from the methods of mathematical analysis, and are the products of inventive genius, that they may be truly called engineering in their character.

The letter file, typewriter and copying book are so much matters of every day use and are so familiar to the business man that a description could only touch upon the varying details of well known and established methods; but there are certain other recently devised innovations to which we may profitably turn our attention. In the matter of record keeping, as well as that of the accounts themselves, there has been a great stride toward convenience by the introduction of the card catalogue; this device consists of a cabinet arranged in drawers, lengthwise in each of which runs a rod of brass  $\frac{1}{2}$ -in. above the bottom; this rod holds in place removable cards strung along it on which may be recorded any fact or account, and which may each be inserted in its proper order without disturbing its fellows.

Simple as this device seems and as obvious as its application, yet it has only recently been used and the conveniences are hardly yet fully appreciated. For the keeping of a ledger account a card with the regular ledger ruling is adopted; a number on the upper right hand corner refers to its proper position in the trial balance book, as well as

should a part be returned at any time the number will at once give the repairs necessary, and the shipping directions for its return, without any reference to any ambiguous letter or telegram. This system also is particularly convenient for preserving an accurate record of quotations and promises made by travelling men, as well as reports made of the stocks and conditions of trade of customers. For buyers also these cards readily lend themselves to complete records and easy comparison of the prices quoted by men of many different firms, as well as indexes of price lists and catalogues in the purchasing agent's library.

While these methods above described of keeping records and accounts may rather be called mechanical than engineering, they are the results of the methods of analysis applied to the details of life and are important and real advances upon the rule of thumb process of 20 years ago. They are the first steps in the great science of statistics which can only be complete and a true predictive science, as the records necessary for complete details become matters of every day life to all. More truly engineering methods are discernible in the application of co-ordinates, areas and lengths to the comparison of statistics in either vital or commercial facts.

Strange as it may seem such methods of the comparison of figures were not in extensive use before the year 1881, when Yves Guyot extensively employed them in his "La Science Economique." Since that time comparisons by curves have been employed by economists very extensively in the place of the less readily intelligible tables of numbers, but even at the present time these methods cannot be said to be in use for actual information by business houses, and yet a curve of the progress of a business, the cost of a product, or the collection of accounts may be of the greatest value in the possibility it gives of prediction and a knowledge of what may be expected or depended upon in the future.

Nothing can be more striking than the curves of the progress of a business, and to present such a diagram to the stockholders whose time may be too busily employed for the exhaustive study of a table



CASE FOR CARD CATALOGUE.

to the order of acceptance of the customer, and guards against any oversight in posting the balance, as the account always keeps the same numerical designation. Accounts are posted from the daybook upon these cards as into an ordinary bound ledger. The cards, being placed in their proper position in the drawers of the ledger cabinet, are their own alphabetical index and easily accessible without any interference with the bookkeeper, while the numerical index forms a sufficient check upon the posting in the trial balance, which is thus arranged in order of the date of first opening the account. But though the ease with which these cards may be posted upon and afterward referred to is apparent, the advantages of this card catalogue method are less noticeable in a ledger account than where the labor of making a proper index is greater in proportion to the data to be recorded. A striking instance of this is the recording of specimen signatures for banks. On the reverse of such a card may be recorded any details concerning the business, address, or introduction of the person opening the account, and as thus filled out and filed away completes all labor connected with such a record and preserves it in a form easy of access for comparison with doubtful signatures, and for presentation in court in the case of any dispute.

The records of the policies of insurance companies, on account of their numerous details and many changes from year to year, have made the books formidable volumes, not at all easy of access or understanding, but the errors committed on account of the complications incident to a page method of keeping records have been entirely avoided by cards upon which all the details necessary for a complete history of the policy have been printed. For such records as these, cards are used not only by the banks and insurance companies, by many societies, by doctors for recording the life history of their patients, as well as by libraries whose catalogues have been replaced to a large extent by this flexible and accurate system. One electrical company has adopted this method of recording the shipments of its machinery on cards numbered to correspond with each machine, giving the complete dimensions of all parts and the ultimate destination of the apparatus, so that

of figures is by far the most satisfactory method of rendering the account of several years of business, showing, as it does, in a glance all the disturbance and special efforts put forth, each in their respective proportions. Such a curve of orders obtained, plotted by the side of the curve of the output of a factory, will show at once the respective capacities of the selling and manufacturing departments, and will prove a check upon either side of the business, and will show immediately the effects of overcrowding or inefficient management. For the complete study of a business by these methods a number of curves should be obtained and studied in comparison with each other. To represent a business in this manner it is at first essential that the values of the co-ordinates taken for all of the curves should be proportional quantities, as otherwise the slopes of the various curves will not give true comparative estimates of the progress of the business which is being studied. For instance, should the sales be plotted in sums of money and orders in quantities of goods, the rapidity of alteration, whether of increase or decrease, in the selling and manufacturing departments will not appear in their true relation to each other, unless the same distance along an ordinate represents in each case an equivalent advance in the business; but if once a common ratio be determined, the curves may be plotted out and compared directly without the labor of reducing the various records to the same terms in figures, and at a glance, without any calculation, presents the true condition of affairs.

For the complete statement of the affairs of a manufacturing concern curves should be plotted of the orders, sales, purchases, payroll, cost price and collections, and in such a system of plotting a normal business would show the deliveries changing rather more slowly, and always lagging behind the orders, while the collections would show much the same curve as the sales, but having a phase lagging a month behind. The curve of purchases should be generally more level than the sales, but varying with them, while the payroll should show much less variation as the fixed charges for salaries of foremen and superintendents tend to hold this item stationary. The curve of the cost price ought to be one becoming asymptotic to a certain figure of the

lowest possible cost, but falling with an increase of the quantity of the manufacture. The detail necessary for such a system of curves may seem so great that the clearness of the record would not warrant the labor necessary for plotting them, but in the actual operation of the system there is little time required to sketch in the line corresponding to each quantity at the end of every month when the reports are presented of the business, upon a sheet of cross-section paper which has been once for all evaluated, and by so carrying out this system, a report is to be found ready at hand when the end of the year turns one's attention to its progress.

The writer was at one time called upon to make a report on the conditions of a manufacturing business in which some capitalists were considering the advisability of investing, and the most valuable portion of his report, in fact the very basis of the report, was the plotting of the items, of orders, sales and collections. The very irregularity of these curves emphasized the importance of graphical methods of presenting reports, and with picture in hand a complete study of the year's business, its disturbing and favoring events, was more easily and clearly expressed to a board of directors before whose eyes the figures on which the work of the manager was directly bearing were graphically expressed.

It is not necessary to give many examples of the value of the co-ordinate method of presenting commercial statistics. The similar method of comparing areas and lengths for presenting the progress of a business from year to year are well enough known from the various advertisements in which they have been extensively used with great and striking effect.

THE ENGINEERING CONGRESS AT OHIOAGO.

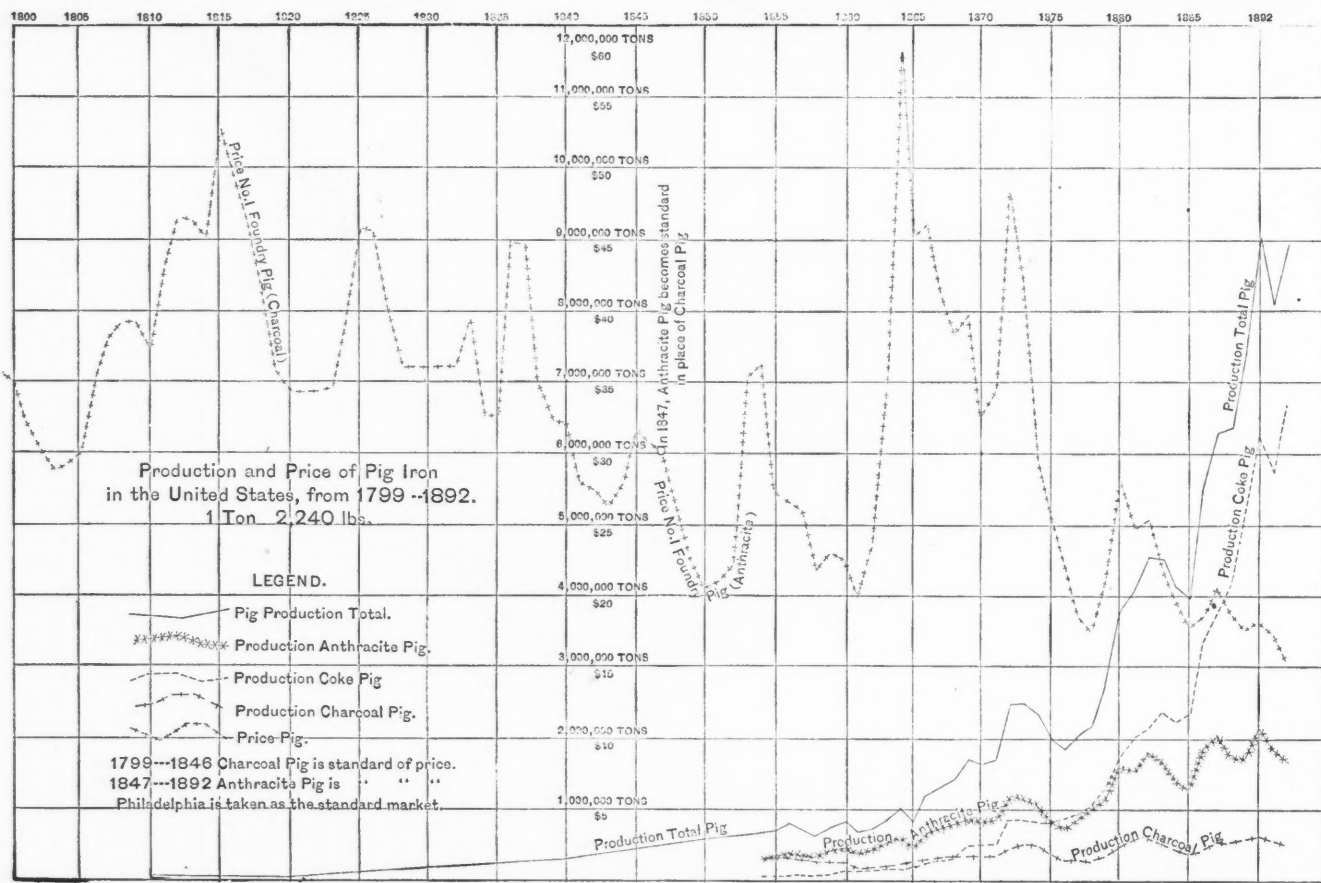
We give below some additional abstracts of papers read in the mining and metallurgical sections of the Congress:

THE SEPARATION OF BLENDE FROM PYRITES; BY WM. P. BLAKE.

In consequence of the impossibility of effecting a separation of blende and pyrites many mines in the Wisconsin zinc region have been but partially worked or closed, the zinc smelters of the Mississippi Valley refusing ores with more than 7% iron, while in others the extraction of ore has been confined to portions of the deposit yielding massive blende in a condition to be hand-sorted or culled. It was believed that, with good jigs and a careful sizing of the ore, a marketable concentrate of nearly clean blende could be obtained. Two large mills were erected by the Wisconsin Lead and Zinc Company, and hundreds of tons of concentrates were turned out; but the percentage of pyrite remained so high that they could not be sold.

The author undertook the design of a special form of furnace for the purpose of roasting the mixed concentrates, preparatory to their separation by jigging. The conditions of the problem were: 1. Automatic feeding and delivery. 2. Oxidation of the pyrite without acting upon the blende, and without sintering. 3. Avoidance of a heat sufficient to affect the lead ore.

These conditions were satisfied by the form of furnace described once in a former paper (Transactions, xxi., 943). The pyrite is oxidized to such a degree for separation, while the blende is not decomposed, and the galena is hardly tarnished. The grains are de-



The diagram here given, as an example of the graphic method of presenting results, is one of several from the "Mineral Industry" for 1892, and shows the production and price of pig iron in the United States from 1799 to 1892, a period of 94 years, showing the fluctuations in a way that can be taken in at a glance.

Iron Ore in Spain.—The following table, from "La Metallurgie," shows the production of iron ore in Spain in 1891 and 1892, in metric tons, by provinces:

Provinces.	1892.	1891.
Biscay.....	4,394,000	3,719,600
Murcia.....	388,000	350,600
Santander.....	366,000	248,254
Almeria.....	174,500	163,224
Malaga.....	70,790	99,589
Oviedo.....	69,300	65,913
Navarre.....	12,500	18,081
Guipuzcoa.....	13,800	15,330
Other provinces.....	40,000	50,000
Totals.....	5,425,600	4,730,080

The exports from Bilbao in 1892 show a total of 4,000,000 tons, which has only been exceeded in 1887 and 1890, the two years of greatest commercial activity in Biscay. In 1891, the exportation by Bilbao amounted to 3,316,464 tons. In the province of Almeria there was obtained in 1891 a quantity amounting to 14,682 tons of argenteriferous iron ore, without counting 163,224 tons of ordinary iron ore, which figures in the table given above. In 1892 no silver ore was met with.

livered from the furnace without being in the least degree adherent, and are as granular and separate as when fed in. Beyond a slight breaking up of the fragments of blende by decrepitation, there is no change of form in the concentrate, except as to the pyrites, which suffers a change of bulk by loss of its sulphur. The pieces of marcasite swell and crack open, and, being more spongy and bulky than before roasting, while the blende fragments are smaller, the two substances are in a condition favorable to separation by jigging in the usual way. The products are clean blende and tailings of red sesqui-oxide of iron, or, rather, a mixture of the oxides, from which an excellent metallic paint can be made. The small residue of zinc ore contained in it adds to its value as a pigment. Any lead ore present is removed in the first compartment of the jigs; the furnace operation having had the effect of splitting off the blende and leaving the galena free, which is a very important advantage of the process; for a blende containing over 2% of lead is unfit for the production of the best spelter.

The ore is first crushed, sized and concentrated to about 25% of blende, 25% pyrite (marcasite chiefly), 5 to 10% of galena, and the remainder dolomite and flint. This is dried and roasted, and then rejigged, giving a marketable blende, assaying in the best samples over 62% zinc, less than 3% iron, and less than 1% lead (often less than 0.5%).

The key to successful separation is found in the complete and even roasting. Even a remnant or kernel of unchanged pyrites will cause the fragment to remain with the blende. The outer coating of oxidized iron may be broken away and go off in the tailings; but the inner portion, containing the unchanged pyrite, will not go over. Any



neglect or carelessness at the furnace is speedily detected at the jigs, and imperfectly roasted ore has to be sent back. When the furnace is in full operation from 3 to 5 tons of pyrite are burned in 24 hours.

The raw concentrates being already sized, and having been kept separate during the roasting, there is, theoretically, no necessity for passing them a second time through screens; but it is found that, owing to the decrepitation of a part of the blende, it is desirable to screen out the finest before jigging; and this is done as the roasted concentrates are fed to the jigs. The best results are obtained, especially with the fine sizes, upon bottom-discharge jigs.

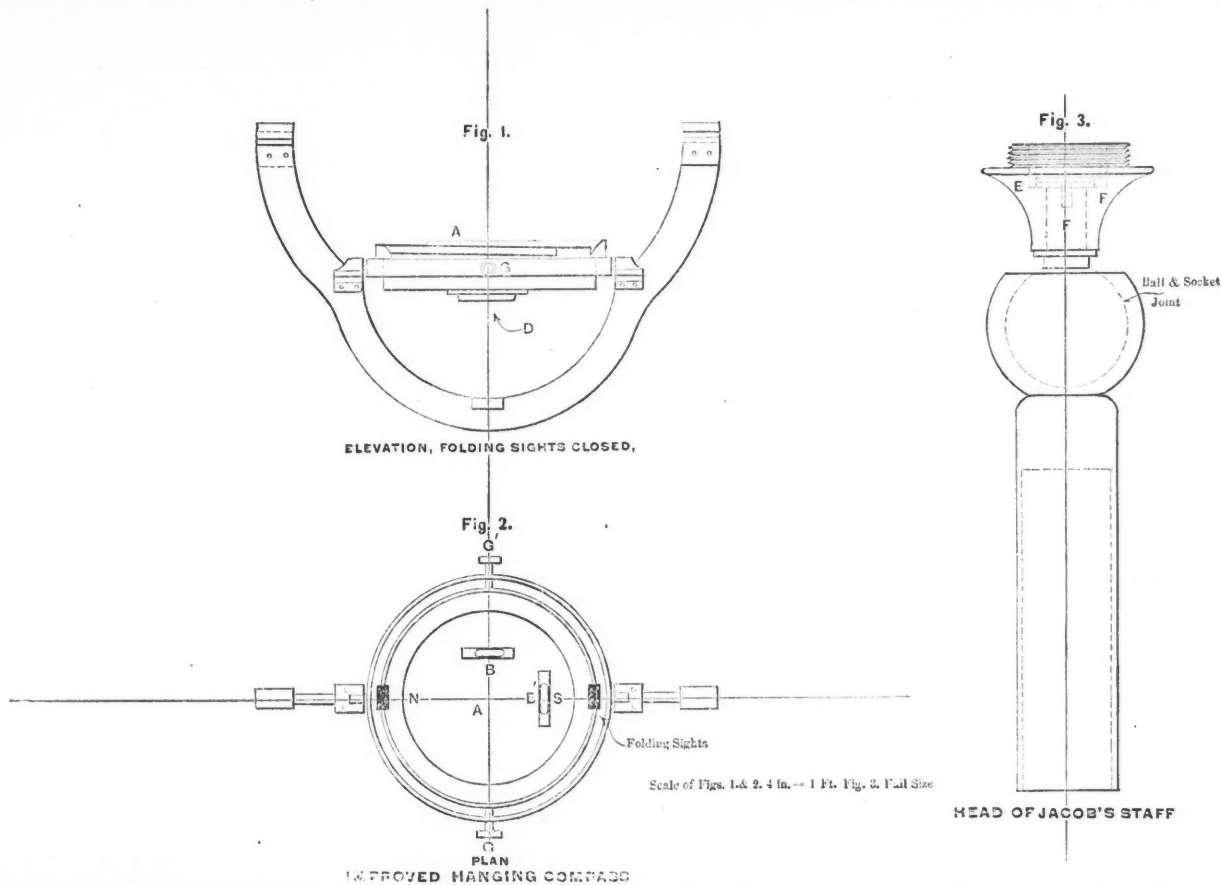
The author finds that it is not necessary to remove the last atom of sulphur, in roasting, and that by proper manipulation the oxidized pyrites may be left in a condition to be removed by magnets. A special installation for this purpose has been made on a small scale, and operates well; but inasmuch as the jigging is so satisfactory, magnetic separation has not been employed to any considerable extent. It is, however, interesting to note that the fully oxidized pyrites which is least affected by the magnets is the most easily removed by the jigging, while the fragments which are most responsive to the attraction of magnets are those more difficult to remove on the jigs.

Experiments have been made by Mr. J. W. Meier upon the magnetic separation of pyrites from blende with encouraging results. Mixtures carrying 33 to 35% zinc and over 10% iron were easily con-

change, the instrument herewith illustrated in Figs. 1, 2 and 3 was ordered.

In these figures, A is the compass swung in gimbals, as in the usual form of the instrument; B and B' are two small levels, sunk into the bottom of the compass-box, one on the N.-S., and the other on the E.-W. line. With these the instrument can be leveled perfectly. Outside levels would have interfered with the gimbals. The folding sights are of the usual pattern. In surveying in the chutes these are never raised, unless the line of sight is near the magnetic meridian. D is a plate into which the cap E of the Jacob's staff screws. This departure from the usual form of Jacob's staff-heads, in which the instrument turns on a spindle, the prolongation of the ball of the ball-and-socket joint, was occasioned by the necessity of having an easily portable instrument. The socket for the usual spindle would have made the carrying-case much too bulky. The compass having been made fast to the head, revolves on the center F; the head E turning with the instrument. In surveying the levels, the screws G and G' are loosened, and the compass is taken out of the gimbals. It is then used with the Jacob's staff, as in the ordinary form of the instrument.

With the arrangement above described, which entails the carriage of only one extra piece (the Jacob's staff), the levels can be surveyed in about one-half the time formerly occupied, and the portability of the instrument is not affected. Also better speed can be made in the



verted into concentrates with 50 to 54% zinc and only about 4% iron. The chief difficulty was to get all of the pyrites into the magnetic condition. Fragments fully roasted and changed to the sequi-oxide could not be removed by the magnet. It seemed necessary after the removal of the sulphur to introduce some carbonaceous material so as partially to reduce the higher oxides to the magnetic oxide.

The method of roasting and rejigging above described has been in successful operation at the Helena mill, near Shullsburg, for nearly two years, and hundreds of tons of high-grade zinc blende have been produced and sold to the zinc smelters from ores that could not be celled. The process utilizes ores which were before thrown aside as useless, and also makes a market for the "chippings" of the culling floors, which have accumulated for years at the chief mines.

AN IMPROVED HANGING COMPASS: BY GUY R. JOHNSON, LONGDALE, VA.

In working brown iron-ore mines on the system employed at Longdale, namely, stopping from the top down, the usual procedure is to drive a succession of upraises from the lowest adit to the highest, or to the top of the deposit, as the case may be. These upraises are usually driven 120 ft. apart, along the strike of the vein. As the work goes on they are connected by levers, 10 ft. apart (vertically), and then serve as chutes. A transit is useless in surveying these chutes, and the writer has for several years made use of a hanging compass. The method of using this instrument, embracing as it does the use of a cord and several strips of wood, is well enough in the chutes proper, where the total distance to be surveyed is comparatively small, but when extended to the levels between the chutes becomes very slow and cumbersome. It was to obviate this objection that the instrument here described was devised. My first idea was to carry another compass of the ordinary type, but the additional weight and inconvenience of carriage through the steep and narrow chutes caused this plan to be abandoned. After some correspondence with the instrument-makers to ascertain the practicability of the

chutes, as the slight extra weight, especially that of the plate D, makes the compass a great deal steadier on the cord.

A COLORADO MAN ON THE SILVER QUESTION.

In December, 1891, Mr. Louis R. Ehrich, of Colorado Springs, Colo., read an admirable paper on "The Silver Question" before the Monday Evening Club, of that place. This paper should be in the hands of every citizen of the land, and more particularly of Colorado, for it gives a clear, convincing statement of the case which every advocate of free coinage would do well to make himself familiar with. Mr. Ehrich is a bimetalist, and a friend of silver and of Colorado. His paper showed exactly what would be the outcome of the silver agitation. This is what he said in closing:

"The whole country is suffering from this unceasing silver agitation. With the late European experience that the safest investments are American securities—with our most bountiful harvest at a period when demand is producing high prices—the United States ought to be in a period of most unusual prosperity. But it is not. Why? Because of this silver agitation. Even the silver extremists admit this. Senator Vest, of Missouri, said in the Senate last January: 'Nothing is so timid as capital, and to-day this silver question is throwing its pall over all the industries and interests of the people of the United States because of the uncertainty which attends it.' The whole country suffers from it, but Colorado most especially. Development in this State is temporarily paralyzed. No money comes here for investment. Business is dull. Land attracts no purchasers. We are being injured more every month than a 33% bounty on Colorado silver would benefit us in a year. We are dragging the name of Colorado in the dust. We are besmirching the reputation of the State. Colorado is being branded in the East as the home of inflationists and silver-lunatics.

"The undisguised truth is that every free-silver coinage man is in reality an enemy to the best interest of Colorado. When this is clearly understood, the business men, the banking men, the real estate men, the wage-workers, and all not blinded by the supposed interests of silver mining, will arise in their might and strangle this most injurious, most dangerous, most noxious delusion. Then will follow a serious effort to expand our silver coinage within the limits of safety, and to reach a true and beneficent bimetalism based on a ratio of international agreement."

#### MINERAL PRODUCTION OF NEW SOUTH WALES.

The annual report of the Department of Mines and Agriculture of New South Wales for the year 1892 gives the following figures for the mineral production of the colony for the year, comparisons being made with 1891. We have reduced the values given to dollars. The tons are of 2,240 lbs. in the report:

	1892.		1891.	
	Quantity.	Value.	Quantity.	Value.
Gold, oz	156,870	\$2,761,513	153,335	\$2,707,750
Silver, oz	350,632	273,887	729,590	651,023
Coal, tons	3,780,958	7,192,582	4,337,929	8,472,960
Slate, "	74,197	659,983	40,349	379,076
Coke, "	7,899	42,932	30,310	166,194
Tin, "	3,492	1,523,453	3,115	1,216,438
Copper, tons	4,834	910,874	4,526	991,701
Iron "	2,782	109,534	4,126	175,090
Antimony, tons	728	71,198	915	106,876
Bismuth "	14	5,238	1	2,425
Silver lead and ores, tons	133,355	11,741,617	149,780	16,900,384
Manganese, tons	16	278	138	1,649
Oxide of iron and pig iron, tons	453	4,215	229	2,105
Zinc smelter, tons	445	24,517	219	12,717
Lead (pig), tons	71	3,521	191	9,821
Limestone (flux), tons	193,268	451,209	74,057	317,030
Alumite, tons	821	17,927	704	9,157
Opal, lbs	42	9,700	.....	.....
Cobalt, tons	76	5,384	1	2,280
Fire-clay, tons	35	388	17	267
Lime, tons	403	3,957	410	4,646
Marble, pkgs	.....	.....	635	12,498
Stone, building, pkgs	2,478	13,764	4,735	25,244
Stone, ballast, tons	224	1,339	619	3,458
Grindstones, No.	.....	.....	471	1,508
Slate, No.	.....	.....	31,234	1,792
Sundry minerals, tons	.....	5,616	789	15,632
Totals	.....	\$25,733,697	.....	\$32,276,799

The iron reported in the table was not manufactured from iron ores, but from scrap iron. The greater part of the silver produced is exported in the form of silver-lead.

The report says: "Owing to the strike at Broken Hill and the financial depression affecting mining ventures, the value of the output in 1892 fell short of that of 1891 by £1,349,194. Notwithstanding this decrease as compared with 1891 the value of last year's output, £5,305,815, is greater than that of any year prior to 1891, and exceeds the decennial average by £1,207,456. With an increase in knowledge regarding the treatment of ores it is more than probable that many of our mines now idle or struggling to exist may become prosperous ventures and afford employment to many miners and others. The decreases in the output of minerals other than silver ores are more than counterbalanced by the increases."

#### THE ACTION OF THE SMELTERS OF SILVER ORES.

The action of the smelting companies has necessarily an important bearing on that of the silver miners, and with a view to ascertaining what this would probably be in the present state of the market, we have obtained the opinions of some of the leading companies, which we give below:

The Tacoma Smelting and Refining Company, at Tacoma, Wash., informs us that its smelter is running as usual, and that it is receiving and buying ores from old customers the way it always has done; although, until the silver question is in a more settled state, the company is not hunting up any new customers, and not anxious to buy high-grade silver ores. At present the bullion is running more in gold than in silver, and contracts for gold and lead ores outstanding will keep its smelter going yet for several months.

The Selby Smelting and Lead Company, of San Francisco, writes: "We think it only proper for us to say that so far as our business is concerned we have been continuing right along the same as usual, purchasing ore and paying for same at the market price for silver and lead contained on the day of arrival at our works, and while the amount of ore from certain sections is not as great as it has been formerly, yet we find that many mines are still being worked, and that shipments are being continued along with astonishing regularity. As fast as our ore and bullion have been worked and we realize the products in fine silver, gold and lead, these have been disposed of from day to day as ready to be delivered at the market price. On this account there have been no accumulations of silver in our hands, and we have regularly gone with the market.

"It is very difficult for us to express any positive opinion regarding the future, but it is evident from the present outlook that quite a number of mines will be shut down in addition to those already closed. They cannot afford to work their mines and sell at the present low prices. This whole financial question is a most difficult one for the general public to comprehend, yet we are satisfied that it is better understood in some respects than ever before. We feel satisfied that some good results must come from the present meeting of Congress, and also that the whole question must either be disposed of definitely or put in such shape as it must be adjusted in the near future. Our opinions have favored the coinage of both metals on a basis of 20 to 1, for the reason that only \$1.03 per fine ounce of silver is nearer an equitable value, when considering all the questions and relations, than that of the old standard of 16 to 1 or \$1.2929 per fine ounce of silver. We have reason to believe that gold mining will be prosecuted more vigorously than heretofore, because of the modified views of many regarding the working of our hydraulic mines, and we are sure you will be pleased to know that the output of the gold

mines has not diminished, but, if anything, has actually increased, and that it is safe to say that the average output of the mines on this coast can be put at \$1,250,000 per month, which, with reasonable encouragement, could be increased to \$2,000,000 monthly."

The Omaha & Grant Smelting Company says: "It is almost too soon to judge of the effect upon miner or smelter. Stocks of ore were on the dump at mines or en route to market. Smelters had large stocks in their yards, hence the impossibility of a sudden realization of the full effect of the disaster. Base bullion has not shown a marked decrease in volume. Ore receipts at our works have fallen off about 20% for July as compared with June, while production of ore has probably fallen off 75%, though it is difficult to procure reliable data of production owing to the unknown quantity of stocks on hand when the mines closed down. The effect upon smelters will begin to show when stocks on hand are exhausted."

Mr. A. R. Meyer, President of the Consolidated Kansas City Smelting and Refining Company, says: "We are running our blast furnace department at El Paso and Argentine to substantially full capacity. Our refining department at Argentine, up to the present time, has also been running full, and will probably continue so, with a slight interruption due to the closing down of our Leadville works. We have made arrangements, however, for a bullion supply to offset what we may be short on account of the closing down of the Leadville plant, and should that plant resume shortly our operations at Argentine would probably be larger than they have been during any period of this year. Our copper department at Argentine is in full blast, and we expect, beginning September 1st, to have our refined copper on market. The low price of silver has resulted in a complete upsetting of exchange values in Mexico, so that the price at which the Mexican dollar may be purchased no longer corresponds to its bullion value. This, of course, has the effect of disturbing the mining business in Mexico, and of raising the smelting charges, which we must make in the purchase of ores in Mexico. The uncertainties of silver naturally make every one connected with the business disinclined to buy except on conditions which will permit selling of silver at substantially the buying price, and this may be covered by buying on condition of payment 30 days or more after receipt of ore, and upon the quotations of the day of payment.

"I have only recently returned from Colorado, but am obliged to say that the outlook in the mining industry is decidedly cloudy. There can be no doubt that a good many of the mines have been losing money for some time, even at the prices for silver that obtained prior to the crash which came from the action of the India Council. These mines, having closed, are not likely to reopen. You are also aware that a great many of the lead-bearing ores are of a very low grade of silver, and can only pay if smelters are willing to make low charges and if the price of lead is fairly high. Under the present condition of the lead and silver markets, production is absolutely impossible, and this state of affairs is aggravated by the necessity of smelters for higher margins. The higher margins are not only a necessity because of the increased uncertainties of the smelting business, but because of general insufficiency. Smelters have been working for several years on insufficient margins, and it was only a question of time when margins must be readjusted. The Arkansas Valley works have closed down because of the action of a mob, whose interest was simply that of general opposition to any adjustment of wages. The Arkansas Valley Smelting Works is to-day without question the most perfectly equipped smelting plant in the United States. I do not believe that there exists any other that has the same general economies for successful operation. At the same time, we are at a serious disadvantage as compared to Denver and Pueblo, for the following reasons: 1. More restricted sources of ore supply; 2. Greater cost of all forms of supplies, such as brick, all kinds of wrought and cast iron, etc.; 3. Greater cost of coal and coke; 4. Greater cost of labor.

"After having gone to a very large expense putting our establishment in the most perfect condition and still finding that we are at a serious disadvantage as compared with smelters in the valley, we considered the advisability of bringing about some fair adjustment of wages. Wages at Leadville are the same to-day that they were in 1878, when the cost of living was very much greater than to-day, and when in every respect life at Leadville was more expensive and the comforts of every kind more rare than they are to-day. Notwithstanding the fact that Leadville has grown into a large town, possessing substantially all the advantages of other places of equal size and importance in other sections of the country, and notwithstanding the fact that the place has three railroads, it is expected that a scale of wages shall maintain which is entirely out of harmony with the wages at other points. Wages paid in smelting works at Denver and Pueblo are one-third less than at Leadville. The work at Denver and Pueblo, if anything, is harder than at Leadville, certainly during the summer months. I see no reason, therefore, why wages at Leadville should be any higher than they are at Denver.

"I found practically all of the mines in Colorado closed, and even if smelters were willing to buy silver ores they would have difficulty in doing so. There are but few mines working at Leadville; the Creede and Aspen mines have practically all closed, and the same state of affairs obtains substantially over the entire State. It must be very clear that unless there come an early change, and unless mines be opened soon, the approaching winter will prevent any considerable increase of mining, and there must naturally follow, from this, severe suffering and hardship. My own judgment is that neither the mines nor smelting works will be running to any great extent during the balance of this year unless the silver question is positively disposed of. With silver uncertain as it has been, the smelter certainly cannot afford to buy ores and pay for the silver, except at the price he realizes. If miners are willing to take this chance, smelters will undoubtedly be willing to operate, but, in my opinion, miners cannot generally accept such disposition of the question, and I therefore look for a great depression in Colorado and in other mining States and Territories until the silver question has been definitely disposed of and disposed of in a manner to bring about a very material increase in the price of the metal."



THE VICTOR MINE, CRIPPLE CREEK, COLORADO.

Written for the Engineering and Mining Journal, by Edward Skewes and Henry J. Eder.

The Cripple Creek mining district is in the southwest part of El Paso County, Colorado, in a very rough and broken portion of the mountains. There are five towns in the district: Fremont and Cripple Creek, which have now consolidated; Barry or Anaconda, Lawrence and Mound City; and on Bull Hill, the town of Pharmacy will soon be incorporated. In addition, there are several smaller camps, situated from 3 to 6 miles from the center of greatest activity. Among these may be mentioned Arequa, Hull's Camp, Cripple City and Midland. There are four stage roads to the camp; a county road from Florissant, which makes the staging distance about 20 miles; the toll road from Hayden Divide; a road from Colorado Springs, by way of Cheyenne, Mont., and a road from Canon City.

There are two railroads projected: The Midland Terminal, of which already 17 miles of grading is completed, and the Florence & Cripple Creek railroad, for which bids for grading and excavating have lately been received.

At present water works are under construction, and it is expected they will be completed in about five months. The location of the camp and the roads is shown in the map, Fig. 1. We have, ever since our connection with the camp, strongly denounced the formation of mining companies. Dozens of claims were incorporated before they had any existence, before the assessment work was done, and stocks had to be sold to pay the miners for assessment work. Some idea may be ascertained when we state that over 330 companies were incorporated, of a nominal capital averaging \$1,000,000; not to work the properties legitimately, but to handle stocks; 70% of such companies owe their inception to irresponsible scheming and designing persons of Colorado Springs.

After a long residence in this camp and careful investigation of the surrounding country and examination of nearly all the mines, we have come to the conclusion that this will be a permanent camp—not a first-class mining camp, with the rich and large deposits that Lead-

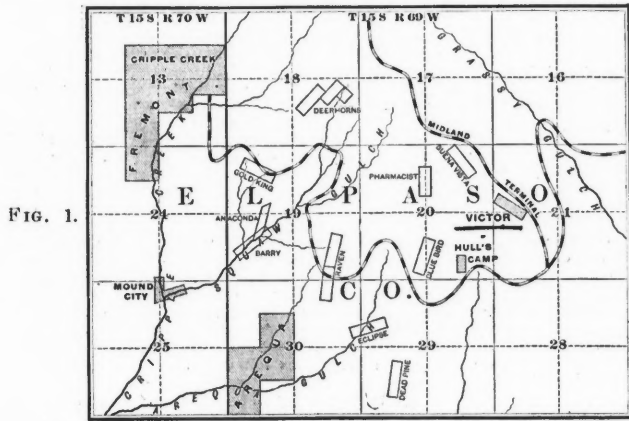


FIG. 1.

THE VICTOR MINE, CRIPPLE CREEK, COLORADO.

ville or the Comstock owned, but one of the best of the second-grade camps in the West. The veins are small, as a rule, and the pay-streak narrow, but the facilities for working are good, and there are features which promise permanency.

Probably the most valuable property in Cripple Creek is the Victor, which has only recently been incorporated, but the claim was patented, and over \$60,000 of gold sold and surface improvements costing fully \$15,000 paid for. This mine is situated on Trachyte Mountain, or, more correctly, on the northeast side of Bull Mountain, so far the most productive one of Cripple Creek. It is about three miles from the town of Cripple Creek, at an elevation above the town of 800 to 1,000 ft.

The Victor mine is in what may be appropriately termed "pyritiferous porphyry," which runs parallel with the vein north 45° west. This pyritiferous porphyry is a fine-grained quartz and feldspar, intermingled with iron pyrites, which shows that this rock cooled very rapidly.

South of the Victor mine, about 3,000 ft. a deep shaft has unearthed a coarser grained rock known in all Western mining districts as "bird's-eye porphyry." Beyond this pyritiferous porphyry, which in this immediate vicinity is about 300 ft. wide, on the north or down hill side is a coarse-grained ferruginous-stained rock of the hardness of 2-3, which shows on every rock evidence of the percolation of water. This rock is also known as porphyry.

To the present time no mineral of value has been found in this latter kind of rock, and under ordinary circumstances but few miners would think of mining for the noble metal in it. Here, considerable work has been done in the way of shafts, tunnels and trenching. South, or up the hill, is a large perpendicular bluff of eruptive overflow—posterior to the porphyry—andesite, in which gold has been but sparingly found, and not in quantities to mine profitably. This perpendicular bluff, known as Trachyte Mountain, rises 400 ft. above the Victor; not a little of the rock has been weathered, so much so that in the neighborhood of the Victor shaft the slide is fully 8 ft. deep. The claim on the southwest terminates in a plateau, the head of both Wilson and Grassy Creeks and the northeast on Trachyte Mountain.

The Victor vein can be plainly traced through several other claims, the Lee, Buena Vista, Emma No. 1 and Emma No. 2. The two latter claims were located transversely across the vein; while the May has

recently discovered it on the southeast. Considerable work was done by the Calumet company 18 months ago on the Morning Star claim, a continuation of the Buena Vista, on the northwest, but without success, as subsequent developments have proved that the vein follows pretty closely the contour of the hill. This Victor vein has been opened on and profitably mined for more than 4,000 ft., as shown in the sketch, Fig. 2.

The lode was discovered and located August 23d, 1891, being the first location on the north side of the hill. The assessment work only was done that year. When first we examined the property in March, 1892, the shaft was sunk 25 ft., the pay-streak or smelting ore being 10 in. An assay taken at that depth yielded \$78 in gold. The vein at that time could be truthfully termed a brecciated vein, small fragments of angular jasper of a heavy dull red color being intermixed. Jasper has been associated with the vein ever since its discovery to the present time, but not in such quantities as are now found on the third level. Some samples of apparently pure jasper have assayed as high as \$11,000 to the ton. In any other district this jasper would be considered valueless mineral. The richest car of ore yet shipped yielded 38 oz. gold and 5 oz. silver per ton, and consisted of a tough, plastic clay impervious to water and hardening on exposure. The color of the richest clay is not unlike the color of a mixture of 1 lime and 2 sand. This clay is generally found on the foot and hanging walls and is free from particles of quartz crystallization as is the case elsewhere. Assays from these mud seams go as high, and even higher, than \$2,500 to the ton.

The shaft is sunk to the depth of 275 ft. along the dip of the vein. There are four levels, drifting having just been commenced on the fourth, which is 240 ft. deep. In the sinking below the fourth level the vein is fully 4 ft. wide the pay streak or smelting ore being 2 ft. wide. At the third or 140-ft. level the west drift has been extended 140 ft., while the east drift is 95 ft., with not an unproductive foot of ground. The vein varies in course and dip from north 30° west—north 70° west and dip from 60°—80°. Two raises communicate with No. 2 level 65 ft. above, but no ore has yet been stoped. At No. 2 level the vein has been opened on for more than 500 ft., and shows the continuity of the vein perfect. The same remark applies to the

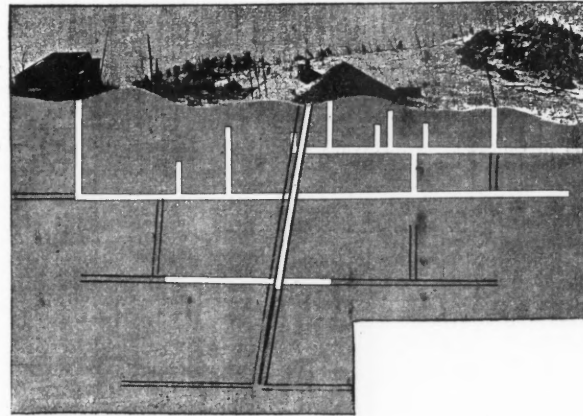


Fig. 2.

first level, save that here in some places the vein has been actually stoped to the "grass roots."

The vein throughout the mine will average fully 4 ft., 3 ft. of which is lower grade or milling ore yielding about 1 oz. gold per ton; while 1 ft. is high-grade or shipping ore, which will average about \$250 per ton. The low-grade is not being treated at present, although there are no less than 3,000 tons on the dump and the stulls in the mines are full. The total shipments of high-grade ore up to May 30th last were 928 tons, yielding \$115,599, or an average of \$124.57 per ton.

Coal in Belgium.—For the six months ending June 30th the coal and coke exports of Belgium were: Coal, 2,000,861 tons; briquettes, 230,543 tons; coke, 465,902 tons; total, 2,697,306 tons. As compared with last year there was an increase of 3.5%. The imports were: Coal, 665,148 tons; coke, 120,198 tons; total, 785,346 tons.

PATENTS GRANTED BY THE UNITED STATES PATENT OFFICE.

The following is a list of the patents relating to mining, engineering and metallurgy issued by the United States Patent Office:

- TUESDAY, JULY 18TH, 1893.
- 201,494. Ore Roasting Kiln. Owen W. Davis, Jr., Middleborough, Ky.
  - 501,547. Shaping and Spinning Metals by Electricity. Elhu Thomson, Swampscott, Mass., Assignor to the Thomson Electric Welding Company, of Maine.
  - 501,557. Belt for Ore Concentrators. James S. Brownell, San Francisco, Cal.
  - 501,559. Process of Extracting Metals from Compound Ores. Arthur Chanute, Denver, Colo.
  - 501,673. Separator for Coal, etc. Hezekiah Bradford, Philadelphia, Pa. Samuel Isaac Willingale and Robt. W. Finletter, administrators of said Bradford, deceased.
  - 501,750. Hot Blast Valve. John W. Wailes, Gateshead-on-the-Tyne, England.
  - 501,755. Method of Forming Coal Cutters. Foree Bain, Chicago, Ill., Assignor to Samuel S. Brown, Pittsburg, Pa.
  - 501,770. Process of Removing Piles of Material. James M. Dodge, Philadelphia, Pa., Assignor to the Link Belt Engineering Company, same place.
  - 501,771. Conveying Apparatus. James M. Dodge, Philadelphia, Pa., Assignor to the Link Belt Engineering Company, same place.
  - 501,783. Method of and Apparatus for Electrolyzing Solutions. Eugene Hermite, Paris, and Andre Duboc, Rouen, France.
  - 501,791, 501,838, 501,889. Artificial Stone. Mark Lafont, Paris, France.
  - 501,795. Mining Machine. Benjamin A. Luzzo, Allegheny, and Adam Kell, MeKeesport, Assignors to Samuel S. Brown, Pittsburg, Pa.
  - 501,879. Combined Ore Separator and Amalgamator. James J. Fitzgerald, Denver, Colo.

## PERSONALS.

Mr. William Hall has been appointed manager of the Joggins coal mines, in Nova Scotia.

Mr. I. L. Morris has resigned his position as manager of the Peoria Steel and Iron Company, of Peoria, Ill.

Mr. W. C. Dickerman, mining engineer, at Lehigh University, Bethlehem, Pa., is visiting the Fair at Chicago.

Mr. V. H. Patterson, a prominent lead mine-owner, of Saline, Mo., is in Chicago, where he will spend a few weeks visiting the Fair.

Mr. Pedro Lopez Monroy has succeeded Mr. Carlos Hoffman in the management of the Concepcion mines, in San Luis Potosi, Mex.

Dr. O. L. Crampton, of Mobile, Ala., has been chosen vice-president of the Coal Creek Coal Company, in place of Gaylord B. Clarke, deceased.

Mr. A. Dick has been appointed general manager of the Canada Coal and Railway Company. He was recently general sales agent of the company.

Mr. William Macintosh, of Buckingham, P. Q., represents Quebec's mineral exhibit at the Fair. Mr. Macintosh is largely interested in mica properties.

Mr. George Tresnou, of Lancaster, England, is now in Chicago. Mr. Tresnou is interested in English mining, and will, while here, look into American methods.

Senor Genaro Garcia Garcia, a relative of the revolutionary general of the same name, and a silver miner of Zacatecas, Mex., is in Chicago. His address is the Victoria Hotel.

Mr. Giacomo Lepori, one of the Swiss delegates to the Columbian Exposition, is now on his way to Chicago to perform his duties. He is a well known engineer and a resident of the Canton of Ticino.

Mr. John P. Haynes, the Prescott, Ariz., representative of the Gold and Silver Extraction Company, of Denver, is in Chicago. Mr. Haynes can be found at the company's exhibit, in the Mines Building.

Mr. F. A. Harlman, a mining man, of Sonora, Mex., is now visiting the Fair, at Chicago. Mr. Harlman proposes looking over the latest devices in mining machinery for the purpose of placing some in mines newly opened by him near Sonora.

The Colorado mineral exhibit, at the World's Fair, is now in charge of a Denver young man, Mr. Victor C. Heikes. He is a member of the Colorado Scientific Society, and his knowledge of the State's mineral resources makes him a fit representative.

The superintendency of the Missouri mineral display, at the World's Fair, has fallen into the hands of Mr. James A. Reeves, of Joplin, Mo. Mr. Reeves is interested in lead and zinc mining in his own State, and is the owner of a fine cabinet of lead and zinc ores.

Prof. Edward S. Dana, of Yale University, is ill in Holderness, N. H., and will not resume his college work in the fall. In consideration of his condition the Yale corporation has voted him a leave of absence from college for a year, and he will not resume active work till September, 1894.

Prof. W. Schulz, of the Royal Polytechnical School, at Aachen, Prussia, and Commissioner of the Prussian Minister of Public Instruction, is now visiting the World's Fair, at Chicago. Professor Schulz's mission to this country is in the interest of his government. He will make a tour of the West and examine the mills, ore dressing machinery, etc., at different mines, for the purpose of introducing advanced features into the mines of his own country.

## OBITUARY.

Thomas D. Messler, third vice-president of the Pennsylvania Railroad Company, died August 11th, at Cresson Springs, Pa., aged 60 years. He was known as one of the best accountants in the country, and to him was largely due the admirable form in which the Pennsylvania company's reports are made.

Paris Haldeman, a well known iron man, of Lancaster County, Pa., died in London, England, August 13th. He was born in Conoy Township, Pa., in 1831, and in 1849 went to California with the gold seekers. Returning, he engaged in the iron business at Chickies, with his brothers, Prof. S. S. Haldeman and Dr. E. Haldeman, both of whom are now deceased. He continued in the business in Lancaster County with partners until his retirement in 1891, when he went to London to live. The Haldemans were among the pioneer manufacturers of anthracite pig iron in that section of Pennsylvania, the furnace having been blown in 1845.

## SOCIETIES AND TECHNICAL SCHOOLS.

International Congress of Electricians.—As the time (August 21st) approaches for the assembling of the World's Congress of Electricians, the following items may be of interest. It will be remembered that at the meeting of the Advisory Council, held January 17th last, several committees were appointed, and among others a committee to decide upon the number of members that each foreign country should be invited to send to sit in the Chamber of Delegates. Their apportionment was as follows: Five each for England, France, Germany, Anstro-Hungary and the United States; three each for Belgium, Italy and Switzerland; two each for Norway and Sweden, Holland, Denmark, Russia and Spain; one each for Portugal, British North America, Australian Colonies, India, Japan, China, Mexico, Brazil, Chili, Peru and the Argentine Republic, making 55 in all. Up to the present moment eight of the more important countries have officially responded to the call. In addition, about a thousand invitations in all have been sent out, and from the number of acceptances that are coming in there is every reason to believe that the congress will be well attended.

## INDUSTRIAL NOTES.

The Braddock Wire Works, at Rankin Station, Pa., started up August 14th, after two months' idleness, giving employment to 700 men.

The Harvey Steel Company, of Newark, N. J., which controls the process for "Harveyizing" armor plates, has paid a cash dividend of 20% on its capital of \$500,000.

The Columbia Iron Company and the Susquehanna Iron Company, of Columbia, Pa., started up August 14th, after two days' shut down. They give employment to 500 men.

The Michigan Forge and Iron Works, of Detroit, Mich., have closed down for an indefinite period. Lack of orders was the cause of the shut down. About 200 men are thrown out of employment.

The Baldwin Locomotive Works, of Philadelphia, Pa., has announced a reduction in the price paid for what is known as contract work, to take effect this week. The reduction, which will affect 3,000 men, amounts to about 10%.

The Southern Iron Company, with headquarters in Nashville, Tenn., will make a special assignment to secure claims of its operatives at the furnaces in Hickman County, Tenn., and certain open accounts. The papers have been made out but no statement has been given out by the officers.

The Dearborn Refining Company have lately opened offices at 163 State street, Chicago, for the purpose of doing a general smelting, refining and assaying business. Mr. H. P. Dickinson, formerly of the Aurora Smelting and Refining Company, and a mining engineer, is general manager of the concern.

The Black Diamond Steel Works, Pittsburg, will start up in all departments next week. The works were running about half time, and shut down on the 12th inst., but when the resumption takes place the full quota of 4,000 men will be employed. These mills will give employment to upward of 15,000 men.

The employees of the Union Iron Mills, of Carnegie & Co., Pittsburg, Pa., who went on strike a year ago, met August 14th and went through the form of declaring the strike off. About 50 men attended the meeting, the others having left the city or accepted non-union places. The mills have been in operation as is well known.

William Kemp and James Keenan, of Troy, N. Y., have been appointed receivers of the Troy Iron and Steel Company, on a joint bond of \$100,000. This company has a capital of \$2,500,000, and its assets amount to \$1,300,000, the liabilities aggregating \$2,000,000. Messrs. Kemp, Rogers, Rockefeller and Corning, directors of the company, are its principal creditors. Mr. Kemp is vice-president of the company.

The Oliver Iron and Steel Company, Pittsburg, was placed in the hands of F. C. Converse and H. W. Oliver, as receivers, on August 17th. The company has \$1,600,000 stock and \$585,000 bonded debt; the floating liabilities are about \$700,000. The assets are large and there is no doubt that all liabilities can be met if reasonable time is given, as the trouble is due entirely to difficulty in collections and the stringency in the money market.

The men employed in the welding department of the Chester Pipe and Tube Works, Chester, Pa., struck on August 11th. The works have not been busy of late and the men were changed from time work to piecework, as the company could not well pay them by the day when there was not enough work to keep them busy. This caused the strike. About 50 men went out and the entire works will close down, as there is enough manufactured material on hand to supply the orders.

The creditors of the Sheridan Iron Company, of Reading, Pa., met at that city on the 12th inst. The statement of the firm showed real estate, \$396,840; liabilities, \$528,039; surplus, \$68,311. George

F. Baer, who represented the Philadelphia & Reading company and the Coal and Iron Company's claim, amounting to about \$95,000, suggested that an extension of four years be granted to the firm, and it was agreed to. An advisory committee was appointed to look after the affairs of the company in the interest of the stockholders.

Under date of August 10th the following circular was sent to the heads of all departments of the Carnegie Steel Company; it affects over 800 men: Taking effect September 1st, 1893, and applying to every officer and employee of this association excepting those working under wage scales, the following reduction in salaries is ordered: On salaries exceeding \$500 per month, 30%; on salaries of \$400 and less than \$500 per month, 25%; on salaries of \$200 and less than \$400 per month, 20%; on salaries of \$60 and less than \$200 per month, 15%; less than \$60 per month, 10%. This action has been deferred as long as possible in the hope that some improvement in the existing trade depression might occur, but as the situation is daily becoming worse, this reduction is found absolutely necessary.

The stockholders of the Pennsylvania Steel Company have voted to increase the bonded indebtedness of the company from \$3,000,000 to \$9,000,000, in order to pay the floating indebtedness. This is in accordance with the plan of reorganization proposed and accepted. It is understood that arrangements have been made to place all of the bonds that will be required immediately.

The plan proposes the use of the new bonds for the settlement of the floating debt, payments to be made as follows: April 15th, 1894, 15% of the indebtedness in cash and 15% in the consolidated joint general mortgage bonds at 85% of their par value; 10% in cash on October 1st, 1894, and April 1st and October 1st, 1895, 1896 and 1897. It is also set forth in the agreement that, in exchange for notes and accounts now outstanding, extension notes of the Pennsylvania Steel Company, or of the Maryland Steel Company, according as the debt may be owing by either, for the amounts of the installments maturing at the specified dates, shall be given with any indorsements now upon them, and interest at the rate of 6% a year shall be paid at each semi-annual period in advance. Should any of the creditors, at the signing of the agreement, desire to take payment in consolidated joint general mortgage bonds at 85% of their par value to an amount exceeding 15% of the debts, such choice may be exercised to the extent of 50% of the indebtedness due each creditor. If the creditors prefer not to take the bonds extension notes will be given them for 15% of their credits in place of 15% in bonds; but the extension notes are not to mature until April 1st, 1898. Each creditor, when signing the agreement, must state under his signature the quantity of the bonds he wishes to take. The companies reserve the right to anticipate the payment of their indebtedness due at any time before its maturity.

## 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.

## Calhoun County.

Woodstock Iron Company.—Commissioner A. H. Shepperd has sold the property of this company, at Anniston, for \$400,000. It was purchased by Mr. John B. Knox, on behalf of the bondholders. There was only the one bid. The sale includes the four furnaces and 50,000 acres of land. The accumulated stock of pig iron is yet to be sold, and the \$50,000 of debts owed by the old company, outside of the bonded indebtedness, settled, before the receivers are discharged by the court. The bonded indebtedness of the company is \$1,000,000.

## Jefferson County.

Virginia & Alabama Coal Company.—This company has secured the contract for supplying the Louisville, New Orleans & Texas Railroad with coal for one year. About 100,000 tons will be required.

## ALASKA.

Alaska-Treadwell Gold Mining Company.—The July output was as follows: Shipment of bullion, \$61,069; tons of ore milled, 20,287; tons of sulphurets treated, 357. Of bullion there came from sulphurets, \$16,618. Estimated gross expenses for period were \$21,099.

## ARIZONA.

## Cochise County.

Copper Queen Mining Company.—This company, according to the Globe "Silver Belt," has purchased another copper claim at Bisbee, for \$15,000.



## Gila County.

Rye District.—Mr. Curtis has a shaft down 60 ft., according to the "Arizona Silver Belt," and has found an 18-in. vein, the ore assaying \$100 per ton in gold.

Zulu Mine.—Work is to be resumed on this mine, which has been standing idle for some time. The shaft is down 160 ft., but will require new timbering.

## Yavapai County.

A late issue of the Prescott "Journal-Miner" publishes an article showing that for nearly every silver mine that has closed down, in Yavapai County, a gold property has been started to work. A list of the mills now in operation there is given, as follows: The Virginia gold mill at Yarnell, 10 stamps; the Kerr mill, at Stanton, 10 stamps; the mill of A. T. Marsh, at Minnehaha, 10 stamps; the Commercial Mining Company's mill, on Big Bug, of 20 stamps; the mill of the McCrum sampling and ore works, at the Silver Belt, 10 stamps; Old Reliable, in Bradshaw Mountains, 5 stamps; the Pratt mill, J. R. Ritchie, lessee, on Big Bug, 5 stamps; John S. Jones, in Chaparral, 5 stamps, to be increased soon to 15 stamps. A lease has been taken recently on the Wire Gold mine, near Squaw Peak, on which there is a 10-stamp mill, which will be started up soon. Mr. Burson has a Burson mill of 10 stamps capacity under process of construction, on the Hassayampa. Dr. J. Miller is also putting up a five-stamp mill on his Westlake mine, four miles south of Prescott, which he expects to have in operation within a month, and if it proves a success the capacity will be doubled. The McCabe Mining and Milling Company has a portion of the machinery for a five-stamp mill now on the ground, and has men at work preparing to put it in place. This one is expected to be ready to start work within six weeks. The Henrietta Mining Company, the recent purchaser of the Yankee Girl, and one or two other mines in Chaparral, have ordered a 20-stamp mill to be erected on this property. Brown & Barrett have contracted for a five-stamp mill for their mine on Castle Creek. The above is a list of those now in operation or already contracted for, while negotiations are now in progress for several other good gold properties, which, if consummated, will require the erection of additional mills.

Seven Stars Gold Mining Company.—Two attachments have been obtained against the Industrial and Mining Guarantee Company, of New York, and of Denver, Colo., one for \$62,718 in favor of the Put-in-Bay Water-Works, and the other for \$17,625 in favor of John P. Carrothers. H. H. Warner, of Rochester, N. Y., was president of the company, and in fact, was the company. It will be remembered that this is the company that has guaranteed the dividends on the stock of the Seven Stars Mining Company.

## ARKANSAS.

## Independence County.

Keystone Mining Company.—This company has suspended its manganese mining operations, near Cushman, for the present, on account of dull business in the East.

## CALIFORNIA.

## Amador County.

Almaden Gold Mining Company.—This company has been incorporated for the purpose of sinking a shaft in and prospecting the ledge which runs through the Mattley field about northwest and southeast, which is the same ledge the Kennedy is located on. The company proposes to sink the shaft 500 ft. without cross-cutting. The capital stock of the company is \$1,000,000, divided into 200,000 shares of \$5 each. The directors of the company are: Geo. B. Heazelton, president; J. N. Wells, vice-president; D. Gutman, secretary; W. B. Hamilton, H. H. Bodwell and J. B. Francis. Mr. Francis will be the superintendent of the property.

Amador Gold Mine.—The Jackson "Ledger" says that on the 29th ult. Vincent Neale and James E. Nye redeemed the Amador gold mine property, which was sold by the sheriff six months ago for about \$5,000. Mr. Neale represents the corporation known as the Jackson Gold Fields. The sheriff's deed to the property cannot pass for 60 days, and the American company is still in possession with its armed guards.

## Butte County.

(Reported for the "Engineering and Mining Journal.") The Golden Queen mine, with its 10-stamps, is to be re-opened after being shut down nearly two years. On probably the same vein is the Gold Bank mine, owned by W. W. Stow, of San Francisco, and superintended by his son, H. P. Stow. This mine is being worked by an inclined shaft now down 350 ft., and there is said to be enough good ore in sight to run their 40 stamps for a long time. Their hoisting and pumping works that were destroyed by fire a short time ago, are rebuilt and enlarged and the mine employs 80 men. Capacity of the chlorination works, eight tons daily. Near this mine is the Shakespear mine, and their new chlorination works are, perhaps, the best in the State. As soon as their 30-stamp mill is completed 500 men will be employed. This property is owned by Mr. Alvinza Hayward, of San Francisco.

A year ago a company was formed in Oroville

to prospect the Paetolian mine, near Hurleton, about 12 miles from Oroville. A 300-ft. tunnel has been run and an upraise of 140 ft. to the surface is being completed; 10 men are constantly employed. About three miles further up the Phoenix mine is milling 20 tons daily. The Bryant mill and Johnston concentrators are doing excellent service. These two ledges are both large and contain rich sulphurets. Near Euterprise, five miles from Hurleton, an Oroville company is prospecting a large quartz vein that was worked in early days, and yielded \$12 per ton in free gold, with rich sulphurets. The company intends erecting a 10-stamp mill. Alm Brothers & Co. are working a river claim, from which they took out \$5,000 last fall, in less than two months. Three miles further up is Forbestown, where several new mines are now being opened.

## Mono County.

Standard Consolidated Mining Company.—A gold shipment valued at \$12,322, has been received at the San Francisco office of this company.

## Nevada County.

It is reported that considerable prospecting is going on in the country around Sweetland and North San Juan, in the quartz lodes.

Reward.—At this mine, says the Nevada City "Herald," the incline shaft, which has two compartments, is down 150 ft., and when it reaches a depth of 200 ft. a level will be made and drifts run north and south on the ledge. The ground is very soft, and requires skillful work. Ten men are employed. The incline was started on the croppings of the ledge, which was then 2 in. wide, and at the present depth of 150 ft. the formation is 22 in. wide. The rock shows but little free gold, but plenty of sulphurets, and it has paid from \$19 to \$40 per ton in various places where it has been worked before.

## San Francisco County.

(From our Special Correspondent.)

Colonel Mendell, Lieutenant-Colonel Benyaurd and Major Hener, of the U. S. Engineer Corps, who form the Mining Debris Commission, returned early in the week from a tour of inspection. They visited the properties of the South Yuba Water and Mining Company and other hydraulic mining properties in Placer and Nevada counties. They viewed the principal deposits of gold-bearing gravel suitable for hydraulic mining, and also the localities where, it is claimed, impounding works may be successfully constructed. The commission then crossed the San Juan Ridge and visited the Eureka Lake Company's properties and at Columbia Hill examined impounding works, by means of which work had been carried on in one of the claims for about 20 months. The Malakoff mines, owned by the North Bloomfield Mining Company, were examined closely, for here are the most extensive impounding works constructed by any company, and mining is carried on by means of a hydraulic elevator, which takes the debris up a considerable height and deposits it in large pits. The Kate Hayes mines, near French Corral, and the mines in the vicinity of Smartsville, Yuba County, and also the properties of the Excelsior Company were all examined.

## Shasta County.

(Reported for the "Engineering and Mining Journal.")

In the Honeycomb mine, owned by Dall, Smith & Sanford, ore has recently been struck which assays very high in gold. So far as opened, the rich streak is from 6 to 18 in. in width. The vein is from 2 ft. to 7 ft. wide, with some gold running all through it.

The same parties have a mine adjoining the Honeycomb, ore from which assays from \$20 to \$60 per ton. The value of the ore is chiefly in the sulphurets, and the freight and smelting charges are so high that it cannot at present be worked at a profit.

Sunny Hill Gold Mining District.—This district is in Shasta County, about 20 miles from Anderson, the shipping point for the ores. The principal mine is the Summit, from which over \$15,000 in gold has been taken. The ores from this mine are sent to the Selsby Smelting and Lead Company, of San Francisco. There are here two Huntington mills and a 10-stamp mill, but only one of the Huntington mills is in use, as the ore is not free-milling.

## Sierra County.

Alaska.—At this mine, in Pike City, a stringer of gold-bearing quartz has been found above the old drain tunnel, 50 ft. from the surface of the mine, which has been traced for over 300 ft. Under the new management of Dr. Lux, development work will be prosecuted as fast as possible. The owners contemplate doing away with the old hoisting works by running a tunnel from Oregon Creek to the main shaft, a distance of about 6,000 ft., which will thoroughly drain the mine at a depth of nearly 1,000 ft., or 500 ft. lower than the bottom of the present shaft.

## COLORADO.

## Clear Creek County.

Florence.—This mill is now running night and day, says the Silver Plume "Standard." It is now treating Pelican ore, and will soon be started on Pay Rock ore.

Connemara Gold Mining Company.—This company has filed articles of incorporation with a capital stock of \$100,000, and the following directors: I. N. Roush, A. Beal, J. C. Simmons, A. E. Simmons and A. D. Bullis. The company will operate in Clear Creek County, with the principal office at Idaho Springs.

Seven-Thirty.—According to the Silver Plume "Standard," this mine has shipped some ore recently, as a favorable deal has been made in connection with the lead ore from the Stevens. The mine is said to be looking well in many places. The shaft is not being sunk at present, as the work of starting new levels is going on.

## El Paso County.

Pharmacist Mining Company.—The Pharmacist shaft is now down 270 ft., and it is the intention of Manager Jones to sink it 60 ft. further before running another level, says the Colorado Springs "Gazette." The ore in the bottom of the shaft is as good as ever, the vein showing a streak of first-class or shipping ore from 6 to 10 in. wide. Fifty men are employed now. A carload of smelting ore was shipped last week, and sample shipments of 12 tons each were made to the Rosebud, Tomlinson and Beaver Park mills.

Zenobia.—Some 25 men are employed at this mine, which is now shipping from 60 to 120 tons per month to the smelters and six or seven tons per day to the mill. Both veins are looking fine, the largest, known as the Zenobia vein, being 12 ft. 9 in. wide at the widest part and averaging 4 ft. in width.

## Gilpin County.

Boundless Mining Company.—This company has filed articles of incorporation to work mines in Gilpin County. The capital stock is \$100,000.

Concrete Mining Company.—This company has the engine or main shaft down to a depth of 830 ft., it having been 760 ft. deep when sinking was resumed after the placement of their 80-H. P. Hendrie & Bolthoff improved hoister. The crevice matter being sunk through is over 8 ft. in width, principally stamp mill ore, although there is more or less mineral intermixed with it.

Fairmount Gold Mining Company.—This is a company recently organized to develop the Fairmount, Fairmount Extension and Adudell Extension lodes, near the head of Virginia canyon, as also several other prospects forming the Fairmount group. The first three are patented properties. Messrs. C. J. and S. B. Clark are at the head of the company. Mr. William H. Cheately will have charge of the company's affairs as superintendent. Work will soon be commenced on the group.

James Henry.—Stahl & Co., contractors, have about completed sinking an additional 100 ft. in the engine shaft, on this mine, on Gunnell Hill, for the owners, Messrs. Hendrie & Bolthoff, of Denver. They have been sinking through a very fair crevice which carries quite a vein of mineral galena and copper pyrites.

Montgomery Lode.—The "Register-Call" says that this vein, situated north of the Running lode, is now being developed by sinking the main shaft, over which a new plant of machinery was recently placed. It is the intention of the purchasers to sink to a depth of 300 ft., and possibly 400 ft. before extending any levels.

U. G. M. Lode.—The Central City "Register-Call" says that this lode has been leased and bonded to Andrew Stevens & Co. It has not been worked since May, 1876, at which time the miners working were flooded out when at a depth of 9 ft. by a heavy fall of snow, which soon melted away and filled the shaft. A contract has been let to Trebilecock & Co. for the erection of a shaft building 30 x 40, which is now in course of completion. The Lidgerwood hoister formerly in use on the Concrete mine, and boiler, has been secured and is now on the ground ready for placement. When work was closed down, 17 years ago, there were about 3 ft. of stamp mill ore in the bottom of the shaft.

## Lake County.

(From our Special Correspondent.)

On the Thespian property a winze is being sunk in the hard lime, with the prospects of soon getting to the ore chnte.

Since the Olive Branch, Tip Top, Forepaugh and Bangkok have been drained, the old stopes and drifts have been cleaned out and some fine bodies of ore encountered. Considerable ore has been taken from the Tip and Cora Belle, consisting of a partially oxidized dry sulphide.

Mr. John Campion is figuring on working some gold diggings, at Farnelm, near here. The workings will comprise 5,000 acres of lodes and placer claims; from this neighborhood in the past over \$12,000,000 has been taken out. It is the intention to sink two shafts. The sources of all the placer gold are the veins of gold-bearing rock found in the slate formation, on Farnelm Hill.

The immense project commenced some months ago by the Union Mining and Leasing Company, to drain the El Paso, Tip Top, Forepaugh, Lee Basin, Olive Branch and other properties, on Fryer Hill, is being carried forward rapidly. This draining is carried on through the El Paso shaft, and within two weeks the shaft will be dry. Just as soon as the bottom is reached, a duplex compound pump will be placed in position.

A fine gold strike was made in Pomeroy Gulch, some 18 miles from here, this week, in the Golden Eagle claims. The vein has been opened up 16 ft., and neither the foot or the hanging wall have been discovered. The pay streak is from 1 to 6 in. wide. The gold-bearing rock is a soft quartz and some of the assays give returns as high as 15 oz. gold. The porphyry itself carries some gold.

A mechanics' lien for \$1,448.60 was filed on the Busk Tunnel Railway this week, by the Colorado Fuel and Iron Company, for coal and coke furnished by said company.

The Arkansas Valley smelter question about running at reduced wages of 10% was suddenly settled on Saturday morning, but not in a way to prove satisfactory to the men. A telegram from President A. R. Meyer, of Kansas City, was received instructing the local management to close down indefinitely on account of the scarcity of ore and poor condition of the market. The closing of this smelter throws 400 men out of employment who were receiving salaries amounting to \$30,000 per month. The total expenditures of the company for supplies, ore, etc., paid in this camp, amounted to \$100,000 per month.

#### GEORGIA.

Fulton County.  
Atlanta, Jellico & Birdseye Coal Company.—This company has been organized, with headquarters in Atlanta, to mine coal. W. A. Broughton, R. P. Dodge and J. P. Leach are among the incorporators.

#### Lumpkin County.

Hand & Barlow Mine.—The one-third interest in this mine owned by Colonel Hand, of Dahlonaga, has been sold to Col. W. A. Charters.

#### Oglethorpe County.

Diamond Granite Company.—This company has been organized, in Augusta, to develop granite quarries, in Oglethorpe County. P. G. Burum is president, and E. S. Johnson secretary.

#### IDAHO.

##### Ada County.

The placers located at Warm Springs Ferry, on the Snake River, are turning out a considerable amount of gold. The old-fashioned rocker is used, and 30 wheelbarrow loads of sand represents a day's work.

It is reported that a number of Coeur d'Alene miners have struck good placer dirt in what is known as the Clearwater country. Formerly, in the time of the excitement on Cedar Creek, this district produced some gold, but of late years no attention has been paid to it. The Coeur d'Alene miners, who have rediscovered the district, intend to take in a sawmill and commence systematic work.

##### Bingham County.

Birdie M.—This is another new mine reported as promising well, ore near the surface running \$10 to \$15 per ton in gold.

Fanny Waring.—At this new mine, near Crichton, it is said that the outcroppings will give ore enough to keep a mill running for some time. These croppings run from \$12 to \$15 per ton in gold.

##### Coeur d'Alene.

In regard to the re-opening of the mines of this district, the Spokane "Weekly Chronicle" says: The union has gained influence steadily since the mines were closed, and nearly all the miners will be governed by its decision. The mineowners have a proposition, unofficial, but very definite, to resume work on all the principal properties if the men will accept \$2.50 instead of \$3.50 per day. The mines said to be bound by this offer are the Gem, Standard, Banner, Frisco, Poorman, Bunker Hill and Sullivan. While it is believed that most of these mines could barely make expenses at this rate, one or two might make a small profit. But it costs money to keep a mine closed, so they would be satisfied to come out even. Besides this, many of the owners have other interests in the Coeur d'Alenes which will suffer greatly if the mines are closed, and to save these they are doubly anxious to keep them open. The railroads also, it is said, have agreed to give reduced rates on ore which will give another chance for a margin of profit. Altogether it is probable that the mineowners can continue to run steadily under these conditions unless silver or lead fall still lower.

##### Custer County.

Yellow Jacket Mining Company.—Superintendent Sheldon is now arranging to buy a 30-stamp mill for this company.

##### Idaho County.

Elk Mining Company.—This company has been organized to buy and work the placer claims on Crooked River, now owned by Chester Davis and others.

##### Kootenai County.

Moyea.—Favorable reports continue to be received from the Moyea goldfields and the excitement remains unabated. It is reported that the best finds are being made up near Round Prairie, close to the Fort Steele trail.

##### Owyhee County.

De Lamar Mining Company.—The following is the telegraphic return for the month of July: Crushed during the month, 2,797 tons; billion pro-

duced in the mill, \$65,157; estimated value of ore shipped to smelters, \$2,000; miscellaneous revenue, \$565; total revenue, \$67,722; total expenses, \$33,760; profit for the month of June, \$33,962.

#### KENTUCKY.

##### Logan County.

Homer Asphalt Company.—This company has begun work on the deposits of asphalt at Homer, and is said to be prepared to spend a considerable amount in development.

#### MICHIGAN.

##### Copper.

Atlantic Mining Company.—This company has finished five miles of its railroad track to its new mills, and locomotives are running over it.

Calumet & Hecla Mining Company.—At the annual election of this company held in Boston, on the 16th inst., 76,521 shares were represented and the old directors were re-elected. President Alexander Agassiz is reported to have said that it was pleasing to the management that, when the trammers struck recently, 600 of the company's miners acted as deputy sheriffs. All the pumping now is being done very satisfactorily by electricity. Drifting on the Osceola amygdaloid has shown enough copper to warrant a new mine from the present openings. The company has decided to extend its compressed air plant and do its tramming and other underground work by means of it. The company must hereafter reduce the number of non-English speaking employees.

Central Mining Company.—The Central mine has stopped running its man-engine for hoisting miners as a measure of economy. The company has reduced wages 10%.

Copper Falls Mining Company.—This mine closed down on August 12th. Nearly 300 men were thrown out of employment.

Huron Mining Company.—Mr. Graham Pope is quoted as saying that if he can obtain a three or five-years' lease of the Huron mine, he will equip it with new machinery, as he feels confident he can make it pay.

#### MINNESOTA.

##### Duluth.

(From our Special Correspondent.)

Ore shipments for last week were 42,000 tons, of which the Duluth & Iron Range Railroad sent 29,000 and the new Duluth, Mesaba & Northern 13,000. The Minnesota Iron Company shipped only 21,887 tons from its two mines. For the season to date the Vermilion range has shipped 490,000, and the Mesaba range 113,000 tons, making a total from the Duluth district, 612,000 tons. Shipments of ore off Lake Superior, that is, all the Lake Superior region, except Escanaba and its vicinity, were, to August 1st, 1,721,000 tons, against 2,014,700 for the same period last year, a falling off of nearly 15%. Marquette increases 100,000 tons, Duluth and Two Harbors, 60,000, leaving all the decrease to Ashland, which also offsets the other increases with a heavy falling off.

##### Iron—Mesaba Range.

(From our Special Correspondent.)

Oliver.—At this mine Drake, Stratton & Co., stripping contractors, are moving some 700 dummy cars of earth daily, working two shifts. About 60 carloads of ore seem to be a good day's work for one steam shovel at this or any of the range mines.

Rouchelas.—At the original workings of this company, in 58-16, a find of soft ore has been made with diamond drill at a considerable depth. This tends to bear out the idea that is gaining favor, that the Mesaba ore pockets extend further to the south of their outcrops than had been expected, consequently that deep mining will largely increase the quantity of ore in sight. The diamond drill will probably play a greater part in future Mesaba operations than surface miners imagine.

##### Iron—Vermilion Range.

Anderson.—At this property exploratory work is going forward with a small force at work.

Minnesota Iron Company.—Repeated reductions in the force at this company's mines have been brought to a stop by the fact that there are no more men to let out. Only 150 men have been at work on the property since the last of last week. These are loading cars from stockpiles. The Minnesota company's fleet of eight fine steel ships, aggregating 25,000 tons capacity, will be laid up soon. Extensive improvements have been made at the mine preparing for future operations. Stockpile grounds are graded, new cage roads built in the shafts, five crushers are in place, etc.

Nehewa.—At this property, near the Chandler, a find of soft ore has been made.

#### MISSOURI.

The State Bureau of Labor has secured an almost complete compilation of the wages paid in the various mining pursuits in Missouri for the year ending June 1st, 1893. The record as compiled is said to be absolutely fair and without prejudice. It is given for the 12 months of the year, and shows the number of months of employment by each man under a company stated, and at a given place. At Rich Hill, the record of 180 miners in the employ of the Keith & Perry Coal Company furnishes the following footings. Only

the general averages are given: Number of days employment, 151; number of working days worked, 92; total amount net earnings, \$53,797.99; amount net earnings per miner per period, \$298.87; daily net wages per miner for working days in period, \$1.976; daily net wages per miner for days worked in period, \$3.225. Of the 180 men employed during the year ending June 1st, 1893, only 20 were with the company all the time. They made net wages averaging \$636.447 each, a total of \$12,728.86. The gross earnings of all these miners are considerably larger than the net wages, as shown above. Such items as cost of tools, powder, fuse, caps, etc., which each miner buys, are charged against him, and could not properly be omitted in a calculation as to the net wages earned.

##### Coal.

The deputy sheriffs stationed at the coal mines at Bedford have been withdrawn, the strike having been declared at an end. The strikes in Vernon and Bates counties have cost the miners more than \$16,000, and their places have been filled by others.

##### Jasper County.

(From our Special Correspondent.)

##### Joplin, Aug. 14.

Saturday evening closed the dullest week that has been known in this lead and zinc mining district, and to-day we may say that all of the mines are closed down for an indefinite length of time. The leading mine operators have had several meetings, and looked the situation over, and have formed a combine to remain closed down until such times as the smelters are willing to pay more for the ore; they have also determined that the zinc ore should be sold on its assay value, and that the price should be controlled by the spelter quotations from either New York or St. Louis. It is a well known fact that the zinc blende ore of this entire district will give an average of 56% metallic, while there are many mines that produce ore that will sample and give an average of 60 and 62%. There is now but a small surplus stock of ore on hand at the mines and this is held by large operators who can afford to hold their stock for better prices. It is hard to predict what effect the combine of the operators will have on the smelters, as many of them have shut down part of their furnaces and have a large stock of ore on hand. The Lanyons, of Pittsburg, Kan., have a stock of about 10,000 tons on hand. The American Spelter Company, of Galena, Kan., has now got the financial difficulties settled and made important changes in the plant, and is all ready to blow in, but can get no satisfactory market for spelter, so are undecided when to start up.

The zinc ore market last week ruled from \$12 to \$17 per ton, \$17 being the top price. The ore buyers were in the market for all that was offered. Lead ore sold at \$16.75 per thousand.

Following are the sales of ore from the different camps: Joplin mines, 716,490 lbs. zinc ore and 184,720 lead, value \$8,902; Webb City mines, 620,760 lbs. zinc ore and 32,150 lead, value \$5,230; Carterville mines, 319,970 lbs. zinc ore and 43,540 lead, value \$3,425; Zincite mines, 89,010 lbs. zinc ore, value, \$712; Oronogo mines, 25,730 lbs. lead, value, \$337; Alba mines, 336,010 lbs. zinc ore, value \$2,688; Granby mines, 218,500 lbs. zinc ore and 41,260 lead, value \$2,330; Galena, Kan., mines, 516,110 lbs. zinc ore and 38,090 lead, value \$4,457; district's total value, \$28,181; Aurora, Lawrence County, mines, 614,860 lbs. zinc ore and 128,900 lead, value \$6,841; lead and zinc belt's total value, \$35,022.

#### MONTANA.

##### Deer Lodge County.

Anaconda.—The Anaconda "Standard" says that the Butte, Anaconda & Pacific Railroad, which is now being put through, has proved a great boon to the many unemployed miners of the district. The railroad company employs about 1,200 men, many of whom are miners. Graders are getting \$2.50 per day, but a large number of men have offered their services at \$1.50 rather than be idle.

Bloomington Mine.—A small force of men are at work and some good ore is being taken out.

Round Up Mine.—The owners have arranged to start work on this property. The incline from the 60-ft. shaft will be continued.

##### Jefferson County.

During the month of July the locations of 77 quartz claims and 27 placer claims were filed for record in this county.

Elkhorn Mining Company.—The manager's June report says of the mine: Lead chamber north. The ore is bunchy as the stope extends northerly. The average width is 18 in., and the value about 40 oz. Shaft cross-cut. The ore is pinching out in this place. The streak is narrow and irregular, but of fair grade. 750 ft. level, north. Footwall cross-cut raise. The vein is 18 in. wide, and assays 25 to 30 oz. Prospecting: 850-ft. level, north. Previously reported 181 ft. Advanced in June 59 ft. Total length July 1st, 240 ft. Ore was struck in this drift at a point 214 ft. from the shaft. The breast is still all in pay. The average width is 4 ft., and its value 50 oz. for the whole length of 26 ft. as at present developed. Some rich bunches of lead are met with in the dry ore, 1,150-ft. level, south. A cross-cut is being run into the footwall, following the diamond drill hole, to ex-



plore the ground in this direction. The distance made during the month was 40 ft. No ore of value has been met with as yet. 1,250-ft. level north. Raise to 1,150 ft. Previously reported 50 ft. Raise in June, 60 ft. Total length, 110 ft. The raise was holed in the latter part of the month, connection being made on the ore extending from the inside chute on the 1,150-ft. level. 1,350-ft. level south, previously reported 561.5 ft. Advanced in June, 16.5 ft. Total length July 1st, 578 ft. Some work was done here to prove up the ground, but no ore was met with. Amount of ore broken 1,160 tons. The mill ran steadily until the 30th of the month, when the semi-annual shut-down was made for a general clean-up and repairs.

The following is the telegraphic return for the month of July: Mill worked 25 days and crushed 830 tons. Bullion produced in the mill, \$21,910; 211 tons of smelting ore sold, \$10,598; total produce, \$32,508; total expenses, \$22,271; leaving estimated profit for the month, \$10,237.

Great Belt Mining and Milling Company.—This property has been attached by the Montana National Bank, of Helena, on a claim of \$2,541.

Iron Age Mill.—Improved machinery for this mill has been shipped from Chicago.

Lewis & Clarke County.

Whitlatch Union & McIntyre Gold Mining Company.—The clean-up for a 26-days' run in July yielded gold worth \$4,400 and \$17 in silver. There is a loss of 1½% on retort. In July 46 men were employed, a great deal of special development being done, blind work being necessary to connect with shafts for air. There is now 650 ft. of 6-in. air pipes in the mine, and a new contrivance for supplying air is working well.

Silver Bow County.

Emma Nevada Mining Company.—The annual meeting of this company was held in Butte. Officers for the ensuing year were elected, as follows: President, P. J. Brophy; vice-president, J. H. McQuoeney; secretary and treasurer, M. P. Siple; trustees, John Holahan, W. R. Kenyon, J. A. Lewis and R. G. Huston.

Heinze Smelter.—The new addition is fast nearing completion, and the two converters will soon be set up. Two reverberatory furnaces, a blast furnace and one O'Harra will also be added to the smelter. The foundation for a new air compressor has also been laid, and the compressor and engine, size 20 x 42 in., is now being constructed and will arrive in a few weeks. The engine-room is being enlarged for the reception of this new machinery, which will also include two new steel boilers. The smelter building will, when completed, be about 300 ft. in length. The smelter is treating about 110 tons of ore per day, and 200 tons of rich copper matte is shipped each week to New York. Nearly all of this ore is being obtained from the Rarus and Glengarry. One thousand tons of concentrating ore was shipped during the past few days from the Rarus to the Liquidator concentrator, which is also being operated by Mr. Heinze. He has recently announced his intention of erecting a large concentrator near the smelter.

NEVADA.

Storey County—Comstock Lode.

Comstock Tunnel Company.—Only five men are now at work on the Suro tunnel, seven having been laid off on the first of the month.

Kentuck Consolidated Mining Company.—A gold shipment valued at \$3,257.53 has been received at the San Francisco office of this company.

NEW MEXICO.

Grant County.

Montana.—Work on the Montana tunnel has been suspended, owing to failure of the contractors to receive pay for their work.

Little Fannie.—At this mine, in Mogollon, the shaft is now down 278 ft., says the Silver City "Enterprise." Drifts have been run from the 237-ft. level east and west. The east drift is 70 ft. and the west drift about 60. The bin at the mine has a capacity of 500 tons. The bin at the head of the tramway has a capacity of 1,000 tons. Both are nearly filled with good ore.

NEW YORK.

Ulster County.

The New York Lime and Cement Company, of Kingston, has closed down every department of its works for an indefinite period, and 175 men are idle. The company has 13,000 bbls. of cement on hand.

OHIO.

Columbiana County.

A strike is announced among the coal miners, at Salineville. They were offered half pay and the notes of the company for 60 days. The miners, rather than accept the terms of the company, ordered a strike and quit work altogether.

Jackson County.

There are several new mines going down, as reported by the Jackson "Standard-Journal." The Alma Coal Company is putting down a shaft on the Lucas tract, near Glen Roy. It is progressing nicely without meeting with very much water. There are two mines going in on the Lincoln furnace tract, one belonging to the Hanging Rock

Company in a 54-in. vein and one belonging to the Aetna Coal Company.

Southeastern Coal Company.—This company has been organized to mine coal in this county. The capital stock is \$50,000.

Montgomery County.

Dayton (O.) Gas and Fuel Company.—Articles incorporating this company have been filed. The incorporators are Messrs. E. R. Leland, Fred. Reibold, Ed. W. Hanley, John A. McMahon and Henry Ferneding. The officers are: President and treasurer, E. R. Leland; secretary, E. W. Hanley.

OREGON.

Baker County.

Mable Mine.—The July output was \$4,500.

Shelton Mine.—The July output amounted to 50 oz. gold worth \$1,000.

White Swan Mining Company.—The second clean-up during July yielded amalgam worth \$7,500.

Lane County.

Bohemia District.—This district is situated on the divide between the Rowe River branch of the Willamette and North Umpqua, in Lane and Douglas counties, 45 miles from Cottage Grove, the nearest railroad and supply point, and 160 miles south of Portland. Two five-stamp mills with concentrators are in active operation—one on the Bohemia mine, discovered about two years ago by a Mr. Music, but now owned by a Los Angeles company, composed of Messrs. J. W. Cook, S. M. Perry and E. Davis. The latter is superintendent and manager, and has the property on a good paying basis. The vein has recently been struck, with a tunnel at a depth of about 150 ft., showing a fine body of ore. From a 30-ft. shaft about \$10,000 in gold has been taken. The ore would produce about 5% concentrates. This vein is about 4 ft. wide, and carries free gold. Last, but not least, of the numerous veins in this district is the Annie. This mine has been worked for about two years, and a large amount of money taken out. It contains a five-stamp mill and two concentrators, and is under the management of J. B. McGee. It is by far the best developed property in the district, containing over 1,000 ft. of tunnel. At present there is over 4,000 tons of ore on the dump.

PENNSYLVANIA.

Anthracite Coal.

The No. 6 Colliery, at Hazleton, operated by Pardee & Co., resumed work on the 11th inst., after an idleness of eight months. Many improvements have been added to the breaker and an increased number of men will be given employment.

Elk Hill Coal and Iron Company.—This company's plant, at Richmondale, 2¼ miles from Carbondale, is nearly completed. North of the breaker and over the 220-ft. shaft, rises a big steel tower, from which a chute span stretches to the head of the breaker. An intermediate tower and an end tower, near the breaker, helms to support the span. The "Forest City News" describes the works as follows: The main tower is 187 ft. high, and the distance from the ground to where the span joins is 152 ft. It stands on concrete masonry. Its base is 52½ ft. by 43 ft. 3¼ in., and it is, at the top, 18 ft. by 12. The intermediate tower has the same kind of a foundation, is 10 ft. by 33 ft. and 8 in. at the base, and 10 ft. by 9 ft. 3 in. at the top. The end tower is similar to the others, and is, at the base, 27 ft. by 8 ft. 3 in. The intermediate tower is 130 ft. high and the end tower 106 ft. The chute span stretches across these towers, a distance of 210 ft., and has a fall toward the breaker of 4½ in. to the foot. Through the span will run the chute, which will be 4 ft. wide and 4 ft. deep. On each side of it will be a walk about 2 ft. wide. The towers and chute are all of steel. When in operation the carriage will be hoisted to where the chute joins the big steel tower. It will be self-dumping. The coal will gravitate smoothly to the head of the breaker, thus dispensing with mules, traction ropes and cars. The two smaller towers are completed and the main one almost finished. The span is about done and work has been commenced on the chute proper. The work is being done by the Wrought Iron Bridge Company, of Canton, O. Everything will be ready for operation September 1st. The chute span will be covered with corrugated sheet iron, and the towers, span and covering will be painted. The breaker is 60 x 92 in dimensions, with a connection 24 x 28, and has a capacity of 1,500 tons per day. It is 104 ft. high at the head. All the machinery is now in place, including three sets of rolls, four screens, three shaker screens, three lines of elevators and five lines of conveyors. A Root blower will be put in, and the culm and rock will be thrown through a 10-in. pipe, a distance of 150 ft. from the breaker. The pipe will run from the south end, will be at an elevation of 70 ft. and will occupy a horizontal position. The tower, which will support it, is already in place. The main elevator will run up through the center of the breaker, a distance of 90 ft., and will carry all rough coal back to the ground into the smaller sizes, the second will take the culm and rock to the blower, and the third will hoist up pea and buckwheat coal to be run over the shaker screens. The conveyors carry slate and culm to the elevator to be hoisted. A Finch hoisting engine is also in place. The slope has been commenced and is

driven in 50 ft. It is south of the breaker about 1,000 ft. The workers have reached the rock. The headings have been commenced in the shaft. The coal found is of the finest quality and there are two good veins, one 15 ft. below the other. Eleven company houses are completed and four more are under way, the weighing scales are in position and covered, the main track for loading coal and a light track are graded and the rails are being laid, and the Ontario & Western branch for taking the coal, which is 3½ miles long, is completed.

Philadelphia & Reading Coal and Iron Company.—President Harris, of this company, has been advised that the report of the total destruction by fire of the breaker of the Hammond colliery, at Girardville, which appeared in the daily papers, was incorrect, and that only a part of a supply plane and a small engine-house were destroyed, the loss being trifling, and the operation of the colliery not being interfered with.

(From our Special Correspondent.)

Parrish Coal Company.—The new shaft which this company is sinking at Buttonwood, near Wilkes-Barre, has just passed through as handsome a vein of coal as there is in the Wyoming Valley. The vein is supposed to be what is known as the Hillman; it is 8½ ft. thick, and was cut by the shaft at a depth of 636 ft. from the surface. The Parrish Coal Company controls about 450 acres of this vein at its Buttonwood colliery, and it will immediately proceed to develop the same. The new breaker now in course of erection at this colliery, is expected to be completed by the end of the year.

Plymouth Coal Company.—On July 26th last a squeeze started in the Bennett workings of this company's Dodson colliery at Plymouth. This colliery is adjoined on its eastern and southern sides by the Lance colliery of the Lehigh & Wilkes-Barre Coal Company, and between these two collieries there has been left in the Bennett vein a barrier pillar varying in width from 60 to 125 ft. The Bennett vein is about 9 ft. thick. The Plymouth Coal Company have flushed the workings west and south of their shaft, full of culm, and had commenced to fill those to the east, when the squeeze began. The squeeze spread rapidly during the latter part of last week toward the east line of the Dodson colliery, and on July 30th last it crossed the barrier pillar to the Lance colliery. An investigation on July 31st disclosed the fact that the pillars in an area of four acres just north of the air shaft of the Lance colliery were chipping slightly, and on account of the great danger that would result if the squeeze extended any further, the Lance colliery was immediately closed down, and the entire mining operations at both the Dodson and Lance collieries will be suspended until the danger is past. On the Dodson property it is impossible to arrive at the exact extent of the squeeze, as it is very unsafe to travel any distance from the shaft. An explosion occurred in the Dodson colliery on Sunday night, by which eight men were burned, but not seriously. It is thought that the worst is about over, as the cracks on the surface show that the top rock has been broken. A close watch is being kept on the workings of both collieries, and everything is being done that is possible to protect them. This squeeze commenced in the Bennett vein, and has affected the workings in the overlying Cooper, Five-Foot, Stanton, Hillman and Lance veins.

Iron.

Valentine Iron Company.—A press dispatch from Bellefonte says that this company has closed down all its mines for an indefinite period. This action will throw over 300 men out of employment. The manager of the company said that they could find no market for their product, and owing to the tightness of the money market, the company could not afford to continue operations, and that the closing of their mines meant a monthly saving to the company of \$25,000.

Oil.

In September, 1892, there was organized under the laws of Pennsylvania the United States Pipe Line Company, whose business was to be the transportation of both crude and refined petroleum from the oil regions to the seaboard, to the great lakes, and to other points for distribution. The principal stockholders are oil producers represented mainly by an organization known as the Producers' Oil Company, Limited, composed of independent refiners in Western Pennsylvania, and certain refiners at the seaboard. The company in all its parts is independent of the Standard Oil Trust. The officers are: Lewis Emery, of Bradford, Pa., president; Hugh King, of the Columbia Oil Company, New York, vice-president; John Fertig, of Titusville, Pa., treasurer, and E. C. Jones, of Bradford, secretary. This company has recently completed and put into practical operation two trunk lines of pipe, one for crude and the other for refined oil, from the oil country as far east as Wilkes-Barre. At present the oils are shipped from Wilkes-Barre by rail in car tanks over the New Jersey Central Railroad to New York. The two lines of pipe run side by side from Bradford to Wilkes-Barre, a distance of 180 miles, the line for crude oil having its present beginning at Bradford. The line for refined oil starts from Oil City and passes on its way to Bradford through Titusville and Warren, a distance of 70 miles, so that the length of the refined line from Oil City to

Wilkes-Barre is 250 miles. From Bradford the lines run directly east, a few miles south of the boundary between New York and Pennsylvania, to Athens, Pa., where they turn and run south-easterly down the valley of the Susquehanna River to Wilkes-Barre. The refined line receives its supply from the products of the independent refiners at Oil City and vicinity, and at Titusville, Warren and Bradford. The crude line will be extended from Bradford southwest through the oil-fields to Pittsburg and beyond, and both lines will soon be extended from Wilkes-Barre to Philadelphia, with branches to the seaboard at New York. The trunk line for refined oil is the first of the kind ever constructed. Crude oil has been forced through pipes a long distance for many years, but the United States Pipe Line Company is the first to demonstrate that refined oil also can be put through iron pipes a great distance without injury to its quality.

#### Northampton County—Slate.

The slate shipments from the Pen Argyll quarries over the Bangor & Portland Railway, during the month of June, as stated in the Pen Argyll "Index," were 185 carloads roofing slate, 1 car and 73 crates mill stock.

**Diamond Slate Company.**—A new 80-H. P. tubular boiler was erected at this company's quarry, and the foundations for a double drum hoisting engine were completed last week, says the Slatington "News." This quarry will soon be fully equipped and in active working order.

**Seranton & New Tripoli Slate Company.**—This company has sold to Wm. Clark, Benj. F. Truax and Franklin S. Gibson, of Philadelphia, for \$3,000, a tract of four acres and 120 perches of slate land in Lynn Township.

#### SOUTH DAKOTA.

##### Lawrence County.

**Deadwood & Delaware Smelting Company.**—This company has advertised that it will buy all gold and silver ores offered.

**Goodenough Mining Company.**—This company has started the Noble Grand 25-stamp mill to make a test run on its ore. There are several hundred tons of ore on the dump, assaying from \$4 to \$5 gold per ton.

**Hawkeye.**—This company's 40-stamp mill is now running exclusively on ore from the new vertical vein opened up in the workings a short time ago. It is proving of high grade. A 24-hour run gave 42 oz. gold. Later advices say that the company has had some trouble with its men. A large number of men have quit work, and during the past week but 10 stamps were run.

**King Solomon Mine.**—This claim has proved to be valuable, says the Deadwood "Daily Pioneer." Recently, in working at a new point, a large vein of mineralized lime shale was encountered, which assays on an average \$7. The work already done on this claim shows that the ore vein runs its entire length, and that it is a blanket formation 6 ft. thick. The vein is covered at one end by a porphyry dike overflow, and the vein is reached anywhere from the dike, at the greatest depth of 20 ft., and at the shallowest depth, 6 ft. A vertical vein about 3 ft. wide at the apex, of a conglomerate of slate, quartz and brown iron, cuts through the blanket, leaving its extension over the Queen Victoria lode adjoining. The conglomerate carries a large per cent. of free-milling ore.

**Lead City Gold and Silver Mining Company.**—This company will resume work in a few days on its property, consisting of five claims, in Ruby Basin, a short distance south of the Mikado and Carthage mines, now owned by the Deadwood & Delaware Smelter Company. In the Lead City group numerous stringers of low-grade ore have been found in the various workings, and the company will now develop some of them by drifting and sinking, says the Black Hills "Times." Prospecting and development work to the amount of \$6,000 has already been performed on the group, all of which is mainly surface workings.

**Mountain Monarch Mine.**—Work has been resumed on the above property by the owners. It was originally known as the Astarito mine, and is situated on Upper City Creek. The ore is very satisfactory. The vein, or rather, ore body, is identical with that now being worked on the Home mine. The main tunnel is in about 200 ft., the greater part of which is in ore. The face is now some distance beyond the old workings, with as yet no indications of the end or termination of the vein.

**Omega Mine.**—A one-half interest in this mine has been sold to Mr. G. Smith, of New York, says the "Rapid City Journal," and operations will begin at an early day. Some five or six years ago a mill of 10 stamps was erected on this property, and after running a short time, the mill was shut down and a clean-up made. A lawsuit followed which still further involved the property.

##### Pennington County.

**Keystone Mining Company.**—A strike of good ore has been made in the shaft at a depth of 520 ft. below the surface and 110 ft. below water level. The vein opened is from 20 to 24 in. in width and exceeds in richness any strike heretofore made on this property. It is now the intention of the com-

pany to sink the shaft to a depth of at least 200 ft. below water level before cross-cutting.

#### TENNESSEE.

##### Anderson County.

Owing to the miners' strike, every mine at Coal Creek and Briceville is closed except that of the Knoxville Iron Company, which employs convicts.

##### Maury County.

**Lawrence Iron Company.**—At the annual meeting of the stockholders recently held at Columbia, the following were elected directors: Col. Henry McCormick and H. B. McCormick, Harrisburg, Pa.; J. Hill Eakin and James M. Hamilton, Nashville; W. J. Whitthorne and G. T. Hughes, Columbia. Col. Henry McCormick was made president, and J. Hill Eakin, secretary.

#### UTAH.

##### Coal and Coke.

(Reported for the "Engineering and Mining Journal.")

There are two producing coalfields in Utah: Those in Emery County, operated by the Pleasant Valley Coal Company and the Union Pacific Coal Company, and those in the vicinity of Coalville, Summit County.

The Pleasant Valley Coal Company's output for 1892 was 250,000 tons, practically the same as in 1891, when it was 248,000 tons.

The Union Pacific Coal Company's shipments from Pleasant Valley were 58,684 tons for 1892, as against 71,287 tons in 1891.

The Pleasant Valley Coal Company is the sole manufacturer of coke in the Territory, for which the smelting works, near Salt Lake City afford a convenient market. The output for 1892 was 7,500 tons, as against 8,040 in 1891.

##### Henry Mountain District.

**Henriette Mining and Milling Company.**—J. J. Parks, superintendent of this company, reports that work is progressing favorably on all the claims belonging to the company. The Parks lode has a 15-ft. shaft in free milling ore, running from \$5 to \$15 per ton. The Ingot, Dileval and B. & O. show about 12 in. of pay-ore, the latter having a 35-ft. drift. Several other claims, including the Sphinx, Ripper, Walrus, Wary, Calumet, Bobtail and New York Central, all the property of the Henriette company, are showing well. The ore ranges from \$3 to \$20 and the veins 8 to 10 in. This company has about 475 drifts, cuts and shafts, all of them in a prospective development.

**William Maskham,** a Salt Lake prospector, claims to have discovered the mother lode of the Henry Mountain placers. He reports this a blanket formation, 5 ft. thick and assaying an average of \$15 per ton for the whole vein. This vein, it is said, is traceable for several miles. Several old miners have visited the new fields and confirm the report. T. H. Morris, the district recorder, is represented to have confirmed the statement. New outfits are preparing to visit the district and much development work is expected before winter.

##### Juab County.

**Bullion-Beck Company.**—The failure of this company to sell the ore extracted has caused much financial trouble in Eureka. It is said that the June time checks have not been cashed, and many of the scalpers and merchants are feeling the effect of the depression.

**Mammoth.**—Two carloads of ore running \$3 in gold and several ounces of silver were taken from the Mammoth and sold to the Argo smelter a few days ago. The gold reserves of this mine make it prosperous notwithstanding the price of silver.

**Mercur Mining Company.**—This company has declared its first dividend of \$25,000, to be paid September 1st.

**Roadside and Rattler—Nom de Plume.**—The contest between the owners of these claims, in the Tintic mining district was decided July 29th by the register and receiver of the Land Office, at Salt Lake City. The contest was on an application for a patent for the Roadside and Rattler claims, by J. A. Beaman and others, including ground covered by the Nom de Plume claim, owned by Mrs. A. A. Cole. In the decision it is found that the charge that assessment work was not done on the Nom de Plume for 1885 and 1886 is without foundation, and that the bulk of the testimony entirely disproves the charges of the owners of the Roadside and Rattler. Also, that while the application for the Nom de Plume was irregular at the time it was made, the irregularities were not such as to warrant cancellation. That the application and subsequent entry of the Roadside and Rattler were based on locations improperly and illegally made, and should be canceled, and that the order canceling the Nom de Plume application should be revoked and said application reinstated and the applicant, A. A. Cole, should be, upon furnishing the evidence required of all final claimants in mineral cases, permitted to make final entry for the Nom de Plume. Thirty days' time is allowed in which to take an appeal.

##### Piute County.

**Gold Belt Mining and Milling Company.**—The annual meeting of the stockholders of this company was held in Salt Lake City, August 7th, and the following officers and directors were elected to serve for the ensuing year: Wm. F. Colton, presi-

dent; James A. Chute, vice-president; E. L. Carpenter, secretary and treasurer; C. A. Ames, W. G. Sharp, J. J. Stewart and Willis M. Ames.

##### Summit County.

**Ontario Mining Company.**—On August 9th a force of men was put at work in No. 2 shaft drifting to connect with the new drain tunnel; the work will be pushed from both ends until the forces meet, unless water in sufficient quantities is encountered in the drift from the shaft to stop the work from that direction. The work on the leaching plant continues.

#### VERMONT.

**Vermont Slate Trust.**—A dispatch from Rutland says that the Vermont Slate Trust has decided that hereafter the mills shall work only four days a week, and that wages will be reduced 10% on September 1st. This action affects all the slate quarries in that section.

#### VIRGINIA.

##### Franklin County.

**Chestnut Mountain.**—A new mica mine is being opened up by Thomas S. Kennerly and others. Sheets of mica 8x10 in., are now being taken out from the outcrops.

#### WASHINGTON.

##### King County.

**Oregon Improvement Company.**—This company, says the Seattle "Telegram," has begun raising coal from the new mine, No. 7, 1½ miles north and west of the main shaft, at Franklin, and the slope will extend in about 2,000 ft. There is a peculiarity in the coal deposit there in that, underlying the surface between the mouth of the new mine and that of the Franklin mine, is a basin of coal, the veins all apparently sloping toward a common center. At Franklin the veins dip in a generally northwest direction, and of course downward, and at the new mine the dip is toward the southeast, while following around the course of the vein the dip changes until the resemblance is like to the sides of a huge basin, indicating that a very extraordinary body of coal exists. Already the company has run a level in for a distance of a mile throughout the apparently huge basin of coal, and another for a half mile, both to the north of Franklin, while this latter level extends equally that distance to the south. The company has in view an elaborate plan of development for this coal deposit. For the time being the coal from the new mine is to be drawn out through the new mouth; and by a temporary track, now in use, is carried around to the main line of the Columbia & Puget Sound road, a short distance out of Franklin. Their ultimate object is to continue the new slope to a depth of 2,000 ft. or so, and then by running out levels top the present level, which is already in about a mile from the Franklin slope. When this communication is fully opened up all the coal will be run out to the surface at the Franklin slope. To facilitate the working the company is now engaged in sinking an airshaft, which will have a depth of about 1,600 ft. This shaft taps the level about midway between the Franklin slope and the new mine.

#### WISCONSIN.

##### Iron—Gogebie Range.

Shipments of iron ore from Ashland for the season to date are 692,063 tons, against 1,133,000 tons to same time last year. Only eight mines are now shipping off the range to Ashland, where 19 started the season, and 21 were at work a year ago. The eight now shipping are the Norrie, East Norrie, Pabst, Newport, Carey's, Aurora, Colby and Tilden.

#### FOREIGN MINING NEWS.

##### BRITISH COLUMBIA.

**Kaslo District.**—The latest advices from this district state that development work on the Noonday mine shows up well. A half interest in the Oshkosh mine near Watson has been sold for \$7,000. Forest fires are raging over in the St. Mary's country, and fears are entertained for the safety of prospectors. Several narrow escapes have already been reported. The Grady group, on Four-Mile Creek, which was sold a short time ago to J. F. McNaught, of Seattle, is one of the most interesting properties in the Sloean country. It consists of four claims. The Alpha is the only one on which any development work has been done. The ledge on this claim is exposed in five places, showing the lead continuous from one end of the claim to the other.

Ore shipments to Kaslo are just beginning again. The Washington mine has let a contract to ship 1,000 tons to Kaslo and work will begin on moving this ore in a few days. The Bluebird, which has been shut down because its dumps are full of ore, will ship about 300 tons, and as soon as its dumps are cleared will resume work and get about 1,000 tons more ready to move on the snow this winter. Garrison & Marks have some to ship from the Sunset on Jackson Creek, and the Wellington mine is delivering ore here daily on its way to Swansea, Wales.

**Silver King Group.**—The sale of this group near Nelson, for £230,000, to an English company, with Sir Joseph Truch for president, is to be followed by the immediate beginning of work on a large scale, according to the Spokane "Review." The Silver King group is the pioneer mining location of Nelson



and its destiny has been involved with Nelson's ever since 1887, when it was located. Hall Brothers of Colville, the original owners, have been working on it ever since. The ore is high grade silver-copper. Four prospects are included in the sale—the Silver King, which has been developed; the Bonanza, which is said to hold out prospects of being even richer than the Silver King and adjoins the latter; the American Flag and the Kohinoor. The Victoria, a gold claim, the fifth of the original Silver King group, is not included in the sale, being retained by the Hall Brothers.

**COLOMBIA.**

A report has just been completed by C. F. Z. Carracristi, civil engineer, of Washington, D.C., which is about to be issued by the Bureau of American Republics. In his report he estimates the coal deposits adjacent to the Gulf of Uraba in the departments of Cauca and Bolivar at 8,000 sq. are miles, and those of Magdalena at 2,000 square miles. The coal is anthracite, bituminous and cannel, and the veins are from 3 to 20 ft. thick. It is the property of the Colombian Government.

**INDIA.**

Mysore Gold Mining Company, Limited.—At an extraordinary meeting of this company, held August 31, it was decided to increase the capital from £225,000 to £250,000 by the issue of 25,000 ordinary shares. It was further decided that the shares be issued at a premium of £2 each. The history of this company, as far as its capital is concerned, is very interesting. The company was registered in 1880 with a capital of £135,000. In 1886 some 15,000 additional shares were issued at a premium of £3. Again in 1888 some 25,000 shares were issued at a premium of £1, which was followed by a like increase in 1890 at a premium of £3. In 1891 the company again issued 25,000 shares to the Gold Fields of Mysore, Limited, for the purchase of land. On a par value of £1 per share the company has paid the following dividends: Four shillings in 1886; 2s. in 1887; 4s. in 1888; 15s. in 1889; 15s. in 1890; 13s. in 1891, and 6s. in 1892, making a total of 295% in seven years, an average of 42% a year.

**MEXICO.**  
Chihuahua.

Palmarejo Mining Co.—The telegraph report of results for July is as follows: Crushed 1,500 tons, producing \$43,500; expenses, \$35,000. 45 stamps working 22 days. Stoppage caused by slight break in conduit owing to heavy storms. Five stamps were not working, cam shaft being broken. Now running 60 stamps, and are crushing at the rate of 75 tons a day.

**NEW GUINEA.**

A party of California miners have left Cooktown, Australia, with hydraulic machinery for St. Aignan's Island, which is off the New Guinea coast. It is reported that the find is a good one and that operations will be conducted on a large scale.

**TASMANIA.**

The metals and ores exported from Tasmania during June were as follows: Gold: Hobart, 873 oz.; Launceston, 1,537½ oz.; sub-ports, N. W. Coast, 14 oz.; value, £9,311. Gold pyrites: Launceston, 56½ tons; value, £349. Tin: Hobart, ½ ton; Launceston, 24 tons; value, £20,600. Silver ore: Hobart, 827½ tons; Strahan, 101½ tons; value, £10,400. Copper pyrites: Strahan, 13½ tons; value, £3,945. Mineral sand: Launceston, 34 tons; value, £177. Total value, £44,921. The value of the mineral exports for the first six months of 1893 was £282,321.

**VICTORIA.**

The mineral output of the central division of Ballarat for the quarter ended June 30th were as follows: The total output of gold was 23,279 oz. as follows: Quartz, 21,836 oz. 18 dwt. 19 gr.; alluvial, 638 oz. 17 dwt.; pyrites, 803 oz. 19 dwt. 16 gr. The quartz crushed amounted to nearly 56,000 tons. For the previous quarter, ended March, the grand total of gold was 21,545 oz. 8 dwt. 23 gr., the quartz put through being 50,946 tons. The gold for the quarter ended June shows an increase over the previous quarter of 1,734 oz. 6 dwt. 12 gr.

During the quarter dividends totaling £17,225 were declared as follows: Star of the East, £12,000, previous quarter £14,000; Last Chance, £2,000, previous quarter £1,000; Suleiman Pasha, £600, previous quarter £600; North Woah Hawp, £825, previous quarter £550; Sir Henry Loch, £1,200, previous quarter £3,600; Eastern Star Freehold, £600, previous quarter £600.

The total dividends paid in the division during the quarter ended March was £22,744. It should be added, however, that in this quarter the Black Hill Company paid £744 in dividends, and of Hope, £150 (final), and North Prince Regent, £1,100.

**MINING STOCKS.**

[For complete quotations of shares listed in New York, Boston, San Francisco, Aspen, Colo.; Baltimore, Pittsburg, Deadwood, S. Dak.; St. Louis, Helena, Mont.; London and Paris, see pages 201, 205 and 206.]

NEW YORK, Friday Evening, August 18. The dullness in the mining stock market has grown so great that many people report that such a thing as a "mining stock market" exists. There really is no market worthy of reporting. During the past week the only sales reported were 1,200 shares of Comstock Tunnel stock at 6@7c., and a \$1,000 bond at 6c. on the dollar. It will be seen that this is equivalent to no business at all. After all, why

should there be any activity at all in mining stocks? Silver mines are at a discount, and money is so tight that a gold bonanza might go a-begging without finding any purchasers. The general financial conditions will have to change radically and altogether for the better before confidence in securities of any kind is restored.

The Comstock pay-roll for the month of July amounted to \$78,252, which is \$18,508 less than was paid out for the month of June.

The following mining companies report having had balances on hand August 1st, 1893, with the July expenses at the mines unpaid: Andes, \$10,128; Alpha Consolidated, \$6,458; Alta, \$14,037; Best & Belcher, \$12,567; Bullion, \$17,517; Bodie, \$6,425; Caledonia, \$8,607; Challenge Consolidated, \$1,420; Consolidated New York, \$3,607; Crown Point, \$2,49; Consolidated California & Virginia, \$45,278 in cash here and \$16,828 in the hands of the superintendent at Virginia City; Consolidated Imperial, \$1,717; Crocker, \$512; Exchequer, \$960; Gould & Curry \$11,345; Hale & Norcross, \$3,446; Independence, \$41; Mexican, \$2,515; Mono, \$5,475; Navajo, \$238; Nevada Queen, \$30; Ophir, \$1,595; Peer, \$126; Peerless, \$1,021; Savage, \$11,071; Segregated Belcher, \$17; Silver Hill, \$243; Standard Consolidated, \$26,771; Sierra Nevada, \$6,691; Scorpion, \$1,361; Union Consolidated, \$10,200; Utah Consolidated, \$507; Weldon, \$280.

The following mining companies report having had an indebtedness August 1st, 1893, with the July expenses unpaid: Belle Isle, \$3,663; Bulwer Con., \$3,530; Belcher, \$11,692; Chollar, \$2,061; Confidence, \$2,370; Commonwealth, \$2,946; Del Monte, \$24,997; Grand Prize, \$719; Kentuck Consolidated, \$8,706; North Belle Isle, \$8,175; North Commonwealth, \$453; Occidental Consolidated, \$3,320; Overman, \$886; Potosi, \$34,077, with bullion to be received and an assessment being collected; Silver King, \$7,840.

The Horn Silver Mining Company, of Utah, has ordered a concentrating plant for handling its low-grade ore, of which there are very large quantities. The concentrates will be very rich in lead and the company should be able to dispose of them without difficulty, independent of the price of silver bullion.

**Boston.** August 17.

(From our Special Correspondent.)

There is but little doing in copper stocks at the present time, and until the conditions are more favorable than they appear for the moment we look for a dull and lifeless market. There is a limited demand for the three or four prominent dividend-paying stocks, but the speculative element is entirely wanting. Boston & Montana has been moderately dealt in, and shows a slight advance in prices over last week's closing. The stock opened at \$17½@18, and sold up to \$18½, closing quite firm. Butte & Boston sold at \$5¼@5½, a small lot bringing \$6.

The July product of the Boston & Montana is reported as 2,350,000 lbs. of fine copper, and the Butte & Boston for same month at 814 tons fine copper, and 63,625 oz. silver. Calumet & Hecla holds steady at \$25½@260; sales in small lots for investment. The annual meeting of the company was held yesterday, and the annual report, which has been published, shows a very satisfactory outlook for the future of the mine.

Tamarack declined from \$130 to \$125, without any special reason, except an absence of buying orders for the moment.

Quincy advanced from \$95 to \$100 on small sales. Osceola steady at \$22.50@23, with very little doing in it.

Atlantic declined from \$8 to \$7½ on sales of 100 shares only. Small lots of Franklin at \$9 to \$9½, and Kearsarge at \$5½@5½.

Centennial sold at \$2, and Tamarack, Jr., at \$13. 3 P. M.—The market was slightly firmer this afternoon, and Boston & Montana sold up to \$19, closing sale \$18½. Tamarack advanced to \$127, a gain of \$2. Others unchanged.

**San Francisco.**

SAN FRANCISCO, August 18 (By Telegraph).—The opening quotations to-day are as follows: Best & Belcher, 50c.; Bodie, 10c.; Belle Isle, 10c.; Bulwer, 10c.; Chollar, 30c.; Consolidated California & Virginia, \$1.20; Gould & Curry, 25c.; Hale & Norcross, 50c.; Mexican, 50c.; Mono, 10c.; Ophir, 55c.; Savage, 30c.; Sierra Nevada, 25c.; Union Consolidated, 30c.; Yellow Jacket, 30c.

**London.** Aug. 10.

(From our Special Correspondent.)

Last week the appearances pointed toward a better feeling and steadier tone in the mining stock market; this expectation has been fully borne out by subsequent happenings. It must be understood, however, that while the tone of the market is improving it is not yet good. The mining market has for the time being got over its period of wreckage, but the business done is very small. On Thursday and Friday, August 3d and 4th, there was some fairly good business on hand, but the Monday following was the great public holiday and very few brokers and dealers have been seen in town since. The weather is abnormally warm at present, and causes suspension of active business.

There are practically no rises and falls to record in American mining stocks. Elkhorns, Jay Hawks and De Lamars rose 6d. each, but fell again to their former level. Elkhorns are offered at 8s. 9d. and find few buyers. Golden Feathers and Golden Gates have been showing off their usual summer fire-

works, going up and down alternately every day. Springdale gold shares are quoted on the official lists 6d. up one day and 6d. down the next with amazing regularity. Stocks of low value like Palma rejos and Holcombs have been dealt in, but at lower prices than a week ago.

The death of Mr. Arthur Forbes, a well-known outside broker, occurred very suddenly last week. He was a large dealer in mining shares, more particularly Australian, but his death did not have any effect on the market.

The New Calaveras Gold Mining Company, Limited, was registered on July 12th, with a capital of £25,000 in 5s. shares, to acquire the Calaveras Consolidated group of gold mining claims, near Angels' Camp, Calaveras County, California. These mines have been idle for over a year, but are now at work again in the hands of this new English company. The leading shareholder in the company is Mr. Seton-Kerr, a member of the British Parliament.

The Newfoundland Mineral Syndicate, Limited, was registered July 21st, with a capital of £5,000 in £1 shares, to acquire a license to search for minerals belonging to R. H. Jones; also to pay expenses incurred by Mr. Jones in searching for asbestos and other minerals, and to prospect for asbestos and metals in Newfoundland. Another exploration company lately registered is the Nickel and General Trading Syndicate, Limited, with a capital of £6,000 in £1 shares to purchase metalliferous lands in New Caledonia.

**DIVIDENDS.**

Mercur Gold Mining and Milling Company, dividend No. 1, aggregating \$25,000, payable September 1st, at the office of the company in Salt Lake City, Utah. Transfer books close August 26th, reopen September 2d.

American Coal Company, semi-annual dividend of three per cent., payable September 11th, at the office of the company, in New York City. Transfer books close August 31st and reopen September 12th.

**MEETINGS.**

Nabob Mining Company, at the office of the company, room 23, West Second South street, Salt Lake City, Utah, September 9th, at 2 P. M.

**METAL MARKET.**

NEW YORK, Friday Evening, Aug. 18, 1893.  
Prices of Silver per Ounce Troy.

Aug.	St. Ex.	London Pence.	N. Y. Cls.	Value of sil. in sl.	Aug.	St. Ex.	London Pence.	N. Y. Cls.	Value of sil. in sl.
12	4'85½	34½	74	0'573	16	4'85¾	33½	72½	0'561
14	4'86½	33¾	74	0'561	17	4'86	33¾	72½	0'561
15	4'85½	33½	72½	0'561	18	4'85¾	33¾	72	0'565

The feature of the past week in the silver market has been the concessions made by the India council in allotting bills on Wednesday, 16th, at 1s. 3¼d., a decline of ¾d. It is a virtual confession of failure to peg the price of the rupee, and while it does not mean the opening of India mints to free coinage, it is a step in that direction.

Spot silver continues very scarce and London has failed to buy in our market on recent bids.

Gold and Silver Exports and Imports at New York, Week Ending August 12th, 1893, and for Years from January 1st, 1893, 1892.

Week	Gold.		Silver.		Excess of Exports.
	Exports.	Imports.	Exports.	Imports.	
1893...	\$6,000	\$13,954,911	\$513,178	\$77,726	\$13,512,459*
1892...	69,225,427	26,882,420	20,125,593	1,553,010	60,915,590
1892...	51,809,862	6,588,600	13,359,466	1,330,683	57,450,045

\* Excess of imports.

Of the gold, \$8,217,357 was in United States coin, \$2,628,302 in foreign coin and \$3,109,252 in bars. Of the total, \$7,996,079 came from London, \$2,491,446 from Bremen, \$2,133,344 from Hamburg, and the rest from Havre, Havana and South America.

During the five days ending August 18th, the exports and imports so far ascertained have been as follows: Exports, gold, none; silver, \$178,000. Imports, gold, \$7,003,918; silver, \$4,246.

**NOTES OF THE WEEK.**

The most interesting topic of the week has been the proceedings of Congress. The delay in taking a vote, and the rumors that a majority of the Senate is opposed to an unconditional repeal of the Sherman bill, are provoking a great deal of adverse comment, but all things considered it is probable that greater haste could not be made. On Saturday, August 12th, the silver and anti-silver men came to an agreement concerning discussion on the repeal bill introduced by Mr. Wilson and debate began on Monday. The text of the agreement is as follows: "It is ordered by the House that House bill No. 1 shall be taken up for immediate consideration and considered for 14 days. During such consideration, night sessions may be held, for debate only, at the request of either side. The daily sessions to commence at 11 A. M., and continue until 5 P. M. Eleven days of the debate on the bill to be given to general debate under the rules of the last House regulating general debate, the time to be equally divided between the two sides, as the Speaker may direct.

The last three days of debate may be devoted to the consideration of the bill and the amendments, as herein provided, under the usual five-minute rule of the House as in Committee of the Whole House. General leave to print is hereby granted. The vote shall be taken first on an amendment providing for the coinage of silver at the present ratio. If that fails, then a separate vote to be had on a similar amendment proposing a ratio of 17 to 1; if that fails, one proposing a ratio of 18 to 1; if that fails, one proposing a ratio of 19 to 1; if that fails, one proposing a ratio of 20 to 1. If the above amendments fail, it shall be in order to offer an amendment reviving the act of February 28th, 1878, restoring the standard silver dollar, commonly known as the Bland-Albion act. The vote then to be taken on the engrossment and third reading of the bill as amended or on the bill itself, if all amendments shall have been voted down, and on the final passage of the bill, without other intervening motion.

Since the debate began the House has been devoid of features of particular note. Comparatively few representatives have spoken in favor of the repeal, it having been deemed best to give the larger part of the time to the advocates of silver.

It is stated on good authority that the House will pass an unconditional repeal bill by a large majority on August 28th. The bill will then go to the Senate.

In the Senate affairs have not progressed so smoothly, and it is asserted that there is a majority against unconditional repeal. On August 14th Senator Vorhees introduced the following bill, which will no doubt be promptly enacted, for there is little or no opposition to it:

*Be it enacted, etc.* That upon any deposit already or hereafter made of any United States bonds bearing interest in the manner required by law, any national banking association which has made or shall hereafter make the same, shall be entitled to receive from the Controller of the Currency circulating notes of different denominations in blank, registered and countersigned as provided by law, not exceeding, in the whole amount in circulating notes thus issued, the par value of the bonds deposited, provided that at no time shall the total amount of such notes issued to any such association exceed the amount at such time actually paid in as its capital stock.

Accompanying the bill was a letter from Secretary Carlisle, in which he said: The enactment of such a law as proposed would enable the national banks to issue and put in circulation at once, on bonds already deposited with the Treasurer of the United States, about \$19,000,000 in currency, in addition to the amount now authorized; and this, in my opinion, would afford a very considerable measure of relief to the country under existing circumstances. I therefore recommend the passage of the bill.

Following this Senator Vest introduced a coinage bill by request, saying that it met his partial approval. It provides that after setting aside in coin and bullion as a reserve such amount to the silver bullion purchased under the act of July, 1890, as shall equal at the coinage value the aggregate sum of the treasury notes authorized by that act all the remainder of such bullion shall be deemed available for the issue of silver certificates; such remainder or surplus bullion shall be coined into standard silver dollars, and such dollars shall be used for the redemption of silver certificates; as now required by law; provided that this shall not be deemed to alter or amend any provision of the act of July, 1890.

The second section provides that national banking associations shall be entitled to receive circulating notes to the value, at par, of United States bonds on deposit, not, however, to exceed the amount of capital stock actually paid in.

On Tuesday, Senator Vorhees' bill was reported favorably by the Finance Committee and he urged its prompt passage. Senator Coekrell, of Missouri, objecting, the bill was laid over. Other bills providing relief for the financial depression were introduced as follows:

By Senator McPherson (N. J.), a bill repealing the purchasing clause of the Sherman law; by Senator Gordon (Ga.) one suspending the law taxing State bank circulation for six months, and by Senator Butler (S. C.) one instructing the Finance Committee to report a bill repealing the Sherman act and the act taxing the State bank circulation and providing for the free coinage of silver, and that a vote on this bill be taken in the Senate on August 22d. These bills were referred to the Finance Committee.

Senator Hunton has prepared a bill providing that the government shall guarantee the depositors in national banks an annual tax of 0.25% on deposits, being provided as a sinking fund to indemnify the United States against losses on such guaranty. This bill is unqualifiedly bad and it is to be hoped that it will receive no support.

On August 16th, two amendments were offered to Senator Vorhees' bill, both designed to kill it: One by Mr. Allen, the Populist from Nebraska, providing that interest shall cease on bonds upon which increased circulation is based; the other amendment, offered by Mr. Coekrell, requires the Secretary of the Treasury to pay, to the holders of 2% bonds who may present them for redemption, their face value, with accrued interest, in United States legal tender notes.

Following these, Senator McPherson, of New Jersey, introduced a bill unconditionally repealing the purchasing clause of the Sherman bill. Its wording is similar to Mr. Wilson's bill in the House.

On August 17th, Senator McPherson's bill was reported upon favorably by the Finance Committee, Senator Vorhees casting the deciding vote.

The full text of the bill is as follows, omitting the enacting clause: That so much of the Act approved July 14th, 1890, entitled "An Act directing the purchase of silver bullion and issue of Treasury notes thereon, and for other purposes," as directs the Secretary of the Treasury to purchase from time to time silver bullion to the aggregate amount of 4,500,000 oz., or so much thereof as may be offered in each month, at the market price thereof, not exceeding \$1 for 371.25 grains of pure silver, and to issue in payment for such purchases Treasury notes of the United States, be and the same is hereby repealed.

And it is hereby declared to be the policy of the United States to continue the use of both gold and silver as standard money, and to coin both gold and silver into money of equal intrinsic and exchangeable value, such equality to be secured through international agreement or by such safeguards of legislation as will insure the maintenance of the parity in value of the coins of the two metals and the equal power of every dollar at all times in the markets and in the payment of debts. And it is hereby further declared that the efforts of the Government should be steadily directed to the establishment of such a safe system of bimetallicism as will maintain at all times the equal power of every dollar coined or issued by the United States in the markets and in the payment of debts.

Mr. W. H. Grenfell, British M. P., and a former director of the Bank of England, has resigned his seat, not being able to support the Home Rule bill in the shape it has now assumed, and because he believes that the attitude of the present government with regard to this question is ruinous to the industries and trade of the country, and that it has been the chief cause of the calamities which have overwhelmed British interests in silver-using communities. After discouraging the efforts made by the representatives of the nations assembled at the Brussels Conference to find some international solution of the difficulty, and after opposing in the House of Commons a motion in favor of the reassembling of that conference, the government has further aggravated the crisis by closing the Indian mints to the free coinage of silver. In Mr. Grenfell's further judgment any good that the Irish policy of the present government may do to such a proportion of the 5,000,000 inhabitants of Ireland as is favorable to it, is far outweighed by the injustice it has done to the 250,000,000 of his fellow subjects in India by suddenly closing the mints to the coinage of silver in their possession. The continuance in power of a government which is not only barring the way to international monetary reform, but is actually decreasing the money volume of the world, is to his mind such a misfortune to the industrial, commercial and agricultural interest of the country that he cannot desire to see it prolonged.

In the House of Commons, on August 14th, Mr. Robert L. Everett (Liberal) asked that the House, in view of the fact that a bill for the free coinage of silver at the ratio of 24 to 1 had been introduced in the Senate of the United States, declare that the time was opportune for Great Britain and the United States to establish a durable par basis for gold and silver. Mr. Gladstone replied that the bill referred to by Mr. Everett in no way represented the views of the United States Government. Its introduction, therefore, could not form a suitable opportunity for communication with the American government, apart from the question whether the passage of such a bill by the Congress of the United States would justify the opening of communications.

The recent proposition of the Spanish Government to compel the payment of all customs duties in gold has evoked so many protests from commercial circles in every part of the country that the government has now disclaimed any design to require such payment.

#### Domestic and Foreign Coins.

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

	Bid.	Asked.
Mexican dollars.....	\$59	\$60
Peruvian soles and Chilean pesos.....	52½	54
Victoria sovereigns.....	4.87	4.88
Twenty francs.....	3.26	3.29
Twenty marks.....	1.74	1.78
Spanish 25 pesetas.....	4.75	4.80

The United States Assay Office at New York reports the total receipts of silver for the week to be 150,000 oz.

Although the receipts of gold from abroad have been very heavy, there is still a premium being paid here for currency, and matters continue unsettled, owing to the dilatoriness of Congress. Failures are reported from all sides, suspensions likewise; factories continue to shut down or reduce working hours, and so on.

**Copper.**—Here there is practically no market at all, one might say, as very little is doing. Some lake copper has been sold at 9½¢, at which there are further sellers, while at 9¢ there would be buyers for large quantities. Electrolytic and casting copper are nominally 9½¢.

From Montana it is reported that some of the large producers have materially curtailed their output.

The foreign market has been an excellent customer for America, taking very large quantities of all descriptions, the electrolytic copper being sold, as we are informed, at particularly low prices. The prices for Chili bars have given way somewhat under the heavy pressure caused by the sales of American copper and close at £41 2s. 6d. @ £41 5s. for spot and at 10s. more for three months prompt. The statistics show a decrease in visible supplies of copper amounting to 900 tons. Refined and manufactured we quote as follows: English tough, £45 @ £45 10s.; best selected, £46 @ £46 10s.; strong sheets, £52 @ £53; India sheets, £50 10s. @ £51; yellow metal sheets, 4½¢.

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

	July.	Seven mos.
Reporting mines in the United States..	11,019	73,519
Pyrites and outside sources, U. S.	5,042	7,520
Reporting foreign mines.....	6,195	47,118

Total, long tons.....	18,185	128,187
Exports from U. S. (fine copper).....	7,181	27,542

The exports continue to increase; those for the month of July were 26% of the total for the seven months.

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

Copper:				
Liverpool—Campania...	322 pigs	121,176 lbs.	\$11,000	
" Tauric.....	18 casks	22,500 "	2,400	
" ".....	3,411 ingots	53,250 "	6,900	
Hamburg—Gillert.....	40 casks	50,000 "	5,195	
" ".....	26 pkgs.	39,230 "	3,117	
" Solingen.....	51 casks	67,500 "	7,000	
" ".....	433 plates	22,410 "	2,200	
" ".....	76 pigs	11,205 "	1,100	
" Augusta Victoria	12 bars bul.	780 "	1,700	
Hayre—La Champagne..	69 casks	75,000 "	8,300	
" ".....	1,186 pigs	175,081 "	17,000	
" Victoria.....	99 bbls.	112,500 "	12,375	
Rotterdam—Obdam.....	53 pigs	12,612 "	1,200	
" ".....	167 casks	298,500 "	21,985	
" ".....	117 bbls.	146,250 "	14,625	
" ".....	2,274 bars	37,257 "	37,228	
" Rydal Hall.....	191 bars	67,388 "	5,800	
Copper matte:				
Liverpool—Campania....	1,167 bags	138,509 "	6,100	
" Holbein.....	3,888 bags	457,144 "	20,000	
" Germanic.....	6,481 bags	701,831 "	31,500	
" Werkendam.....	145 casks	181,009 "	19,510	
" ".....	255 plates	44,837 "	4,250	

Tin showed marked weakness at the close of last and opening of this week, and a few sales were made at as low as 18½¢ and even less. Since there has been a change for the better some bear sales having evidently to be covered, and the prices at the close are from 18½¢ @ 19 for spot and 19 for September. The demand for consumption is quite fair.

In London stocks have been accumulating of late, causing prices to give way to £78 10s. for spot and £78 15s. @ £79 for three months prompt, and thus, for the first time in a long while, is future tin quoted at more than that for immediate delivery. It is not thought probable that prices will decline much if any further, as in about two months' time America must begin to cover future wants in the eastern markets, and that will result in a betterment of those in Europe.

Lead has recovered from its extremity and most of the smelters are now withholding from selling. Early in the week a few sales were made at 3:30, but the price has since advanced to 3½¢ @ 3:40.

The European markets are dull and weak, Spanish lead being quoted in London at £10 and English at £10 2s. 6d.

Spelter is in a most deplorable condition; nearly all the galvanizers are closed down, as we have heretofore noted, and the yellow metal makers have sufficient stocks on hand, and thus the production, small as it is, cannot be taken care of, and prices have to be quoted at 3:55 to 3½ East St. Louis or 3:80 to 3½ New York.

In London good ordinaries are quoted at £17 5s. and specials at £17 7s. 6d.

The Geological Survey has issued a statement of the production of spelter for the first half of the current year, as follows, in tons of 2,000 lbs.:

Eastern and Southern States.....	7,380 tons
Illinois and Indiana.....	10,427 "
Kansas.....	13,269 "
Missouri.....	8,718 "
Total.....	45,794 "

This, if correct, is about the same output as during the corresponding period in 1892.

Antimony is only in moderate demand: Cookson's at 10½¢, L. X. at 10 and Hallett's at 9½¢. Nickel is unchanged.

#### IRON MARKET REVIEW.

NEW YORK, Friday Evening, August 18, 1893.

#### Pig Iron Production.

Fuel used.	Week ending		From Jan., '92	From Jan., '93
	Aug. 18, 1892.	Aug. 18, 1893.		
Anthracite.....	67 28,937	51 23,679	1,145,810	1,011,711
Coke.....	131 118,639	85 80,657	4,412,046	4,197,635
Charcoal....	41 8,926	34 5,634	349,893	286,672
Totals....	239 156,522	170 110,000	5,907,449	5,526,018

Pig Iron.—No change has occurred in the pig



iron market since our last report. From some quarters we hear that the demand, especially during the past two or three days, has shown some improvement. Some consumers who had been holding off have sent in their orders, and others who had deferred deliveries on existing contracts are asking that they be made now. This state of affairs, however, is by no means general. The production has undergone a great decrease, but so has the consumption, as is attested by the size of the stocks on hand. It is encouraging, at any rate, that the dullness is not quite so great; actual business is still dull and trade throughout the country continues extremely poor. Nevertheless, any improvement, no matter how slight, in the iron market is sure to be welcomed with joy by the iron men who have been so seriously affected by the financial troubles.

There is no change in prices. Low bids are still made and refused. Quotations are about as follows for Northern brands: No. 1, \$14.50@15; No. 2, \$13.50@14; gray forge, \$12.25@12.50. For Southern iron we quote: No. 1, \$13.75@14.75; No. 2 F., \$12.75@13.50; No. 1 soft F., \$12.25@14; gray forge, \$11.75@12.50—all at tidewater. Scotch irons are quoted: Coltness, \$21.50@22; Eglinton, \$19.50@20; Summerlee, \$20.

**Billets and Rods.**—We hear of no business in either billets or rods. We quote: Steel billets, tide water, \$23@24; foreign, \$28.50@29; wire rods \$30.50@31.50; foreign, \$40@40.50; Swedish, \$50@52.

**Manufactured Iron and Steel.**—We do not hear of any new business of consequence in this market. Prices show little or no change from last week. We quote: Angles, 1.75@2c; axes, scrap, 1.80@2.10c; delivered; steel, 1.75@2c; bars, common, 1.45@1.60c; refined, 1.65@1.8c on dock; beams, up to 15 in., 1.80@2c; 20 in., 2.10@2.30c; car truck channels, 2@2.10c; channels, 1.90@2c on dock; steel hoops, 1.8@1.9c; delivered; links and pins, 1.85@2.10c; plates, flange, 2@2.10c; firebox, 2.5@2.8c; flange, 2.10@2.25c; marine, 2.50@2.75c; sheared, 1.85@2.10c; shell, 1.95@2.10c; tank, 1.75@1.9c; universal mill, 1.75@1.90c; tees, 1.95@2.15c, all on dock.

**Merchant Steel.**—This market continues exceedingly quiet. We hear of little business. Reports from Pittsburgh are rather more encouraging, but the financial difficulties are being felt acutely by the mills. Quotations are: Tool steel, 6.50@6.75c and upward; tire steel, 2@2.10c; toe calk, 2.20@2.30c; Bessemer machinery, 2.10@2.20c; Bessemer bars, 1.80@2c; open hearth machinery, 2.20c; open hearth carriage spring, 2.10@2.20c; crucible spring, 3.75@4c.

**Old Material.**—There is nothing doing in this market. Quotations are nominally as follows: Old iron rails \$15.50@16; steel rails, \$11.50@13; car wheels, \$11.50@13.50.

**Rail Fastenings.**—The market for rail fastenings continues lifeless. Quotations remain: Fish and angle plates, 1.55@1.60c; at mill; spikes, 1.9@1.95c; bolts and square nuts, 2.45@2.50c; hexagonal nuts, 2.55@2.60c, delivered.

**Spiegeleisen and Ferromanganese.**—There is absolutely nothing doing in either ferro or spiegel. Quotations are nominally as follows: 10 to 12% Spiegel, \$22@22.50; 20% \$25@25.50. Ferro, \$50@57.

**Steel Rails.**—No improvement has taken place in the rail market. The demand shows a decided falling off and there is no telling when it will become normally good again. We hear of no sales of any consequence during the past week. Quotations are unchanged at \$29 mill or tidewater. Girder rails, \$31@33.

**Tubes and Pipe.**—Business in tubes and pipes is very dull. Ruling discounts on carload lots are as follows: Butt, black, 5 7/8, 10 and 5%; butt, galvanized, 50, 10 and 5%; lap, black, 6 7/8, 10 and 5%; lap, galvanized, 5 7/8, 10 and 5%.

**Buffalo.** August 17.  
(Special Report of Rogers, Brown & Co.)

There is really no market to report. An occasional carload order keeps the record above the statement that there is absolutely no business doing. Producers of iron have met the situation in like form and to-day only one furnace making coke iron is running in the State of New York and that one expects to shut down soon. Prices quoted in the schedule below are really nominal: No. 1X foundry strong coke iron, Lake Superior ore, \$13.75; No. 2X foundry strong coke iron, Lake Superior ore, \$13.25; Ohio strong softener No. 1, \$14; Ohio strong softener No. 2, \$13.25; Jackson County silvery No. 1, \$17@17.30; Jackson County silvery No. 2, \$16.30@16.80; Lake Superior charcoal, \$16; Tennessee charcoal, \$16; Southern soft No. 1, \$13.65; Alabama car wheel, \$18; Hanging Rock charcoal, \$20.50.

**Chicago.** August 17.  
(From our Special Correspondent.)

The liquidation now in progress is slowly but surely putting a brighter phase and infusing more confidence into trade. But the shrinkage in the output, sales and consumption of crude and finished iron and steel has been large, and the task of bringing about a betterment will be one of difficulty. The iron market here exhibits much the same lack of animation which has characterized it for some weeks. But there are, however, not wanting some indications of returning confidence, as shown by the creditors of the East Chicago Rolling Mill, just closed. On August 14th it was decided to accept two years' notes, with interest, for the amount of indebtedness, \$68,000, and to allow the

mill to resume, which will probably be done next week. The crude iron trade is still very quiet, largely from a sturdy unwillingness on the part of most consumers to incur new obligations. A good percentage of the business now being done is on a cash basis.

**Pig Iron.**—Already there is a somewhat better inquiry for iron, not only Southern but local as well, and while it is true that these are for small quantities there are more of them. Coke pig iron of local make is very quiet, scarcely a tenth of the tonnage selling as compared with last year at this time. Consumers in the city as well as the country have reduced their wants to a minimum, and not a ton of metal is being bought outside of known requirements. Southern coke iron is not only dull, but there is really no market price, and for this reason some furnaces have withdrawn all quotations, and may be called out of this field for the present. Two sales of fair sized lots have been closed at very low figures, the amount aggregating 1,200 or 1,500 tons; but general demand is from carloads to 100 tons. Statistically the position of Lake Superior charcoal iron is all that furnaces could desire, but there is no demand.

Quotations per gross ton f. o. b. Chicago are: Lake Superior charcoal, \$16.00@16.50; Lake Superior coke, No. 1, \$13.50@13.75; No. 2, \$12.75@13.25; No. 3, \$12.25@12.50; Lake Superior Bessemer, \$14.00; Lake Superior Scotch, \$11.50@13; American Scotch, \$15.50@16.00; Southern coke, foundry, No. 1, \$14.00; No. 2, \$12.35; No. 3, \$12.00; Southern coke soft, No. 1, \$12.50; No. 2, \$12.00; Ohio silveries, No. 1, \$16.50; No. 2, \$16.00; Ohio strong softeners, No. 1, \$16.25; No. 2, \$16.00; Tennessee charcoal, No. 1, \$17; No. 2, \$16.50; Southern standard car wheel, \$18.50@18.75.

**Structural Iron and Steel.**—Beams and other building shapes are in very moderate demand from warehouse; there is some inquiry for mill lots from outside points, but parties are slow to close. All prices are weak. Quotations, car lots, f. o. b. Chicago, are as follows: Angles, \$1.75@1.85; tees, \$1.9@2.05; universal plates, \$1.75@1.85; sheared plates, 75c@1.85; beams and channels, \$1.80@1.90.

**Plates.**—Extreme dullness is noted by mill agents and warehouse men. There is nothing promising in the outlook, and prices weak. Steel sheets, 10 to 14, \$2.25@2.35; iron sheets, 10 to 14, \$2.20@2.30; tank steel, \$1.90@2; shell iron or steel, \$2.50@2.75; firebox steel, \$4.25@5.25; flange steel, \$2.74@3; boiler rivets, \$4@4.15; boiler tubes, all sizes, 6 1/2.

**Merchant Steel.**—Soft steels continue quiet and although two or three contracts are reported as having been closed with the implement trade, the bulk of the business has been in small quantities. Quotations are: Tool steel, \$6.50@6.75 and upward; tire steel, \$2@2.10; toe calk, \$2.30@2.40. Bessemer machinery, \$2.10@2.20; Bessemer bars, \$1.60@1.70; open hearth machinery, \$2.25@2.30; open hearth carriage spring, \$2.10@2.20; crucible spring, \$3.75@4.

**Galvanized Sheet Iron.**—Sorting up orders in lots of 10 to 25 hundred iron agents' warehouses is about all the trade now doing. Discounts are easy at 70, 10 and 5% off on Juniata and 70, 10 and 10% off on charcoal, and jobbing quantities at 70 and 7 1/2% off on the former and 70 and 10% off on the latter.

**Black Sheet Iron.**—Orders are of meager proportions, but there is some little inquiry for late fall delivery. Prices are unchanged at 2.85c for No. 27 common, and 2.90@2.95c for steel. Jobbers quote 3c for iron and 3.10@3.15c for steel, same gauge.

**Bar Iron.**—There is a visible improvement in demand for small lots of bars, both iron and steel, from the numerous small manufacturing consumers, who are gradually adapting themselves to the new régime of the cash basis which warehouses and mills are now compelled to adopt, even good buyers experience difficulty in shading 1.45c@1.50c base, with half extra. Jobbing trade is very fair, considering, at 1.70@1.80c for iron and steel bars.

**Nails.**—Steel cut nails are in better demand and specifications covering orders are more frequent from in mill-lots at \$1.20 base. Jobbers note a light demand at \$1.35. Wire nails are also in better inquiry since price has stiffened under the new pool which manufacturers have consummated. Mill lots are now quoted at \$1.45 Chicago, and jobbing price is \$1.55@1.60.

**Steel Rails.**—The steel companies here report orders very scanty and tonnage light, and they look for no improvement in the near future, as all trunk lines are limiting supplies in positive needs. Quotations are \$30@31. Track repair material is ordered only as required.

**Scrap.**—Offerings from railroads and other large scrap makers are increasing, but dealers and consumers are not making any bids. A sale of cast machinery is noted at \$8 per net ton. Quotations are nominal only. Railroad, \$13.50; No. 1 forge, \$12; No. 1 mill, \$9.00; fish plates, \$14.50; cast borings, \$5.00; wrought turnings, \$7.50; axle turnings, \$9.25; machinery castings, \$10; stove plates, \$7.50; mixed steel, \$9; coil steel, \$15; leaf steel, \$15; tires, \$14.50.

**Old Material.**—Iron rails are evidently not worth more than \$14, based upon negotiations now under consideration between consumers and railroads. Old steel rails are very dull at \$9.25@13 as to length and condition. Car wheels are nominal at \$14.

**Philadelphia.** August 17.  
(From our Special Correspondent.)

**Pig Iron.**—The entire market is lifeless, and offerings of pig iron attract no attention. The present output, so makers say, is not equal to the actual consumption. This may be true as regards foundry, but not forge. Buyers are not inclined to make purchases, either at present quotations or at the concessions which have been named. Business is likely to run along as it is now for two or three weeks to come. At the same time the possibility of a sudden reaction is kept in mind; this depends upon several considerations, such as favorable legislation at Washington and easier monetary conditions. A few lots of No. 1 foundry sold this week at \$15 for good brands. Several offers were made, of Southern No. 2 at \$14, and of Northern at \$14.50, showing that makers regard these prices as bottom ones. Standard Bessemer is quoted at \$16.

**Steel Billets.**—It is impossible to make business at this time. Users of billets are certainly low in stocks, and will be obliged to buy as soon as orders for their products are received. Quotations, \$23.50.

**Muck Bars.**—A few of the muck bar mills expect to resume next week, with a small amount of business in hand, at about \$23.

**Merchant Iron.**—Some orders have been taken at interior mills at 1.50, the intention being to start up next week. A good many mills will remain idle until orders warrant resumption. The average prices for refined are from 1.60 to 1.70.

**Skelp.**—An improving demand is reported at the skelp mills; the best figure paid this week was 1.50 for grooved. To all appearances there will be a large amount of business this fall.

**Sheet Iron.**—The mill owners are making sheet iron faster than it is ordered, in anticipation of a heavier demand in September. It seems that this demand can be relied on, especially for soft steel sheets, and galvanized.

**Plate and Tank.**—Those representing the plate mills have become so accustomed to reporting business in very bad shape that it is a matter of habit to say that business is dull. This is true in some instances; but it is safe to say that there is more business doing than office reports would indicate. All of the mills are now running. Tank plates have sold as low as 1.65, and even lower, it is rumored. Bridge plates, 1.75; this figure is also shaded. Firebox, 2 1/2@4c, according to quality.

**Structural Material.**—The only encouraging point this week is the expectation of considerable business in September on contract work which has been delayed for a month or two. It is rumored that another shading will take place on beams, tees and channels; this probably has reference to some large prospective requirements which will no doubt lead to a shading of quotations. Angles are 1.75.

**Steel Rails.**—No sales are reported to-day. Quotations are continued at \$29 for standard sections.

**Old Rails.**—Quotations, \$16 for iron. No business.

**Pittsburg.** August 17.  
(From our Special Correspondent.)

**Iron and Steel.**—That business is in a very demoralized condition is a fact that is well known—how long this condition of affairs is going to continue is something that we are all in the dark about. The week under review has been one of extreme depression in the market for iron and steel, and there are no indications of improvement in the near future. The central features in the pig iron situation are the great restriction of output that is going on, the small demand for crude material and the inability of manufacturers to make arrangements in regard to money matters, compelling the blowing out of many of the largest furnaces.

**Pig Iron.**—The amount on hand is steadily increasing; the official figures for the past two months are: Stocks on hand July 1st, 1893, 342,000 tons, August 1st, 1893, 424,000 tons, showing an increase for July of 82,000 tons. Mills that have started in this vicinity are running on a limited scale; many have not started at all and show no inclination to do so. The outlook is very unfavorable in all directions. There is not a mill in Pittsburg running full.

The mills in operation have to contend with another difficulty—currency is so scarce that it is almost impossible to obtain sufficient to pay even the limited number of men at work.

The market for finished material is weak and unsettled, with the orders placed being in small lots and at prices which are low and unsatisfactory.

Coke smelted Lake and Native Ores.		Tons.	Cash.
1,000 Bessemer, City furnace, Oct. ....			\$13.25
500 Bessemer, Aug. ....			13.00
500 Bessemer off grade			12.25
500 Bessemer, Aug. ....			11.75
500 Bessemer, Aug. ....			12.50
300 Bessemer, Aug. ....			12.75
100 Grey Forge, Aug. ....			11.65
200 Grey Forge, Aug. ....			11.85
200 Bessemer, Sept. ....			12.60
150 Foundry, all cre. ....			14.00
150 No. 1 Foundry ....			13.75
100 No. 2 Foundry ....			12.75
50 No. 2 Foundry ....			12.65
50 No. 1 Silvery ....			13.75
<b>Charcoal.</b>			
25 No. 2 Foundry ....			13.50

Blooms, Billets and Slabs.		Tons.	Cash.
600 Bl. at works. ....			20.00
500 B. & S. at works. ....			20.75
475 B. spot at works. ....			21.00
200 B. spot at works. ....			21.60
100 B. spot, at works. ....			21.00

Muck Bar.		Tons.	Cash.
100 Neutral. ....			21.75

Sheet Bars.		Tons.	Cash.
300 At mill. ....			26.50

Ferro-Manganese.		Tons.	Cash.
50 80% domestic. ....			58.00

Skelp Steel.		Tons.	Cash.
306 Wide grooved. 1.40-4 M.			



## COAL TRADE REVIEW.

NEW YORK, Friday Evening, August 18th  
Statement of shipments of anthracite coal (approximated) for week ending August 12th, 1893, compared with the corresponding period last year:

	Aug. 12, 1893.	Aug. 13, 1892.	Difference.
	Tons.	Tons.	
Wyoming region.....	387,439	436,128	Dec. 48,689
Lehigh region.....	126,212	120,206	Inc. 6,006
Schuylkill region.....	216,507	232,236	Dec. 15,729
Totals.....	730,158	788,569	Dec. 58,411
Total for year to date.....	25,706,685	24,560,479	Inc. 1,146,206

PRODUCTION OF BITUMINOUS COAL for week ending August 12th and year from January 1st:

	1893.	1892.	
	Week.	Year.	Year.
Shipped East and North:			
Phila. & Erie R. R.....	1,027	54,200	53,169
Cumberland, Md.....	90,826	2,502,331	2,246,490
Barclay, Pa.....	431	35,619	118,392
Broad Top, Pa.....	8,465	403,225	374,399
Clearfield, Pa.....	58,472	2,521,427	2,424,948
Allegheny, Pa.....	23,469	787,075	774,455
Beach Creek, Pa.....	26,372	977,203	1,526,463
Pocahontas Flat Top.....	4,371	1,725,647	1,447,170
Kanawha, W. Va.....	4,016	1,915,382	1,424,339
Totals.....	303,340	10,921,093	10,371,756

	1893.	1892.	
	Week.	Year.	Year.
Shipped West:			
Pittsburg, Pa.....	18,631	785,997	789,399
Westmoreland, Pa.....	39,344	1,238,232	1,021,537
Monongahela, Pa.....	8,602	446,564	389,930
Totals.....	66,667	2,470,793	2,199,866

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending August 12th, 1893, and year from January 1st, in tons of 2,000 lbs.: Week, 31,615 tons; year 3,071,083 tons; to corresponding date in 1892, 3,342,245 tons.

## Anthracite.

The anthracite coal market is as dull as it can be. During the past week nothing of interest has occurred, even the usual hatch of rumors and prophecies being smaller than in the past. There is practically no new business doing. Some coal, of course, is moving, but it is on old orders and at old prices. The companies claim that they are adhering to the schedule prices and certain individual operators admit that they are selling at 25c. below the companies' prices on what little business they are doing. As a matter of fact the demand is nil, and producers are not anxious to sell unless they have good assurance that the cash will be forthcoming. The best of paper is hard to discount just now, and those consumers who have the actual hard money prefer to hold on to it than to exchange it into coal. Producers are looking forward to September as the month which will open the season of active trading. It is to be presumed that when business returns to the coal market it will do so gradually. People will buy only enough to supply their most pressing needs.

There has been some talk of an advance in prices for next month, but it is to be doubted whether it will take place. The abrogation of the Lehigh Valley-Reading lease has introduced an element of uncertainty which has upset many plans. It is greatly to be doubted whether the present condition of the coal market warrants such a step.

There has been a good deal of talk as to what the Lehigh Valley Company will do in regard to the independent operators. The company gave notice that it would continue to purchase coal on the old basis (just as the Reading had done) until September 1st. Then it commenced negotiations for the continuance of it, but at a reduced percentage. Up to 55% was offered and the operators refused. We learn from what is usually good authority that the Lehigh Valley this week offered to those individual operators along its line 57 1/2% of the net tidewater prices for their output, and that the operators have shown no disposition to accept this offer, but are adhering to their determination to accept no reduction from the old figures, namely 60%. This is not official, but there is no reason to doubt that it is true.

We observe a disposition among all consumers to talk of peace and harmony in the future, and that the separation of the Lehigh Valley from the Reading system will not affect the trade to the extent that many anticipated, as the first mentioned company will eventually come to terms with the obstinate individual operators. The latter, after all, are right in asking 60%; the Lehigh Valley is the purchaser of the output of several independent collieries on at least the 60% basis, and the others simply demand that no distinction be made. The Reading probably will not pursue "the aggressive policy" which the daily press has been reporting. As a matter of fact the Reading is in no position to fight anyone. It must do business solely with a view to making money. And if with high prices and many things in its favor it has failed to accomplish this most desirable end, it is difficult to see how it is going to profit by cutting prices.

The Reading official circular rates, subject to the usual commissions, are as follows, f. o. h. at its New York harbor shipping ports:

	Broken.	Egg.	Stove.	Chestnut.
Hard white ash.....	\$4.00	\$4.25	\$4.60	\$4.60
Free white ash.....	3.90	4.15	4.60	4.60
Shamokin.....	4.50	4.80	4.60	4.60
Schuylkill red ash.....	4.50	4.95	4.75	4.75
Lykens Valley.....	5.00	5.80	6.20	4.45

Pea, \$2.50@2.75; No. 1 Buckwheat, \$1.75@2; No. 2 Buckwheat, \$1.50.

The Reading Railroad system reports that its coal shipment (estimated) for last week, ending August 12th, was 230,000 tons, of which 40,000 tons were sent to Fort Richmond and 15,000 tons were sent to New York waters.

## Bituminous.

The only new feature in the soft-coal trade during the week under review have been the action of ship captains, who are determined to obtain higher freight rates. They have been holding meetings and signing papers pledging themselves to adhere to such a course of action as will bring about an advance. As yet, there has been no appreciable change in rates, though doubtless the measures taken by the vessel-men will have a tendency to stiffen prices in the near future. Nobody, with the exception of the captains themselves, anticipates that more than a very moderate advance on current rates will be paid. The probabilities are that the struggle which seems certain to come will result in a decrease of shipments and stationary or possibly decreasing freight from coal ports for the balance of the month. Ocean freight rates are now quoted as follows from Philadelphia; to Sound ports, 55c.; Boston and Salem, 55@60c.; Portsmouth, 60c.; Portland, 60c.; Bangor, 60@65c. From Baltimore, Norfolk and Newport News, rates may be quoted at about the same, with a possible advance of 5c. when vessels have to wait any time for loading.

The demand for soft coal begins to show an unmistakable decrease and the condition of the money market is being fairly reflected in the trade. Overtures are made by the very best class of consumers for additional time, but this will be difficult to obtain in the case of such an article as coal, which so largely represents (probably 90%) a spot cash outlay. A general and material extension of the time on which sales have been made will be obviously impossible without a great increase in the working capital of the operating companies, and this would be very difficult to secure at this critical period in finance.

The blockade on the Pennsylvania railroad, to which we alluded in our last issue, is not so bad as it was. The Baltimore & Ohio is moving coal in a satisfactory manner. Cars continue in good supply.

## Buffalo.

August 17.

(From our Special Correspondent.)

There is but little activity in the anthracite coal trade, and prices are unchanged. To comment upon the condition of affairs would be a waste of time, as nothing new could be stated and it would only be ringing the changes on an old tune. Our dealers and shippers await philosophically future developments. Lake shipments continue light in consequence of the docks at the West being well filled, and under present conditions of the money market and credit they are likely to await depletion for many weeks to come.

Bituminous coal is quiet and prices easy. Manufacturers are not working to full capacity, tugs and propellers are laid up, and cash to buy with is short, causing the quietude which prevails to a considerable extent.

Col. J. H. Horton has returned to Buffalo and has again taken charge of the Lehigh Valley general coal traffic and the superintendency of the terminals and docks of the company at this port. Mr. Arthur Atkins will look after the coal business of the Reading company. This is the result of the abrogation of the lease of the Lehigh to the Reading.

The sum of \$30,000 will be expended during the next few months in this city in the construction of a machine for making gas fuel to supply our manufacturers. The product is expected to take the place of coal and do away with the smoke nuisance.

The Reading Coal and Iron Company has contracted with the Pennsylvania & Ohio Fuel Company, of Duluth, to handle 25,000 tons of the Reading coal this year. The Reading has its own yards at West Superior, just opposite Duluth, and by the action named will supply a new territory hitherto unavailable.

The shipment of coal westward by lake from August 1st to 12th, both days inclusive, aggregated only 130,235 net tons, distributed as follows: 29,700 to Chicago, 18,700 to Milwaukee, 13,950 to Duluth, 28,900 to Superior, 600 to Sarina, 3,000 to Gladstone, 6,200 to Fort William, 1,900 to Menominee, 1,000 to Racine, 700 to Kenosha, 500 to Kincardine, 250 to Kelly Island, 13,075 to Toledo, 500 to Green Bay, 1,150 to Bay City, 1,000 to Sault Ste. Marie, 50 to Oscoda, 2,080 to Manitowoc, 1,900 to Ashland, 125 to Alpena, 2,150 to Lake Linden, 500 to Two Rivers, 1,480 to Saginaw and 825 to Marquette. The going rates of freight were 50c. to Chicago, Kenosha and Racine; 45c. to Milwaukee, Sault Ste. Marie and Manitowoc; 60c. to Two Rivers; 35c. to Bay City; 30c. to Toledo, Fort William, Duluth, Ashland and Superior; 40c. to Oscoda, Green Bay, Saginaw, Manistique, Kelly Island, Kincardine, Menominee, Gladstone and Alpena. To-day rates are demoralized; what little freight taken has been contracted at probably a 10c. cut to Chicago and Milwaukee.

## Chicago.

August 17.

(From our Special Correspondent.)

Anthracite coal in all branches continues very dull. The inability of the average country dealer to raise even sufficient money to pay his freights, combined with the close inspection of credits, and

with the slowness of collections on coal already sold, has called a halt on the rush for tonnage usually sold at this season of the year. The general belief of all classes of trade in the futility of an attempt to maintain the present high prices with every other commodity daily falling in price, and the scarcity of money with which to pay for the coal, contributes very largely also to the dull condition of affairs. While the shippers' agents are ostensibly maintaining full circular prices, there is a very large amount of cutting going on through the pet retail distributors of each shipper. It was a conspicuous circumstance that in the bids to furnish Lincoln Park with 1,000 or 1,500 tons of anthracite coal for use during the ensuing season, none of the shippers' agents or larger dealers made tenders, and the contract was awarded to a little retail dealer without yard facilities, at a price 5c. per ton delivered under the market price for the same coal in yards. Quite a good deal of curiosity is manifested as to the result and effect on the market of the separation of the Lehigh Valley & Reading interests and what the outcome will be. So far as known, there has been no arrangement made for the division of their interests here, but it is conceded that the yards and stocks of coal of the Lehigh Valley may revert at any moment to the direct control of some one to be appointed by their agent. The appointment of Col. J. H. Horton as superintendent of the coal shipping docks and coal transfer station, and general northern sales agent, at Buffalo, N. Y., gives great satisfaction to his many friends in Chicago. Receipts of anthracite are light.

Circular prices are at the following rates: Lehigh lump, \$6.25; large egg, \$5.85; small egg, range and chestnut, \$6.10. Retail prices per ton are: Large egg, \$6.75; small egg, range and chestnut, \$6.75.

Bituminous coal of all kinds, with one or two exceptions, is in excessive supply here and at certain junction and group points. This has been occasioned in a great measure by the endeavor of some of the larger producing mines to give sufficient work to the men during the present dull time when there is an unusually limited demand for steam coal. So many large iron, steel and other works are shut down that coal operators will be compelled to seek a market elsewhere for their surplus soft coal. Country trade is steadily gaining and coal for threshing purposes is in fair demand. A peculiar effect of the coal strikes in Kansas and southern Missouri has been the receipt, by some of our largest shippers, of inquiries for prices of the cheapest grades of coal marketed here. Of course, they were only inquiries, as coal could be shipped from St. Louis and other points on the river, and it is mentioned merely to show the scare dealers received in that vicinity. Coal from the Wilmington, Ill., field will be advanced to \$1.75 at mine September 1st, and Central Illinois mines will also advance their coal to \$1.25 on the same date. Hocking coal is quiet and operators in Ohio are having trouble with their men. Prices of bituminous per ton of 2,000 lbs., f. o. b. Chicago, are: Pittsburg, \$3.35; Hocking Valley, \$3.10; Youghiogheny, \$3.25; Illinois block, \$2.60; Brazil block, \$2.50.

Coke continues in very light demand, and the reduction in price and shading of the new circular of Connellsville does not appear to stimulate trade. Operators here look for no improvement until there is a general revival in those trades which use this fuel. Quotations are: \$4.35 furnace; \$4.65@ \$4.75 foundry, crushed; \$5.10 Connellsville. West Virginia: \$3.90 furnace, \$4.10 foundry; New River Foundry, \$4.50. Walston: \$4.50 furnace, \$4.60 foundry.

## Pittsburg.

August 17.

(From our Special Correspondent.)

Coal.—Trade in this vicinity is very dull; the harbor and pools are crowded with loaded craft which are a daily expense in the way of pumping and taking care of the same. As near as can be ascertained, there are about 18,000,000 bushels loaded waiting water to depart for the lower markets. In our last we gave some very interesting facts to show what the Pittsburg coal men will have to contend with. The first proof that the predictions in that article were correct is found in the awarding a contract at Cincinnati to the Pocahontas Coal Company for furnishing the government building with 3,500 tons of coal at \$2.85 per ton, the first time that anything but Youghiogheny coal has gone into the building.

Connellsville Coke.—The late dry spell has been the worst known since 1854. Some of the coke works were forced to close down because of shortage of water. A reduction in wages has been accepted by the men generally which goes into effect when the works start up again. Coal miners will be paid 90c. per 100 bushels, drawers, 45c. per 100 bushels; levelers, 81c. per oven, and all other workmen will be reduced 10%.

The McClure Coke Company, the second largest concern in the coke region, has made a commendable move, and one that has no precedent in this section. They have given notice to all their tenants that they will be given free rent at the plans when the ovens are shut down until work should be resumed. The week's shipments aggregated 52,040 tons distributed as follows in cars: To Pittsburg, 1,000 cars; to points east, 680 cars; to points west, 1,200; total, 2,880, showing a decrease of 1,058 cars.



CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, August 18.

Heavy Chemicals.—There is absolutely nothing of interest to report of this market. Without exception all the heavy chemicals have been dull, and there is no demand for them. The acute financial troubles are largely responsible for this state of affairs. Consumers are suffering from dull business in their respective fields, and many have even been obliged to ask sellers to defer deliveries upon existing contracts. We hear of no sales of any importance and consequently quotations are chiefly nominal, as follows: Caustic soda, 60%, 2.95@3.10c.; 70%, 2.70@2.90c.; 74%, 4.72@4.92c.; 76%, 2.90@3.00c. Carbonated soda ash, 28%, 1.25@1.30c.; 58%, 1.15@1.25c.; Alkali, 48%, 1.15@1.20c.; 58%, \$1.10@1.20, according to package. Sal soda, English, to arrive, 0.95c.; American, 95@1c.; bleaching powder, 2.25@2.37c. Sales doubtless could be made at lower figures.

Acids.—Nothing worth reporting has occurred in this market during the past week. General dullness has prevailed and little new business has been done. Prices are unchanged. We quote as follows: Acids, per 100 lbs. in New York and vicinity, in lots of 50 carboys or more: Acetic, in barrels, \$1.87½; in carboys, \$2.25; muriatic, 18", 90c. @ \$1.10; 20", \$1@1.25; 22", \$1.10@1.35; nitric, 40", \$4; 42", \$4.50@4.75; sulphuric, 80c. @ \$1.15. Mixed acids, according to mixture, oxalic, \$6.30@6.50. Blue vitriol is quoted all the way from \$3.50 to \$3.75; glycerine for nitro-glycerine, 11½@12½c., according to quality and quantity.

Brimstone.—There is practically nothing doing in brimstone. The demand for it is very small. Late cables from Europe make prices here as follows: Future shipments, \$18 for best unmined seconds and \$17 for thirds. On the spot prices are nominally about 25c. higher than the above prices. Buyers' views, when there is a buyer, are below these figures. We hear of no spot sales.

Fertilizing Chemicals.—Very little business was done in the fertilizer market during the past week. The stringent condition of the money market is felt very acutely by manufacturers, and there is little disposition to purchase supplies excepting for the most urgent needs. There is little change in prices to report. If anything, they are slightly lower. We quote this week: Sulphate of am-

monia, gas liquor, \$3.30@3.35; bone, \$3.05. Dried blood, \$2.10@2.20 per unit for high grade, and \$2@2.05 for low grade; azotine, \$2.15@2.20. Concentrated phosphate (30% available phosphoric acid), 70c. per unit. Acid phosphate, 13% to 15%, av. P<sub>2</sub>O<sub>5</sub>@60c. per unit at seller's works in bulk. Dissolved boneblack, 17% to 18%, P<sub>2</sub>O<sub>5</sub>@85c. @ 95c. per unit. Acidulated fish scrap, no stocks on hand; dried scrap is quoted at \$25 f. o. b. fish factory; wet scrap, \$15 f. o. b., fish factory. Tankage, high grade, \$24.50@25.50; low grade, \$22@23. Bone tankage, \$23@24; bone meal, \$24@25.50.

The price of double manure salts as fixed by the syndicate is as follows: New York and Boston, \$1.12; Philadelphia, \$1.14½; Charleston and Savannah, \$1.17 cwt., basis 48% @ 50%, in 50-ton lots on foreign weights and analyses. Sulphate of Potash, 90-96%, basis 90%; New York and Boston, \$2.07; Philadelphia, \$2.09½; Charleston and Savannah, \$2.127, sulphate of potash, 96-99%, basis 90%, is 4% higher.

Phosphates.—Quotations for high grade land rock, f. o. b. Charleston, are \$4.50@4.75. Freight is \$2.25.

Muriate of Potash.—No business is reported in this market. The prices fixed by the syndicate for 1893 are as follows: New York or Boston, \$1.78; Philadelphia, \$1.80½; Southern ports, \$1.83. During the past week there were no arrivals.

Kainit.—Practically nothing is doing in kainit. Quotations for shipments previous to September are as follows: New York, Philadelphia and Boston, \$8.75 for foreign invoice weight and test, and \$9 for actual weight; Charleston, Savannah and Wilmington, \$9.50 for invoice weight and test, and \$9.75 for actual weight. Shipments after September 1st, 25c. higher.

Nitrate of Soda.—There is only a small business doing in nitrate for spot goods or near due, which are quoted at \$1.70. Nothing is doing in futures. Some odd re-sale lots, near due, have been offered by consumers at \$1.67½@1.70.

Liverpool, Aug. 9.

(Special Correspondence of Jos. P. Brunner & Co.) The coal strike is progressing, but as manufacturers generally had laid in stocks the pinch will not be felt for a little time yet. A good deal of the caustic soda plant in the Lancashire district has been shut

down so as to economize the fuel and salt supplies for the chlorine products, and should the strike last for any length of time, as is anticipated, manufacturers will suffer great inconvenience when their supplies of raw material run out.

As regards our market for chemicals, trade shows no improvement, and there is very little business to report.

Soda ash dull and prices nominal. For Leblanc makes, prices vary considerably according to market, make, quantity, etc., and nominal range may be quoted about as follows, viz.:

Caustic ash, 48%, £4 10s. @ £5 per ton; 54% to 58%, £5 10s. @ £5 15s. per ton net cash.

Carbonate ash, 48%, £4 15s. @ £5 per ton; 58%, £5 5s. @ £5 15s. per ton net cash.

Ammonia ash, 58%, is slow of sale at £4 7s. 6d. @ £4 10s. per ton, less 2½%, while some resale parcels are offered at a shade under the minimum quotation.

Soda crystals in fair request at £2 17s. 6d. @ £3 per ton, less 5%.

Caustic soda is not active, but there is a little more doing. Quotations vary considerably according to export market, and we quote spot range: 60%, £8 @ £8 15s. per ton; 70%, £9 @ £9 15s. per ton; 74%, £10 @ £10 15s. per ton; 76%, £11 10s. @ £11 15s. per ton, net cash. For parcels under 10 tons, 5s. per ton extra is charged.

Bleaching powder, steady at £8 10s. @ £8 15s. per ton net cash for hardwood packages, but orders are not plentiful.

Chlorate of potash is disappointing, for although there are a fair number of inquiries there has been little actual business of late. The prompt and August delivery quotations range from 8d. @ 8¼d., according to holders' views. For September delivery 8d. is nearest value, and 7½d. @ 7¾d. for October and December. For all 1894 delivery 6¾d. is price for most quarters, while 7d. is asked for United States orders.

Bicarb. is in small compass and firm at £6 15s. per ton less 2½% per cwt. less, with usual allowances for larger packages.

Sulphate of ammonia is almost unobtainable and spot price is about £14 per ton less 2½% for good gray, 24% in double bags f. o. b. here, and £5 to £10 per ton extra for 25%.

Nitrate of Soda easier at £9 15s. @ £10, less 2½% for double bags f. o. b. here.

Carb. Ammonia.—Lump, 3¼d. per lb.; powdered, 3¾d. per lb., less 2½%.

CURRENT PRICES.

These quotations are for wholesale lots in New York unless otherwise specified.

Table listing various chemicals and their prices, including Acid-Acetic, Commercial, Carbonic, Chromic, Hydrobromic, Hydrocyanic, Hydrofluoric, Alcohol, Alum, Amalgamating solution, Ammonia, Muriate, Aqua Ammonia, Antimony, Argols, Arsenic, Asbestos, Ashes, Asphaltum, Iridium, Iron, Kaolin, Kieserite, Lead, Litharge, Magnesite, Manganese, Mercuric Chloride, Borax, Sulphuric, and others.

Table listing various minerals and their prices, including Cadmium Iodide, Chalk, China Clay, Chlorine Water, Chrome Iron Ore, Chromalum, Cobalt, Copper, Corundum, Cryolite, Emery, Epsom Salt, Feldspar, Fluorspar, French Chalk, Fuller's Earth, Glauber's Salt, Glass, Gold, Kaolin, Kieserite, Lead, Litharge, Magnesite, Manganese, Mercuric Chloride, and others.

Table listing various materials and their prices, including Mineral Wool, Naphtha, Nitre Cake, Ochre, Potash, Potassium Cyanide, Pyrites, Quartz, Soapstone, Soda, Sulphur, and others.

Table listing various metals and their prices, including Tin, Muriate, Vermillion, Zinc, and others.

THE RARER METALS.

Table listing various rare metals and their prices, including Arsenic, Barium, Bismuth, Cadmium, Calcium, Cerium, Chromium, Cobalt, Didymium, Erbium, Gallium, Germanium, Glucinum, Indium, Iridium, Lanthanum, Lithium, Magnesium, Manganese, Molybdenum, Niobium, Osmium, Palladium, Potassium, Radium, Rubidium, Selenium, Strontium, Tantalum, Tellurium, Thallium, Titanium, Tungsten, Uranium, and Vanadium.



NEW YORK MINING STOCK QUOTATIONS.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Table with columns: NAME AND LOCATION OF COMPANY, Aug. 12, Aug. 14, Aug. 15, Aug. 16, Aug. 17, Aug. 18, SALES.

Table with columns: NAME AND LOCATION OF COMPANY, Aug. 12, Aug. 14, Aug. 15, Aug. 16, Aug. 17, Aug. 18, SALES.

\*Ex-dividend. \*Debit in at New York Stock Ex. Unlisted securities. Assessment paid. Assessment unpaid. Dividend shares sold, 1,100 Non-dividend shares sold, 1,200 Total shares sold, 2,300

BOSTON MINING STOCK QUOTATIONS.

Table with columns: NAME OF COMPANY, Aug. 11, Aug. 12, Aug. 14, Aug. 15, Aug. 16, Aug. 17, SALES.

Table with columns: NAME OF COMPANY, Aug. 11, Aug. 12, Aug. 14, Aug. 15, Aug. 16, Aug. 17, SALES.

Dividend shares sold, 1,967 Non-dividend shares sold, 304 Total shares sold, 2,571

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Table with columns: Name and Location of Company, Capital Stock, Shares, Assessments, Dividends.

Table with columns: Name and Location of Company, Capital Stock, Shares, Assessments, Dividends.



DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns: Name and Location of Company, Capital Stock, Shares, Assessments, Dividends, and Date & amount of last. It lists numerous mining companies and their financial details.

G. Gold, S. Silver, L. Lead, C. Copper, B. Borax. \* Non-assessable. † This company, as the Western, up to December 10th, 1881, paid \$1,400,000. ‡ Non-assessable for three years. § The dividend previously paid \$275,000 in eleven dividends and the Terra \$75,000. Previous to the consolidation in August, 1884, the California had paid \$31,320,000 in dividends, and the Cons. Virginia \$42,390,000. \*\* Previous to the consolidation of the Copper Queen with the Atlanta, August, 1885, the Copper Queen had paid \$1,350,000 in dividends. †† This company paid \$180,000 before the reorganization in 1880. ††† This company acquired the property of the Raymond & Kly Company which had paid \$3,075,000 in dividends. †††† Previous to this company's acquiring Northern Belle, that mine declared \$2,400,000 in dividends against \$425,000 in assessment.

COAL AND COAL RAILROAD STOCKS.

Table with columns for Stock Names, Aug. 12, Aug. 14, Aug. 15, Aug. 16, Aug. 17, Aug. 18, and Sales. Lists various coal and railroad stocks with their respective prices and sales figures.

Total shares sold, 48,695.

INDUSTRIAL AND TRUST STOCKS.

Table with columns for Stock Names, Aug. 12, Aug. 14, Aug. 15, Aug. 16, Aug. 17, Aug. 18, and Sales. Lists industrial and trust stocks with their respective prices and sales figures.

\* First a sess. paid.

Total sales, 198,747.

CALIFORNIA. San Francisco.

Table with columns for Stock Names, Aug. 11, Aug. 12, Aug. 14, Aug. 15, Aug. 16, Aug. 17. Lists California stocks from San Francisco with closing quotations.

Colorado Springs. Aug. 12.

Table with columns for Stock Names, Bid, Asked. Lists Colorado Springs stocks with bid and asked prices.

Denver. Prices and sales for the week ending July 4:

Table with columns for Stock Names, High, Low, Sales. Lists Denver stocks with weekly price ranges and sales.

Total sales..... 50,000

COLORADO. Aspen.

Table with columns for Stock Names, Bid, Asked. Lists Colorado stocks from Aspen with bid and asked prices.

MONTANA. Helena.

Table with columns for Stock Names, Bid, Asked. Lists Montana stocks from Helena with bid and asked prices.

MARYLAND. Baltimore.

Table with columns for Company, Bid, Asked. Lists Maryland stocks from Baltimore with bid and asked prices.

MINNESOTA. Duluth.

Table with columns for Company, Bid, Asked. Lists Minnesota stocks from Duluth with bid and asked prices.

UNLISTED STOCKS.

Table with columns for Company, Bid, Asked. Lists unlisted stocks with bid and asked prices.

London Quotations.

Table with columns for Buyer, Seller, Aug. 10, 1893. Lists London quotations with buyer and seller prices for various international stocks.

New York Mining Stocks.

Table with columns for Company, Bid, Asked. Lists New York mining stocks with bid and asked prices.

ASSESSMENTS.

Table with columns for Company, No., Dnt. in office, Day of sale, Amt. per sh're. Lists assessments for various companies with details on dividends and sale dates.



CLASSIFIED LIST OF ADVERTISERS.

**Adders and Calculators**  
Smith, R. C.

**Air Compressors and Rock Drills**  
American Diamond Rock Boring Co.  
Bullock, M. C. Mfg. Co.  
Burling Rock Drill Co.  
Clayton Air Compressor Works.  
Hasensahl, W.  
Ingersoll-Sergeant Rock Drill Co.  
Merris County Machine & Iron Co.  
Norwalk Iron Works Co.  
Penn Diamond Drill & Mfg. Co.  
Rand Drill Co. (See Diamond Drills.)

**Aluminum**  
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Baker & Co.  
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Bullock & Crenshaw.  
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Henry Hill Chem. Co.  
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Penn Sm. & Ref. Wks.  
Penna. Salt Mfg. Co.  
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**Bankers and Brokers**  
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Bieher & Sohne.  
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Chisolm, A. R., & Co.  
Cochran, A. M.  
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Grant, E. R.  
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Jeffrey Mfg. Co.  
Link Belt Machinery Co.  
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Caldwell, J. H. & Co.  
Macbeth, James, & Co.  
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**Blowers**  
Foss Mfg. Co.  
Laruevant, S. F. Co.

**Bolter Compound**  
American Fluoride Co.

**Boilers**  
Babcock & Wilcox Co.  
Maine Safety Boiler Co.  
Lidgerwood Mfg. Co.  
Orr & Semhower, Inc.  
Pollock, Wm. B. & Co. (See Machinery.)

**Brake Shoes**  
Sargent Co.

**Brick Machinery**  
Crescent, S. M., & Co.

**Bridges**  
Berlin Bridge Co.  
Perry & Co. (See Machinery.)

**Buckets**  
Scaife, Wm. B. & Sons. (See Machinery.)

**Calculators**  
Smith, R. C.

**Carbons**  
Bishop, Victor, & Co.

**Car Wheels**  
Whitney, A. & Co.

**Chain and Link Belting** (See Belting.)

**Chemicals**  
Baker & Adamson.  
Bullock & Crenshaw.  
Henry Hill Chem. Co.  
Overbrook Chem. Co.

**Coal**  
Berwind-White Coal Mfg. Co.  
Castner & Curran Consolidation Coal Co.  
Coxe Bros. & Co.  
Haddock, Shonk & Co.  
Coal Cutters  
Ingersoll-Sergeant Drill Co.  
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