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The English have learned something; instead of buying American mines after they are brought to London with half a dozen commissions quadrupling their price, they are now sending capable American engineers all over this country to buy mines at first hand and at reasonable prices. This will be better for the mining industry and far more profitable for the English investor.

The United States in 1895 produced \$46,830,200 worth of gold and 46,331,235 fine ounces of silver, that is almost as many ounces of silver as there were dollars of gold. The gold output of the United States in 1895 exceeded that of the Transvaal by \$3,886,331, and that of all Australasia by \$4,036,376. The Transvaal output will not increase as rapidly as has generally been expected. Australasia will, doubtless, regain second place, but the United States promises to hold the first place as a gold producer for many years to come. Mexico is now the greatest producer of silver in the world. In 1895 its output was 50,890,267 fine ounces, as compared with 46,331,235 fine ounces produced in the United States.

Electricity is finding in mining and metallurgy one of its widest and probably its most profitable field. For drilling, coal cutting, pumping, hoisting, ventilating, underground haulage, crushing, concentrating and for driving machine-shop tools so generally used at mines it is now in most places the most advantageous, and is always in the shop the most convenient source of power.

In metallurgy the field for electricity and electrical machinery is equally extensive. At present nearly all the copper and much of the gold and silver are refined electrolytically, and several metals are reduced from their ores by its use. In the chemical industry electricity is rapidly supplanting the older methods, and it is certain to become more and more popular as the electrolytic methods are better understood and the cost of electric transmission of power is reduced.

The London & Cripple Creek Reduction Corporation, Limited.

On another page will be found a letter from Mr. Philip Argall, the well-known metallurgist of Denver, Colo., and the manager of the Metallic Extraction Company, who unqualifiedly contradicts the statements of Mr. James R. Page, who is endeavoring to sell a secret cyanide process to the London & Cripple Creek Reduction Corporation, Limited. It is scarcely necessary for us to do more than to warn investors against what has all the appearances of a humbug.

The Merced Mine.

The mill returns from the Merced mine in March, \$1.67 per ton, and in April, \$4.51 per ton, average \$3.49, were published in these pages May 16th, when we stated, in referring to the grade of the ore, "It is perhaps more important to account for the comparatively high yield, \$4.51 per ton in April" (than the low yield in March). "Is it possible that the revelation of March induced the managers to mill only their good ore in April and learn the best that could be obtained?"

It seems now from the May returns that our supposition was correct. In May the official statement says there were treated 2,280 tons (the full capacity of the mill), and the yield in gold was \$5,100 and in sulphurets \$1,432 (allowing 90 per cent. to be recovered), making a total of \$6,532, or an average yield of \$2.82 per ton.

Probably this is not far from the average grade of the ore, for the average of the three months' milling, in which was included what appears to have been selected ore in April, was only \$3.24 per ton. It is certain that the company is losing money on every ton of ore now milled, and he would be rash who assumed that even with a large mill any dividends can be earned.

It would be interesting to know how much stock the "insiders" hold now and when and at what prices they sold.

If it were possible for the Engineering and Mining Journal, which had no interest in the matter, to learn the actual value of Merced ore, as we stated it in September last, how is it that the high-priced experts and the experienced mining men on the board of directors of the company were so woefully mistaken after the examinations which they claimed to have made? The stock, which sold up to about \$50, has now gone down to \$6 1/2 per share, and an assessment of \$2 per share has been made. It may well be that those who have lost their money may seek to have it returned on good grounds. Directors or trustees may learn that they have responsibilities as well as honor and profit in floating mines.

Mining in West Australia.

Advices recently received in private correspondence from West Australia confirm our impression that the region has been greatly overrated as a basis of investment upon actual development. According to this information, the people of the colony itself, of South Australia and of Great Britain, have rushed, or have been drawn, into speculative investments which have no reasonable basis, and in comparison with which the reckless purchases of mining property in the United States sink into insignificance. British investors have fairly insisted upon purchasing in West

Table with 3 columns: Article Title, Page, and Page. Includes sections like Cleveland, Colo. Springs, Salt Lake City, San Francisco, London, Paris, Br. Columbia, Quotations: Boston, Ind. and Coal, Colo. Springs, New York, Pittsburg, St. Louis, San Francisco, Baltimore, Miscellaneous, London, Paris, Mexico, Valparaiso, Shanghai, Denver, Philadelphia, Salt Lake City, Aspen, Helena, Duluth, Mining Co's: List of, Advt. Index, Advt. Rates.

Australia so-called mineral property by the acre, and holes in the ground as valuable mines. The number of these holes is amazing. The local papers refer to them as "having a large formation, with fine gold." In fact, their prospective value is predicated upon the existence, anywhere within five miles of more or less productive mines, and upon the generally uniform character of the country, in which it is easy to dig anywhere, and in which anywhere a bonanza might be found, for all that the surface shows to the contrary.

The Coolgardie district is about played out. The very rich ores struck there proved to be only bunches, and little more has been found. In the outlying districts of Minzies to the north, Broad Arrow and White Feather to the East, and Dundas to the South, miners are heroically pegging away, but favorable developments are few. In the Murchison region, conditions and prospects are now favorable, especially since, by reason of the abundance of water, ore can be profitably mined which carries 1 oz. of gold per ton. Elsewhere, the scarcity of water, and the presence of 20 to 30 per cent. of saline matter in such water as can be obtained render the treatment of the ore very difficult. The experiment of reducing in "dry" stamp-mills is not yet a success.

In the Kalgoolie district, perhaps half a dozen mines may ultimately turn out to be profitable. The Great Boulder and the Lake View, which are now the "bonanza" mines, have ore-streaks of remarkable length and regularity, and three or four other mines present fair prospects. The country-rock is talcose schist, which has been crushed and fissured by intrusions of diorite. The small cross-fissures seem to have silicified and mineralized, in places, zones of the schist, producing belts of interlaminated schist and quartz, varying from 2 to 5 feet in thickness, and pretty well defined. The average value of material is about 1.5 oz. gold per ton. In the Great Boulder mine the average is about twice that, though a considerable amount of 6-oz. ore has been crushed. The question of the continuation of value in depth is watched with great interest. The 200-ft. levels, which are just beginning to be opened up, do not exhibit very encouraging features.

On the whole, it must be said that mining developments in West Australia have not justified, thus far, the extraordinary statements of promoters concerning that field. No doubt there will be some valuable results from the energetic prospecting now in progress, but the expectations of credulous investors are likely to be cruelly disappointed.

The Bicycle for Mining Men.

Evolution marches with even more rapid strides nowadays than formerly, and its march is not confined to the beaten-track bike pathways and park roads in the older cities and in the less scenic parts of the world. So, as mechanical progress goes on, just as the Morgan roadster, the natty cob, the stylish tandem team, the coaching crack, and even the unobtrusive but reliable street-car animal, are being displaced by something "fitter," the great ruling principle asserts itself everywhere, and now the reflective onlooker may witness the passing also of the sportive broncho, the decorative pinto, the agile cayuse, the mustang of many amiable varieties, the pony of the plains and the corral-nay, we may even soon witness the effacement of the patient and tuneful burro himself.

No one can say whether the bicycle's popularity has yet reached full flood, but it is evidently something far beyond a fad and a momentary diversion. See how in the plains cities, nay even in the mountains, it has displaced animal locomotion, not merely as a means of recreation but as a practical method of getting over ground. In a level city like Denver, for example, and in many of the metallurgical centers and distributing points near the mines, where the roads are level and good, often finished with asphalt concrete, note how the machine has ousted the animal. The messenger boys use it, the real estate peripatetics rely on it, and the mining experts are not too proud to reach their lairs on it. But that is not all. Pass from the plains and the racecourse smoothness of such places to the rugged fastnesses of the mountains, and behold the superintendent wending his way up the grade from office to hoisting works, and the assayer nimbly trundling his morning's samples along the trail on the way to work them up. Find a place still steeper, more arduous, and there will you find also the ambitious coasters, flying down choice bits of country like the old Pike's Peak wagon road, with the stimulating expectation of possible headers always in view, to keep the other wheels in their think-tanks lubricated and moving.

But between these two extremes of prosaic utilitarianism and dillitante enthusiasm, the "bike" is forcing its relentless way into the medium-grade roads and paths of all the rolling coal mining territory, into many of the moderately accentuated precious-metal camps of the far West and into all of them where there is a decent stretch of level to rest on, or something like the Geiger grade to luxuriate in, and of course into all the flat country where so many of the iron, coal, lead and zinc mines are—for it is a mistake to suppose that mines exclusively haunt the upper altitudes.

In all these places the bicycle makers are finding a great and liberal market, and they are taking advantage of it. They should always bear in mind that to suit the requirements of this large, but peculiar, demand

they should offer the most substantial goods, with not too much cutting of weight, and, above all, with honest tires, for replacements and repairs are not always so easy in mining regions as in Connecticut; while the prospective buyers, understanding this, are willing to pay well for reliability, in the light of a necessary insurance. All the accessories which help to make the rider independent of the repair and outfitting shop are also in special demand there.

The Old Dominion Copper Company.

This company is having much trouble at its mines in Arizona, and they are now closed on account of unreasonable demands on the part of the Miners' Union. The stock of the company was sold at very high prices, and is widely held abroad, hence the recent heavy decline in its value has occasioned much dissatisfaction, and many inquiries concerning its probable intrinsic value and the prospects of the mine in the future have come to us. One of our correspondents' letters appeared in these columns, June 6th, and a number of replies to it have been received, mostly from Arizona, where there appears to be so much personal feeling that it is somewhat difficult to separate the actual facts from the statements intended chiefly to injure the company's superintendent.

The local paper, the *Arizona Silver Belt*, gave, June 4th, a very fair account of the strike at the mines, and from this and other evidence before us it appears that when the Bigelow-Lewisohn interest purchased the property Mr. A. D. McLean was appointed manager of the mines. He had long been connected with the Detroit Copper Company, and is, we believe, a competent man. Shortly after this appointment the company sent to Globe as manager, Mr. S. A. Parnall, son of the superintendent of the Tamarack mine in Michigan, and no doubt also an able man.

From the first there appears to have been friction between these officers, and as Mr. Parnall last September ordered a reduction of wages of the car men from \$3 to \$2.50 per day, he naturally aroused the antagonism of the men also. About a month ago Mr. McLean resigned, and at the end of May the mine car men and surface laborers were notified that their wages would be reduced to \$2.25 per day. This immediately brought on active war, and late at night, on the 31st ult., a party of men, mostly employees of other companies, attacked Mr. Parnall on the street and threatened to run him out of the camp.

Mr. Parnall explained that his order would not result in any reduction of wages, because the car men could do the work on contract and make even more than the old wages and he even offered to withdraw the notice of a reduction of wages. The miners at once formed a Union and practically took the superintendent a prisoner and made demands that all the men at the mines should be paid \$3.00 a day, which had been heretofore the rate for miners only; that all Mexican laborers be summarily discharged; that the monthly insurance fee be abolished; that no union man be discharged, and that no one be employed except upon the approval of the Union. One hour was allowed Superintendent Parnall to concede these autocratic demands and if he refused any one of them he was to be expelled from the camp by force. Not only were these inadmissible demands made in this autocratic manner but they were accompanied by the coarsest of personal abuse of the prisoner, Mr. Parnall, who is said to have acted with great courage and composure. He conceded the demands until he could communicate with the company, and as was inevitable, the directors promptly ordered the mines closed, and they so remain at present.

These outrageous demands of the Miners' Union remind one forcibly of the "Molly Maguire" days in Pennsylvania, and they must necessarily bring loss and injury on the men as well as the company and discredit on the Miners' Union.

Unquestionably there is much antagonism to Mr. Parnall at Globe, and the fault is not all on his side. The men point out that the price of copper has advanced considerably, and that the speculators—in which category rumor places at least some of the directors of the company—have been making vast sums of money by booming the stock, and that it is unreasonable under these circumstances to ask the men to submit to a reduction in their wages.

The purchase price of the property was \$1,000,000 or \$6.67 a share, a sum which was considered by many experts as very fully covering its value. The stock was sold in Boston at \$25 per share, or at the rate of about \$3,750,000 for the property. Much of the stock was, it is said, sold in Europe at about \$30 a share, or at a rate of, say, \$4,500,000 for the property. It is not altogether unreasonable then that workmen seeing these enormous profits being made, as they believe, by the directors of the company should object to their wages being reduced in order to help inflate the boom. The present price of the stock is about 16.

It is possible that the youth of Mr. Parnall may have rendered him less prudent in dealing with antagonistic forces than a more experienced man would have been.

The condition of the mine is represented as not very favorable by a Globe correspondent, who evidently is familiar with the property. We refer to his letter on another page.

NEW PUBLICATIONS.

The 31st edition of a manual of the principal instruments used in American engineering and surveying has just been issued. The special class of instruments dealt with are those manufactured by the firm of W. & L. E. Gurley, of Troy, N. Y., who commenced business under the partnership of Jonas H. Phelps and William Gurley just 50 years ago, so that this manual might be called a semi-centennial edition, and during no less than 30 years, consecutively, this firm has advertised its instruments in the *Engineering and Mining Journal*.

There are excellent portraits of William Gurley and Lewis E. Gurley in this manual, besides a good representation of the manufactory in Troy, which shows the extent of the business and the space occupied in which to carry it on.

The manual is very complete, gives fullest possible information with regard to prices and instruments, and to take the company's chains and steel tapes, for instance, almost any reasonable size can be got in meters and varas as well as in feet, so as to suit the conditions existing in Mexico or any of the Central or South American countries. With regard to transit instruments, compasses and engineers' levels of every description, the information is as full as possible.

There is one chapter upon astronomical terms which will be found of great use either to a student who has got rusty from lack of practice or to an ambitious subordinate who has not had the full advantage of education and wants to understand the work he is carrying out in that position.

BOOKS RECEIVED.

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

- Canadian Geological Survey: Summary Report for the Year 1895.* Ottawa, Canada: H. M. Printer. Pages, 124.
- Estadista Minera de Espana; Correspondiente al Ano de 1894.* Madrid, Spain; National Printing Office. Pages, 61.
- Handbuch der Metallhüttenkunde. Volume I.* By Carl Schnabel. Berlin, Germany: Julius Springer. Pages, 706; illustrated.
- Yearbook of the United States Department of Agriculture for 1895.* Washington, D. C.: Government Printing Office. Pages, 656; illustrated.
- A Postal Dictionary: Being an Alphabetical Handbook of Postal Rates, Laws and Regulations. Compiled from Official Sources.* Buffalo, N. Y.; Matthews-Northrup Company. Pages, 102. Price 15c.
- Iowa Geological Survey: Annual Report for 1895. With Accompanying Papers.* By Samuel Calvin, State Geologist, and H. Foster Bain, Assistant State Geologist. Des Moines, Ia.: State Printers. Pages, 452; with maps and illustrations.

CORRESPONDENCE.

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

Mr. James R. Page and the London and Cripple Creek Reduction Corporation, Limited.

Sir: You state in your issue of the 6th that Mr. James R. Page, of the London and Cripple Creek Reduction Corporation, Limited, "erected, and until recently managed, the plant of the Metallic Extraction Company at Florence." This statement is absolutely false. Mr. Page has never been connected with the works of the Metallic Extraction Company in any capacity whatever.

Mr. Page made an attempt last year to float a company to treat Cripple Creek ores by his alleged process, and the prospectus of this first company is now before me. In it Mr. Page does not claim any connection with the Metallic Extraction Company, though at that time this company had been running successfully for over four months.

That prospectus, however, gives information not contained in the second, as, for example: "The vendor has deposited with the company a sealed full description of his *secret process*, which in case of his death would enable the company to continue the process, and he will also confide the secret to two of the directors."

The date of contract is the same in both prospectuses, 30th of September, 1895.

It is surprising that even London investors can be found who will listen to the mellifluous promises of the secret process man.

CYANIDE, Colo., June 10, 1896. PHILIP ARGALL, Superintendent.

Sir: In your issue of June 6th, you state in an editorial that "Mr. Page erected, and until recently managed, the plant of the Metallic Extraction Company at Florence."

This is a serious error, and one liable to do injury to the company and also its efficient manager. Mr. Philip Argall erected the plant in question, and has been its manager since the works started. I am informed that the Mr. Page you mention never had anything to do with the plant.

Under the efficient management of Mr. Argall this has been one of the most successful cyanide plants which have been erected, and it appears to me that it is an injustice to both the company and Mr. Argall to couple the name of Mr. Page with it.

DENVER, June 10, 1896. H. VAN F. FURMAN.

Treatment of Zinc Lead Sulphide Ores.

Sir: I read with much interest, in your issue of May 23d, a letter from Mr. F. L. Bartlett, stating that lead ores high in zinc were being successfully treated by the American Zinc Lead Company, at Cañon City, Colo., and making light of the attempts being made at the Broken Hill mines in Australia, but it appears to me the conditions at the two places are so entirely different that no rough comparison can be made.

If I am not mistaken, in Cañon large quantities of ore are smelted con-

taining little or no zinc, and by this means the average percentage of that metal is greatly reduced and no trouble is found in smelting such mixtures successfully.

At the Broken Hills, on the contrary, nearly all the free ores were mined and smelted at an enormous rate, with no thought of the future, and in depth nothing but sulphide ores have been found. Consequently the problem now is to smelt Galena ores containing from 20 to 30% of zinc, in the form of blende, without any adequate supply of ores free of zinc by which the average per cent. of that metal in the mixture could be reduced.

A few items of information regarding the process in use at Cañon suggest themselves which would be very interesting.

- 1st. What proportion of high-grade zinc ore is used in the charge?
- 2d. What per centage of zinc is contained in the furnace mixture?
- 3d. What per cent. of zinc do the resulting slags contain?

If Mr. Bartlett would kindly favor your readers with information on these and other matters connected with the process, I believe it would greatly interest many of them, as the question of utilizing such ores is an important one throughout the West and in many other countries.

BOURNE, Baker County, Ore., June, 8th 1896. JOHN LONGMAID.

Sir: If the treatment of the Broken Hill zincy ores be such a simple matter as Mr. Bartlett makes out, why is the large cash premium offered by the Broken Hill Company for a practicable method of treating these ores still going a-begging?

The fact, of course, is that while small quantities of these ores can be treated by the Colorado smelters, mixed with large proportions of other less refractory material, none of them could handle this class of material alone. And so far as Mr. Bartlett's own very ingenious process is concerned, I understand that even in Colorado, with the almost boundless market of America at its door, the limited demand for the zinc-lead pigment produced hampers its wider application. If made in the interior of Australia, and on the scale required at Broken Hill, it would be simply a waste product.

And further, has not Mr. Bartlett made some mistake in figuring the price which he pays for this ore? At this mine we have repeatedly tried to sell ore of this type, and even of considerably better silver grade, and have found it not worth hauling to the railway.

A leading firm of ore-buyers here figures its value in car-load lots, as under.

Lead, 18% at 20c.....	\$ 3.60
Silver, 21.2 ozs., at 68 3/5c., less 5%	13.77
Gold, 100, not paid for if under 100.....	nil
	\$17.37
Less zinc, 26.8%, deduction of 50c. per unit over 10%	\$8.40
Less treatment	5.30
Less freight to Denver.....	2.70
	16.40
Net value per ton at Georgetown.....	\$0.97

If Mr. Bartlett will purchase ore, such as he describes, from this district, on the schedule mentioned in his letter, I can promise him a large supply.

Americans may well be proud of the great metallurgical industry which they have built up in their midst; but such misleading comparisons as this are neither in good taste, nor just to the many skilled metallurgists, American as well as English, who are so freely employed by the great mining companies of the Broken Hill district.

ARTHUR L. COLLINS.
TERRIBLE MINE, GEORGETOWN, COLO., June 4th, 1896.

Mr. Bartlett's Reply to Mr. Collins.

Sir: We have a copy of your letter of June 4th to the *Engineering and Mining Journal*—handed us for reply. We beg to say if you have for shipment such ore as you describe, we will be pleased to handle it, and pay for it as follow:

21.2 oz. silver @ 68 3/5c., less 5%	\$13.78
0.05 oz. gold @ \$19 per oz.	0.90
18% lead @ 25c. per unit.....	4.50
26.8% zinc, nothing .....	.....
Gross value.....	\$19.18
Less a treatment and freight of.....	11.00
Net value.....	\$8.18

We are now and have been for some time handling a car a day of zinc tailings from Georgetown, which assays only 10 oz. gold, 15 oz. silver, 3 to 4% of lead, and 33% zinc, and this notwithstanding the fact that freight from Georgetown to Cañon City is \$2.50 higher than to Denver, making Georgetown rather difficult territory for us to bid in. Still we have been able to secure some ore from there, and hope we shall be able to do business with you.

Please let us know if you can accept our bid, and how much you can ship daily.

You mention a premium offered by the Broken Hill Company, for the successful treatment of their ores. I am unaware of anything of the kind, and would be pleased to have particulars.

F. L. BARTLETT, General Manager.

CANON CITY, Colo., June 13, 1896.

[We referred the letter of our correspondent, Mr. A. L. Collins, to Mr. Bartlett, and he made the accompanying reply, which we publish, since it replies to many other inquirers, and gives that practical information which answers questions most satisfactorily.]

The Broken Hill Company at one time did propose offering a large prize for a successful method of treating their zinc-lead sulphides, but this offer, if ever actually made, was withdrawn.—ED. E. & M. J.]

The Old Dominion Copper Company.

Sir: Partly in reply to J. C.'s questions regarding this company, and partly for the benefit of those who may be either directly or indirectly concerned in its welfare, I shall attempt to give you an account of the

state of affairs and the way things have been managed at this end of the line, while the "ring" has been manipulating the stock in the East.

The purchase price was \$1,000,000, and in the opinion of competent men, who are well qualified to judge, this was a full value for the ore in sight. The best ore bodies are between the 4th and 6th levels. The 7th level shows very little, and the 8th is altogether barren. The depth of the shaft is some 440 ft., about 40 ft. below the 8th level, and the vein is wedge-shaped and the walls are gradually coming together as depth increases.

The management of the mine was placed in the hands of Alex. D. McLean, whose name has been intimately associated for the last 15 years with the successes of the Detroit Copper Company at Morenci, with the understanding that he was to have full charge of his department. The mine was retimbered, put in good shape, and in condition to ship before Mr. Parnall was sent down. Shortly after Mr. Parnall's arrival, the three furnaces were blown in and started up on about 6,000 tons of choice, clean ore averaging a little under 14%.

Under his superintendence two out of the three furnaces, sometimes all three, might continually be seen frozen solid. Instead of making from \$100,000 to \$150,000 on this ore, which cost them nothing delivered at the smelter, and which should have cost but little to smelt, I venture to say, that they ran it through at a dead loss of tens of thousands of dollars.

Finally, when all this ore had been converted into a very rich slag and some few tons of bullion, orders were given to Mr. McLean to virtually "pick the eyes out of the mine." Only high-grade ore was to be sent up (8 to 10% ore being useless when a 6 to 8% slag is being made); the rest remained in the mine as filling. Two 42-in. water jacketed furnaces have been running continuously on this ore for about five months, making on an average only from 16,000 to 17,000 lbs. of copper per day.

A few days ago a shut-down was ordered for an indefinite length of time by the Boston office. The excuse given was the action of the "Miners' Union," a body which was organized to resist the superintendent's wage-cutting policy.

It is to be hoped that the shut-down is only a temporary affair, and that operations will shortly be recommenced, this time in a business-like manner and under new management. If the company does not wish to entirely cripple its resources the gutting of the mine should be stopped. The low and high-grade ores should be mixed in proper proportions to form a minimum charge.

With a competent and conscientious superintendent and a good smelter man who would cooperate to curtail expenses and leave costly and unnecessary experiments alone, there may be fair prospects ahead of them in the future. If, however, they do not make radical changes, but persist in running along on the old lines total ruin will shortly overtake them.

GLOBE, ARIZ., June 12th, 1896.

C. E. B.

THE CAMP FLOYD MINING DISTRICT, UTAH.

Special Correspondence of the Engineering and Mining Journal.

Since I returned here I find a marked change in the aspect of the camp. It was booming before, in a mild way, but now there are several deals on foot which will bring the camp into competition even with Marysvale. In the present rush to develop Utah's gold resources, we have no Cripple Creek to show as a means of attracting Eastern and foreign capital, but if you will compare the steady, solid returns of this old, yet new camp—for we are just beginning to find out what there is in it—you will see that we make a pretty fair showing. When I say "new," I mean that recent developments are only just beginning to show what we have here. At first it was one mine and all interest centered in the solution of the problem of working a peculiar class of gold ores by a then novel and not very well-trying process. But now the Mercur is not the only shining light of the camp. We have a whole nest of mines, some good and paying under existing conditions and some other propositions which the rock sharps are now looking into and some of which ought to turn out well.

There is one great difference between our conditions here and those existing in many of the other Rocky Mountain and coast camps. In these other places the one question lately has been to get a large body of low-grade ore in well-defined beds or fissures, and then, by raising enough capital to put up a big 120-stamp mill and run through a lot of rock at the least cost, to make a total net aggregate profit, depending upon a margin of a dollar or so, or even a few cents, per ton. Here we have some fair low-grade propositions, but they are of a different sort from the Black Hills, the California and the Alaska big low-grade lodes, for the old standard Nevada County process and the Gilpin County system do not apply here. California and Colorado are not Utah. Our cyanide plants are doing the work, and more than was expected. Perhaps if, in the same line that the amalgamation mills have been expanded and average costs per ton reduced by better labor-saving arrangements, better graded sites or improved elevator mechanism, with higher tonnage capacity, it may be possible to rush through the ores of some of the big low-grade deposits of our camp at a rate that will make new records—we could show up something like the Homestake or better.

If you will permit the suggestion, I think that just now the metallurgical authorities, and the *Engineering and Mining Journal* in particular, ought to devote special attention to this new problem—of working low-grade rock in quantity that will not pay by the old free-milling or Gilpin methods. In the Transvaal and here great practical results have been accomplished in the way of object lessons lately; but the limit of efficiency is a long way below the best records we have got.

We do not want any patent process or secret process men to advertise their wild assertions here. We have been through all that. What we do want is for competent metallurgical authorities to give a fair share of their attention to the conditions arising from the entirely new problems presented; and if this suggestion is met with the hearty professional response I expect, it will not have been made in vain. There has been some nice work done here in working out the practical application of cyaniding, and the records are something to be proud of; but, as in all like cases, there is always room for improvement.

MINOUR, June 16th, 1896.

THE POSSIBILITIES OF THE PETROLEUM INDUSTRY IN CALIFORNIA.

Written for the Engineering and Mining Journal by Harold W. Fairbanks.

The unfortunate predictions of the old State geological survey under Prof. Whitney have undoubtedly delayed the development of the petroleum industry of California for many years. It not only did this, but it created such a bad opinion concerning the value of geological investigations that ever since the State has refused to undertake any thorough and exhaustive study of its geology. Twenty-five years ago geology had hardly reached the state of a science in many of its different lines of study. To-day those intending investing in any business which is concerned with the development of natural resources cannot afford to make light of the judgment of careful observers on questions of this kind.

Although no systematic examination of the oil-bearing strata of California has as yet been made, there is in all probability a great area which will be found to be productive. The conditions of the occurrence of petroleum here are somewhat peculiar, being totally different from those of the Eastern States. Here it occurs chiefly or wholly in strata of one of the youngest formations, viz., the Miocene. The source of the oil has very little, if any, connection with coal-bearing rocks, but appears to have been formed from animal life, which occurred in great abundance in the form of minute organisms. The strata most characteristic of the oil-bearing portion of the Miocene are clays, shales, limestones and banded flints. All together were termed the "bituminous slate series" by Whitney. The calcareous strata, in particular, are rich in oil, and for several hundred miles through the coast ranges, wherever these rocks occur, they give out a strong fetid odor when freshly broken.

The oil-bearing shales extend from a point a little south of Los Angeles through the Coast Ranges as far north as San Francisco, a distance of nearly 400 miles. Although owing to erosion and different local conditions the oil strata proper appear in much more limited areas, yet the known extent in which the deposits of asphaltum occur is very large. The most southerly field now developed is that at Los Angeles. Northwest of this a few miles is the field about Newhall and the Santa Clara valley, where oil was first found. From this point the shales extend continuously northward along the coast through Santa Barbara and a part of San Luis Obispo counties. A number of productive wells have been bored near the town of Santa Barbara. Much of the western portion of Santa Barbara County is especially rich in bituminous products, while the characteristic shales are prominently exposed over a large area in the Santa Ynez valley, the lower Santa Maria and the Sisquoc valleys. In this region no thorough test wells have yet been put down, but the mining of bituminous rock and asphaltum is a prominent industry. The oil shales are characteristic of southern San Luis Obispo County, and occur also on its northwestern border, extending into Monterey County.

An oil belt is continuous for a long distance along the western side of the San Joaquin Valley. Beginning in western Kern County near the Sun Set oil wells it extends north to San Benito County. It is quite possible that this will prove one of the most productive fields in the future.

Much interest is being aroused in California at present over the subject of petroleum, and it would be of the greatest importance if there could be disseminated a correct knowledge of its occurrence. In default of this knowledge much effort and expense will continue to be wasted, as it has in the past. In no line of development is it so absolutely necessary to understand the geological conditions as in that of putting down oil wells. Many instances have already come under the writer's observation in this State where thousands of dollars might have been saved by consulting a capable geologist instead of depending on the report of an Eastern "expert," perhaps well versed in the conditions under which oil occurs in the East, but totally ignorant of those in California. In Monterey County wells have been bored where there was a mere seepage of oil or even smell of oil in the shales without paying any attention to the local geological conditions, structure and thickness of the beds, etc. These wells have all been failures.

One of the best examples of boring undertaken under the advice of a so-called "expert" totally unfamiliar with the local geology is furnished by some recent experiments near San Diego, in the extreme southern part of the State. Geologists have not been able to trace the Miocene oil shales any great distance south of Los Angeles, while the strata farther down the coast belong to older formations, the Eocene and Upper Cretaceous. A well is now being bored on Point Loma, west of the City of San Diego, in strata of upper Cretaceous age and has already reached a depth of about 1,000 ft. No oil has yet been found, which result is in accordance with what any geologist could have predicted. It is a self-evident truth that wells bored in strata underlying the oil horizon will be unproductive.

It would seem that an illustration of this kind, similar to former experiences in other localities and which will probably be duplicated in projected borings in the same region, would impress upon those interested the value of a thorough geological survey. California covers an enormous area and progress would necessarily be slow, but this fact should not stand in the way of making a beginning.

Considering the wealth and rank of the State it has done very little along the lines of geological survey work, which has been so profitably undertaken by a large number of the States. Money thus spent would, without question, be returned many times over in the production of added industries.

Arctic Railroad in Europe.—The northernmost railroad in the world, which extends to about latitude 64°, inside of the Arctic Circle, is in Sweden, and serves for carrying iron ore from Gellivara, southeast to the Gulf of Bothnia, at Lulea. Originally it was isolated, but in the summer of 1894 a Swedish main line, which extends nearly parallel with the west coast of the Gulf of Bothnia, was extended to a junction with it, so that now one may travel by rail from Stockholm into the Arctic zone. The main line is now to be extended around the head of the Gulf of Bothnia to the border of Finland at Haparanda, and the *Railroad Gazette* says a Finnish railroad on the east side of the gulf is also to be extended to Tornea, opposite Haparanda, when it will be possible to go by rail from Stockholm to St. Petersburg, going completely around the gulf.

ABSTRACTS OF OFFICIAL REPORTS.

The Gold Coin Mines Company, Colorado.

The Gold-Coin Mines Company, whose stock is quite largely dealt in in Boston, has issued a very handsome prospectus giving a description of the company's property, with maps and illustrations. This prospectus has been prepared and the drawings made by Mr. L. von Rosenberg and is a highly creditable piece of work.

The mines are in Gilpin County, Colo., on the Indiana and Kansas veins. The workings on the former are shown on the accompanying section, which covers also the workings of the California mine, which does not belong to the Gold Coin Company and the Hidden Treasure mine leased to the Gold Coin Company. The company owns a number of other more or less undeveloped claims, but the chief known value of the property is in the two veins mentioned and on these the company owns a long run.

The country-rock is granite-gneiss, frequently cut by quartz-porphry dikes. The veins are true fissures and course in the vicinity of the eruptive dikes.

The ore occurs in a succession of long swells or lenticular-shaped bodies, called "shoots" or "chimneys." While they vary in thickness from 1 to 15 ft., the average is about 3 ft.

shaft and on the Hidden Treasure claim (now leased to the Gold-Coin Mines Company) is another shaft, known as the "Hidden Treasure," 1,400 ft. deep. Most of the levels between the two shafts connect down to the 1,400-ft. level of the Hidden Treasure, and the 700-ft., 800-ft. and 900-ft. levels have been continued westward by the Gold-Coin Mines Company into "Indiana" ground. The eastern end-line of the "Indiana" is 528 ft. from the Hidden Treasure shaft.

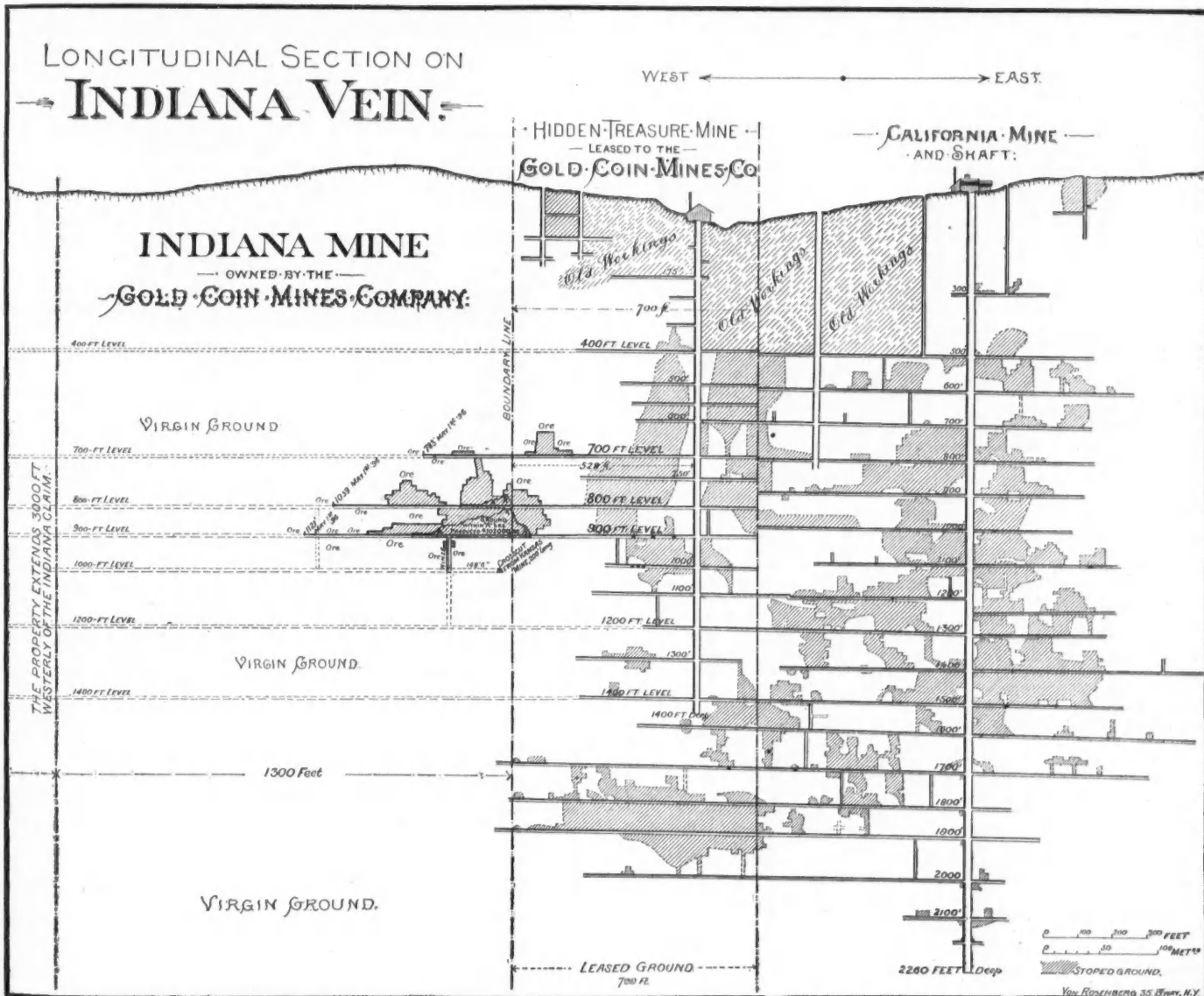
The Kansas mine lies to the north of the California and is on a separate vein, nearly parallel with the "Indiana," though approaching the latter slightly as it trends to the west. The Kansas has been opened to a depth of 1,350 ft. by its main shaft, with numerous levels.

The cost of driving drifts is from \$5 to \$7 per ft., while the cost of blasting ore in the stopes is from 50 cents to \$2 per ton according to the varying width of the ore-breasts.

In the three months, January, February and March, 1896, the product was:

Smelting ore, 258 6 tons, gross value.....	\$30,971
Milling ore, 6,175.4 " "	53,634
Total. 6,434 tons.....	\$84,605
Expenses are stated to have been	\$46,676

The following items of cost are given: Extraction, \$2.17 per ton; hoisting, \$0.70; milling, \$1.72 and smelting, \$9.23 per ton.



The mineralogical character of the ore is rather complex, being a mixture of auriferous copper pyrites, iron pyrites and zinc-blende, with occasional spots of galena, associated with quartz in a porphyritic-granitic matrix derived from the enclosing country rocks. The gold is not visible in the ore, although it constitutes about seven-tenths of its total value. The minerals form two distinct classes of ore, which occur sometimes separately in the veins and at other times run side by side in well-defined pay streaks. First. The "milling" ores, which carry fine metallic gold and pyrites in a silicious gangue and vary in value from a few dollars to \$20 per ton and in wide bodies can be profitably mined as low as \$4 per ton. Second. The "smelting" or "shipping" ore, locally termed "iron," which consists of massive copper and iron pyrites mixed with zinc blende, and averages over \$100 per ton. The cost of treatment varies from \$4 to \$10 per ton, the ore being shipped directly to the Denver smelters at \$2 per ton and sold for cash, in which market there is active competition.

The vein in the Hidden Treasure and California has been worked for 40 years, during which time it has become celebrated as one of the deepest, most persistent and productive of known true fissure veins. Its production is known to have been many millions of dollars. It has been opened by the California shaft to a depth of 2,250 ft., from which more than 20 levels have been driven east and west. Eight hundred feet west of this

With good management and dead work kept well ahead of requirements, this should be a profitable mine for many years to come.

Playa de Oro Mining Company, Ecuador.

The Playa de Oro Mining Company, concerning the value of whose mines very unfavorable reports come to us from what we consider reliable sources, has issued a circular to its stockholders which says that the company has succeeded in selling some of its treasury stock, and the circular adds:

"First.—The proceeds of sales of treasury stock for cash, together with the gold now on hand at the mines, will enable the company to pay current expenses and outstanding obligations to date, including the advances made by the directors personally, and the loan of \$15,000 of Messrs. Carey and Whitridge, referred to in the circular of February 27th last.

"Second.—A contract has been made with entirely responsible parties for the sale of additional treasury stock, whereby the company will receive the further sum of \$200,000, payable in four monthly instalments of \$50,000 each. Meanwhile the company will be in receipt of the gold produced by the plant now in operation and in gradual course of extension.

"Third.—The treasury stock has not been entirely disposed of by these sales.

"This sale furnishes ample funds to increase the water supply, enabling the extensive gravel deposits of the company to be worked upon a large scale. Against these resources there remains on a claim for salary account, \$24,000 of Mr. R. F. Lord, formerly engineer and superintendent of the company in Ecuador. This the board has declined to pay, and he has entered suit for the amount, which will be contested."

A BIMETALLIC QUESTION IN CHINA.*

A very singular bimetallic question has just been agitating China, though little or nothing of it has appeared in the European press in those regions, still less in the press of Europe. As it hardly concerns the European banks (except in so far as their "compradores" are doubtless quietly making fortunes out of it), perhaps this fact is scarcely to be wondered at.

A few years ago the Canton Viceroy Chang Chih-tung (since then at Nanking, now at Hankow) established a series of mints at Canton. Not only were excellent dollars and fractional coins struck for local use, but Hong Kong itself was flooded with ten-cent and five-cent pieces. So far so good. No great consequences ensued. But, as copper cash were growing scarce in China (owing chiefly to the comparative failure under the four last Emperors to develop the copper industries of Yun Nan, disorganized by the Panthay rebellion), Chang Chih-tung decided to start a cash mint at Canton, as well as a dollar mint. The cash were not quite so heavy as, but their workmanship was much finer and more regular than in the case of the old-fashioned native article. As we all know, the Chinese "cash" is a coin rather larger than a farthing, having a square hole in the middle to facilitate its being strung. The tael, or Chinese ounce of silver, varies in every town; but, roughly speaking, the Mexican dollar is worth a string of a thousand cash, and is in value as 72 to 100 compared with the tael. In 1800 the Spanish dollar was worth 750 cash, and the Spanish Government at home had altered the value of the *quadruple de a ocho* from 15 to 16 Mexican dollars. The first Manchu Emperor, 250 years ago, had fixed the tael at 700 cash; but a century later the opium trade and the tea trade combined gradually had the effect of forcing the tael up from 1,000 to 1,600 cash.

At the beginning of this year strange news suddenly arrived in Shanghai from all the outports. In Chinkiang, one of the centers of the opium trade, the Spanish dollar suddenly fell from 1,300 to 1,175 cash, and the tael from 1,480 to 1,345. At Hankow the Mexican dollar fell to 920 cash, and the same thing at Ningpo. At both these last places proclamations had appeared announcing that the Viceroy Chang Chih-tung's new dollars (coined at Hankow now in the same way as at Canton) would shortly be placed on the market, and must be received on the footing of Mexican, Japanese, French and English dollars; that is, they must be taken freely by all good lieges, subject to market fancies. The proclamations announced, moreover, that the new dollars would be received in payment of taxes and customs duties. That always sounds uncanny to a Chinaman, who knows by experience that all exchanges go against him when he pays his taxes. The authorities at Chinkiang and Nanking were therefore somewhat staggered to find that, when the troops received their pay in the new dollars instead of in copper cash, as usual, the money changers charged 1% discount, and would only give 935 cash for the dollar. From Hangchow came news that, although 1,000 cash were still procurable for a dollar, 20 per cent. of base cash were inserted in each string, so that in effect only 960 really good coins were given. At Yangchow the local tael had gone down to 1,300 cash, and the Mexican dollar to a trifle over 900. From Wuhu and the towns of the Poyang Lake similar reports arrived. It is the invariable rule of copper cash to advance in price as compared with silver at the Chinese new year (February), for in China it is the custom for everyone, rich and poor, to keep articles not required for daily use in the pawn-shops, and copper cash are required at that festive season, in order to regulate petty domestic transactions. The fall this year, however, was something quite abnormal, and as the holidays were rapidly approaching, great popular excitement and even distress was inevitable.

It never seemed to occur to anyone that the more dollars were coined the easier they were to get; and the easier to get, the less there must be to pay for the accommodation; in short, the dearer copper-cash must be. The export of cash from China has always been forbidden by treaty, but permission to export from port to port has invariably been granted under customs surveillance. The illicit coinage and the melting down of cash are offences which have always been severely punishable. It was suspected that the present dearness in cash was in some undefined way connected with the Japanese indemnity; it was known that "smashers" were apt to coin inferior cash, for mixing with the standard article, whenever the demand was active; and it was more than suspected that the high price of raw copper in the market made it worth the while of "roguish merchants" not only to export copper cash to Hong Kong and Japan, but to melt them down to be fashioned into pots and basins. The Chinese mandarins accordingly everywhere took the same fatuous steps. Cash banks were "ordered" by proclamation not to fix "unreasonable" prices; the export of cash from port to port was either limited to a few stringworth at a time, or entirely forbidden; dire penalties were threatened against any persons who should clandestinely melt down or coin cash under any pretext; and so on.

It was not long before news came from Peking that there had been a similar crisis there too; to make matters worse, the two metropolitan mints were at a standstill for want of copper. Not only did matters not improve, but things went from bad to worse everywhere. The tea season was coming on, advances were required for purchases up country, riots were taking place, and consternation was in every man's eye. Some wiseacre at last discovered that, if all the authorities maintained the rigid prohibition against sending cash away to a port, it was evident that no cash could possibly arrive from a port. It was also discovered that so long as cash were so large and heavy that a string of them weighed eight English pounds, it was absurd to buy raw copper for coining at £30 to £50 a ton sterling, and with the other hand give away eight pounds of

finely mixed and carefully stamped copper for a trifle over 2s.—the sterling value of the Mexican dollar.

The authorities at Hankow and several other great centers, especially tea marts, endeavored to tide over immediate difficulties by issuing official cash-notes, receivable in payment of taxes and customs dues, but redeemable at some date not specified. However, in order to obviate loss from wear and tear, these notes were to be cancelled and exchanged for new ones immediately they were handed over the official counter. Proclamations were issued authorizing the free export of cash from port to port. Enormous orders for cash were sent to the Canton mint, which for some reason had recently stopped working; copper cash were ordered to be struck on a wholesale scale in various provinces where mints existed, but where for years past they had been neglected; and the latest news is, in fine, that a general improvement is shortly hoped for, when the new cash shall have come into free circulation.

Incalculable popular injury has already been worked all over China by this singular monetary crisis, and it ought to be a lesson to all who rashly interfere with the *status quo* of currency, be it gold, silver or copper.

THE MINERAL INDUSTRY OF BULGARIA.

At the present time, according to the *Genie Civil*, mining is rather in a rudimentary stage in Bulgaria, and attention is now directed, in the development of the country's mineral resources, to only three leading products—coal, mineral waters and quarries. The coals found in the country are of two classes, lignites and anthracites. The lignites occur at many points in the Balkans, and the more important centers of production are Pernik, Bobowdol, in northern Bulgaria, and Mitichien, in southern Bulgaria. There are beds of anthracite at Trevna, Toudin and Svoghia, which furnish the better class of coal of the country.

The Pernik mine is said to have 100,000 tons in sight, and has now a yearly output of 150,000 tons. The Bobowdol mine has been worked under unfavorable conditions, with badly planned openings, but furnishes at least 2,000 tons yearly to the works at Daubnitza and Kustendil; further, difficulty of transportation, which has to be by pack horse, retards the development and working of this deposit. The Trevna mine, formerly worked by the Turks, supplied the works at Tirnova and Gabrovo. The recent explorations seem to show that there is not a continuous coal bed, but rather a series of deposits, thus rendering the working difficult and expensive. The same conditions affect the coal beds of Svoghia and the other coal districts.

The springs of mineral waters are numerous in Bulgaria; all along the Sredna Gora, and on both banks there are five or six held by the Government, and in all Northern Bulgaria there have been found valuable cold and sulphuretted springs. But these waters have so far received little study from a scientific and therapeutic point of view. They are more commonly thermal waters, with a temperature ranging from 30° to 70° C.; some are utilized by the central government, others by the departments or communes under official inspectors. The best known are those of Issar (40 km. from Philipopolis), Haskovo, Kosten and Karlovo.

The quarries are of considerable importance, especially in the neighborhood of the large towns.

Iron ore has been found and was formerly mined, and there are many remains of Catalan furnaces; but the iron industry has been completely abandoned. Lead ores have been found near Kustendil, but the tenor in lead and silver is not determined.

Some of the rivers carry auriferous sands, which the Macedonians have for years come to wash, but the gold industry has not much importance.

Notwithstanding active search, petroleum deposits have not been found.

Large Steel Plates.—There was recently rolled at the works of the Stockton Malleable Iron Company at Stockton-on-Tees, England, a steel plate weighing 12,320 lbs., the sheared size being 76 ft. 3 in. by 5 ft. by 0.6 in. thick. The width before shearing varied from 5 ft. 2 in. to 6 ft. 2 in. Another large plate recently made by the Dowlais Company in Wales was 69 ft. long, 4 ft. 2½ in. wide and 0.6 in. thick; it weighed 8,200 lbs.

Titanium.—Among the latest products of the electric furnace is the metal titanium, a metal which hitherto has probably only been seen in small quantities, and rarely outside of the specimen cabinet in a chemist's laboratory. It is an extremely refractory substance; in fact, M. Moissan, whose researches with the electric furnace our readers are familiar with, states that it is the most refractory that he has yet obtained, being more infusible than vanadium, and far more so than molybdenum or zirconium. It has only been prepared in the electric furnace at the highest temperature, and by means of a dynamo using 100 H. P. The general properties of titanium resemble those of the metalloids, and particularly silicon. In a recent issue of the *Bulletin de la Société Chimique de Paris*, Moissan has a paper of considerable length describing his experiments and defining the properties of their product.

The Mitis Process.—In the melting of wrought iron it is necessary to heat it to a much higher temperature than is usually obtained in the cupola, in order to reach the fluidity necessary to secure a clean, sharp casting, and the resultant castings are of very inferior quality. There is, however, a process of making wrought-iron castings known as the "Mitis" process, which is substantially as follows: The charge of wrought iron is heated to a temperature of 2,200° C., at which heat it assumes a pasty condition, when from 0.03 to 0.05% of aluminum is introduced in the shape of ferro-aluminum (6% aluminum). The metal at once becomes fluid, and will produce good sharp castings, retaining all of the characteristics of wrought iron, except the fiber. Cast iron and steel borings and turnings may be melted in the cupola, in the proportion of 10 to 15% with high silicon pig, and will make good strong castings, but the *Engineer* argues that it would not be advisable to attempt to melt wrought-iron turnings in a cupola.

**Economist*, London.

HYDRAULIC RAMS.

Written for the Engineering and Mining Journal by Carl Pixis, Paris, France.

The use of hydraulic rams being on the increase generally, and especially in France and England, a new kind of these useful machines attracted considerable attention recently in Paris at the Agricultural Exhibition.

There have been exhibited three descriptions, viz.:

1. The single ram-pump which is raising a part of the driving water to a certain height, while the other part is flowing off.
2. The single ram-pump, by which any other kind of a liquid can be raised to a certain height by pistons of different diameters with equal strokes.
3. The ram-pump with lever, provided with two pistons of different diameters and different strokes, the driving water and the liquid to be raised being separated.

Fig. 1 shows the first of the named apparatus, which works in the following manner:

The driving water, flowing with a certain fall through the pipe A enters the cylinder B, flows out, first by the open valve E, which is some-

balance equal to the water column in the delivery pipe. By this means the shocks in the delivery pipe are avoided and the water is flowing off in a regular and uniform jet; meanwhile the air which possibly was withdrawn from the air chamber will always be replaced from outside.

If the driving water is clean and can be used for household purposes, and if the local conditions are convenient, the use of this single ram-pump certainly is the most advisable.

But it happens often that the water is impure, rendering it unfit for further purposes. Also sometimes it may be necessary to take advantage of the fall of water which has been used for other purposes; if, for instance, it is intended to raise drinking water out of a well, to a certain height, and for this purpose the ram-pump, Figs. 2 and 3, will be suitable.

The lower part of this apparatus is provided with the same arrangement as described above, viz.: The inlet-pipe A, the cylinder B, the valve E with its balance-lever L. The upper part, instead of the valve H, is provided with a piston, D, moving in the cylinder C, and the whole is supported by four small pillars.

By this arrangement the piston D, is receiving the full power of the reactive motion of the water and moves up, forcing the piston G, fitted on the same rod in the cylinder F, to move up at the same time.

After the absorption of the power of the driving water, both pistons come down by their own weight and by the lever K, provided with a

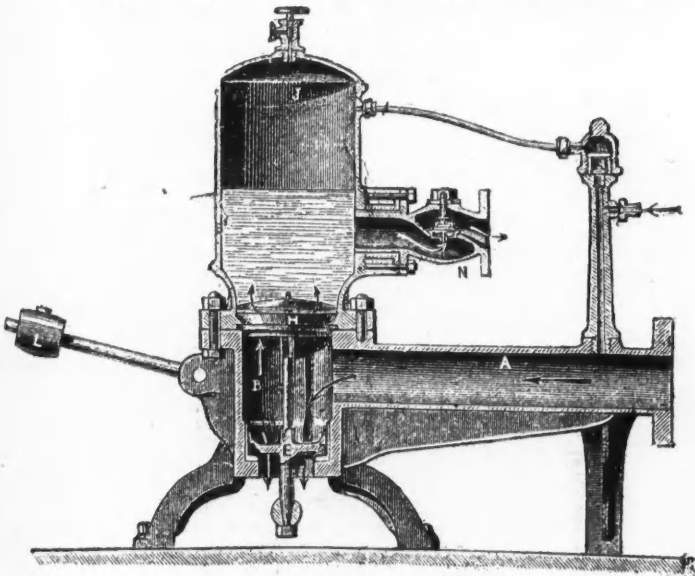


FIG. 1.

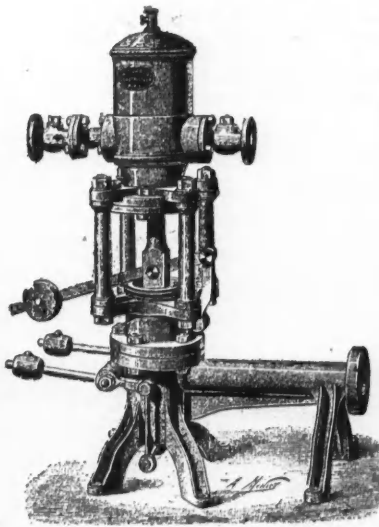


FIG. 2.

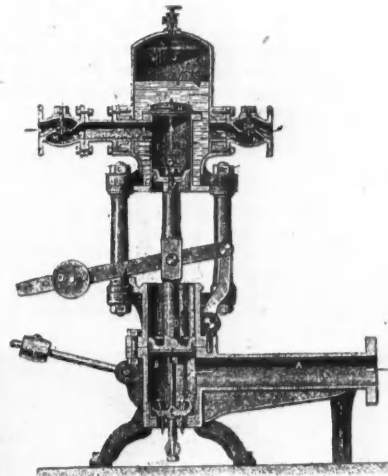


FIG. 3.

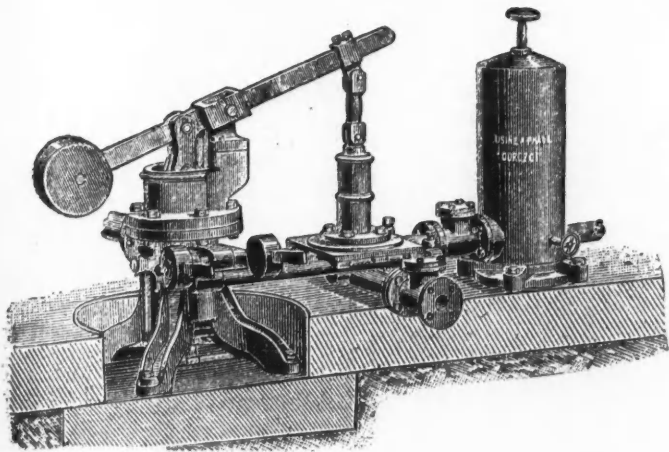


FIG. 4.

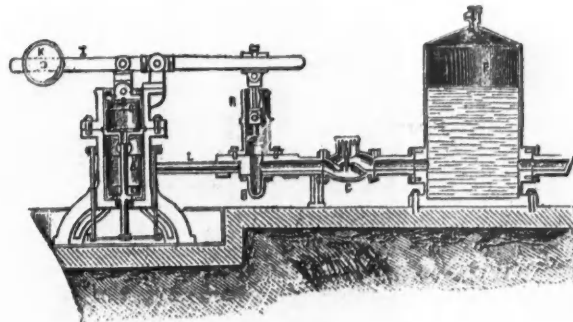


FIG. 5.

HYDRAULIC RAMS IN EUROPE.

what distant from its seat. As soon as the water has reached its normal speed, the valve E, balanced by the weight L on a lever, will close the power of the stream, which consequently is interrupted by this means just on the highest degree of its current and as it cannot flow back it is lifting the upper valve H of the cylinder B and forces its way in the air-chamber J, wherein the air is taking up the shock. If now the power of the water column is absorbed, the valve H falls back in its seat and the pressure of the air is forcing the check-valve N to open and a part of the water is raised up in the delivery-pipe. At the same time a reaction is performed in the water column, the valve E is raised with the assistance of the counter-weight and then the same working is reproduced. The apparatus connected on the right side with the air chamber is providing it continuously with air in the following manner:

As soon as the driving water is getting a certain velocity its level is sinking in the small hollow pipe which is connected with the pipe A. By this means is created an airless space; the outside air then opens a small valve and enters the small pipe in the direction of the arrow. During the repeated work of the ram the level is raised again, the inlet valve is closed and the air will be compressed between this level and a valve above, which is lifted as soon as the pressure is high enough and the air is entering the air-chamber J with a tension maintaining the

balance weight, O. By this means the water is sucked alternately by the valve M. of the cylinder F, and is forced then by the check valve H, in the air chamber J, in which the volume of air is secured by a small pipe connected with the suction pipe. Then the water is forced in the delivery pipe which is provided underneath with a check valve.

If now the piston G has a smaller size than the piston D, a small portion of a liquid can be raised to a considerable height, and if on the contrary a larger quantity of water is to be raised to a smaller height, the piston G will have to be larger than the piston D.

The shock of the ram going directly against the moving piston, the useful effect of the apparatus is very favorable; also the function of the valve can be regulated very easily by its counter-weight, and thereby the number of the ram shocks can be varied from 20 to 30 per minute.

We come now to a third kind of ram-pumps with lever, shown by Figs. 4 and 5. This kind is used for the same purpose, also for raising drinking water or any other liquid by other water which only can be used by its fall. This apparatus has also two cylinders, but instead of being placed the one above the other, they are arranged in line.

Inside the ram the parts as described above are the same. The driving water enters the cylinder A by a pipe, and flows off directly by the valve E, which also is in connection with a lever and counter-weight.

After this valve has been closed by the moving water column, the pressure is acting from below on the piston G, the rod of which is connected close to the center of the fulcrum of the side lever I. After the full stroke, the piston goes down by means of the counter-weight, K, which is fitted on the same part of the side-lever like the piston-rod. On the other side the lever is connected at a convenient distance with the piston-rod of the pump, R, and the piston receives an up and down movement in proportion to the length of the lever.

The water to be raised enters the pipe, B (Fig. 5), which is provided with a suction valve. If now the piston of the valve moves down, it is forcing the water through the valve C, in the air chamber P, and from there in the delivery pipe.

This apparatus does not require a high fall for raising the liquid to important heights; not only pistons of different diameters can be used, but also a convenient proportion between the stroke of the driving and the pumping piston can be applied.

By this means the latter can be of a smaller diameter with a longer stroke, which is advantageous on pumps in general, and here especially, where the work is produced by series of more or less vigorous shocks.

If there is disposable a large quantity of water with small fall (8 to 10 in.) water can be raised to considerable heights without any necessity to fit up several ram-pumps one above the other, a manner giving the same result but at the cost of the useful effect and the economy of the arrangement.

This apparatus can besides be used as an air compressor, feeding an apparatus of gasoline for lighting purposes at isolated places, if a small air-pump is connected with the side lever opposite the water-pump.

Also if a lack of water occurs the pump can be moved by hand. All the arrangements of this kind fitted up hitherto have given the most satisfactory results.

THE PRODUCTION OF METALLIC BARS OF ANY SECTION BY EXTRUSION AT HIGH TEMPERATURES.*

The author stated that the system of manufacture he now had the privilege of bringing before the Institute was the invention of Mr. Alexander Dick, the inventor of Delta metal. It related to the production of all kinds of metallic sections, from thin wire or plain bars to complex designs, by simply forcing metal, heated to plasticity, through a die by hydraulic pressure. He referred to the fact that although the principle

tween them, the spaces being filled in with a dense non-conducting packing. This proved perfectly successful, and machines on this principle are now in operation on a commercial scale not only at the Delta Metal Company, Pomeroy street, New Cross, London, of which Mr. Dick is managing director, but also in Germany, and at one of the large Birmingham metal rolling mills on license.

These machines are served by two men and one boy, so that the cost of labor per ton is very small.

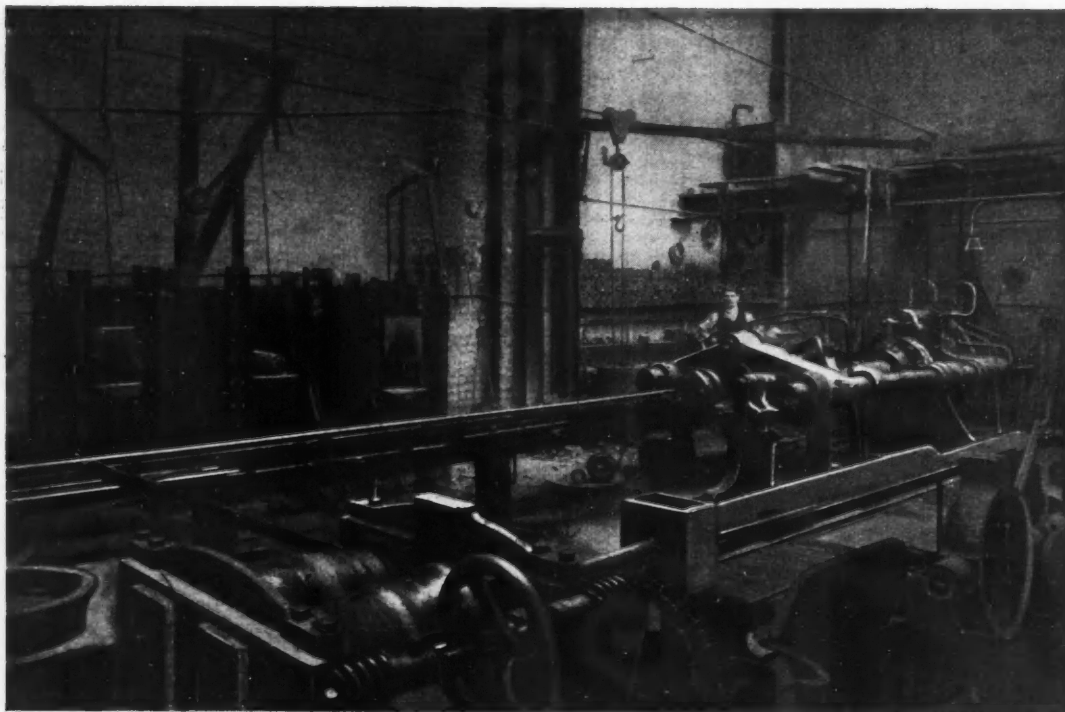
The author described the working of the system and referred to the great variety of sections (some of a very complex nature) produced in Delta metal, brass, aluminum, aluminum bronze, and other alloys and metals, samples of which were exhibited. These ranged from wire weighing about $\frac{1}{16}$ of a pound per foot run, to heavy rounds, squares, hexagons, etc., weighing 40 lbs. and over per foot run. He pointed out that the pressure put upon the metal greatly increased its strength, and at the same time rendered it still more homogeneous. Some tests made at Woolwich Arsenal with Delta metal bars produced by this machine showed a tensile strength of 48 tons per square inch with 52.5% elongation on 2 in., as against 38 tons per square inch tensile strength and 20% elongation of rolled bars of the same metal.

THE ELECTROLYSIS OF CHLORIDES.—II.

Written for the Engineering and Mining Journal by E. Andreoli.

(Concluded from page 569.)

The Castner process differs totally from that of Messrs. Richardson and Holland, to which it is far superior in every respect. It is based on the use of mercury, not as a cathode, as too many electricians believe it to be, but as a diaphragm. This diaphragm consists simply of a layer of mercury which constantly oscillates in a compartment closed on each side by a non-porous partition, the lower end of which just reaches the layer of mercury. No resistance is offered by this diaphragm, which automatically leans first toward the cathode and then toward the anode, and which in coming alternately in contact first with one and then with the other, absorbs the sodium liberated and then at once gives it up to the water which is over the mercury. Castner attributes the high yield to this, and lays great stress on the absence of hypochlorite, which is a char-



PRODUCTION OF METALLIC BARS OF ANY SECTION BY EXTRUSION AT HIGH TEMPERATURES.

of extrusion was employed in the manufacture of lead pipe and lead wire, yet the temperature in those cases was very much lower than in Mr. Dick's system, which required the metal to be red hot (about 1,000° Fahr.).

Mr. Dick's process consists in placing the red-hot metal in a cylindrical pressure chamber or container, at one end of which is a die. Upon pressure being applied at the opposite end the plastic metal is forced through the die, issuing therefrom as rods or bars of the required section and length. The container of the first apparatus was a solid steel cylinder, bored out to the required diameter, to form the chamber for the hot metal, and heated in a coke fire. In practice, however, it was found that the strain set up by the unequal expansion and contraction of the walls of the cylinder, added to that caused by the internal pressure applied to force the metal through the die, developed cracks in the cylinder which rendered it useless. After a long series of experiments with various kinds of steel cylinders, Mr. Dick abandoned the solid wall principle and devised a built-up container. It is composed of a series of steel tubes of different diameters placed one outside the other with annular spaces be-

characteristic of his electrolytical work, whereas, in the Richardson-Holland process the presence of hypochlorite is a serious drawback. Mr. Castner is very enthusiastic about his anodes, which withstand the corrosive action of the gases liberated at the positive pole much longer than the best retort carbon which can be found. But his process, which consists in submitting retort carbon to a very high temperature in contact with different substances, has nothing wonderful about it, and it would be as well not to have recourse to it. We can think it very good to have to require an E. M. F. of only 4 volts when the current used is 550 amperes. All the experiments on the strength of which the factory was built were carried out by Mr. Castner at the works of the Aluminium Company, of which he is a director. He had 30 tanks; 28 only of these tanks were in use, each divided into two sections; the remaining two were kept in reserve in case of accident or to be used whenever any of the others required cleaning out, which took place every three weeks. Each tank contained 198 lbs. of mercury in the central compartment, where 62 lbs. of salt were decomposed daily. The tanks together yielded 1,320 lbs. of caustic soda per day of 24 hours, to which is to be added an equivalent quantity of chlorine, which was used for the production, not of chloride of lime, but of potassium chlorate.

The calculations made by Mr. Kellner show that 1,058 g. of sodium

*Abstract of a paper read before the British Iron and Steel Institute, by Perry F. Nursey.

chloride produce 724 g. of caustic soda and 642 kg. of chlorine per hour and that 28 kg. of salt yield 19 kg. of caustic soda and 17 kg. of chlorine.

1 ampere hour decomposes 1.91 g. of salt.
 1 watt " " 0.48 g. "
 1 kilowatt " " 1.06 g. "
 1 H. P. hour " " 2.96 g. "
 1 H. P. hour is required to produce 200 g. of caustic soda and 183 g. of chlorine.
 1 H. P. is sufficient to yield 6.5 kg. of caustic soda and nearly 5 kg. of chlorine per day.

We give these figures just as they have been furnished, for the study of those interested in this electro-chemical industry. They are splendid results, we freely admit, and Mr. Castner, without doubt, deserves to be congratulated by all electro-chemists without exception, for it has been a great achievement to do better than the Electro-Chemical Company.

Without raising any questions of rivalry, without comparing the Richardson process with the Castner process, and admitting that the latter has not only succeeded and done better than the Electro-Chemical Company, we can well say that electrolysis has achieved two brilliant triumphs.

We have just described the Castner process; nearly everybody is acquainted with it. Why does the company bear the name of Kellner in conjunction with that of Castner? That is a mystery at which we can only conjecture. We can only suppose that among the numerous patents taken out there is probably one which Mr. Castner has unwittingly infringed upon and which may have brought forth a protest or a claim of priority from Dr. Kellner, and finally some arrangement whereby the company would put his name by the side of that of Mr. Castner, who has the right of working the process in Austria.

Now that we have witnessed the industrial success of two electrolytic processes, so different, not only from each other, but from anything which has up to the present been attempted either with or without the use of mercury, we will turn our attention to a third process, still more original than either Castner's or Richardson's, the latter of which is characterized by the use of non-porous partitions which do not reach to the bottom of the tanks. This third electrolytic method, due to Mr. James Hargreaves, has for its distinguishing feature the use of porous partitions on each side of the positive compartment and of two dry negative compartments. According to tradition the electrolysis of chloride solutions of uniform strength, which takes place in the positive and negative compartments, leads to the formation of caustic soda at the positive pole and alkali at the negative pole.

We have, or rather Mr. James Hargreaves has, changed all that. That he does not favor the use of mercury we shall see presently, but he is of opinion that if a good diaphragm has not up to the present been used, it is because people have not set to work in the right way, and if any difficulties have arisen while the diaphragms were being made use of it is because too little attention has been paid to "osmosis"—and it has been neglected too much.

Mr. Hargreaves and his colleague, Mr. T. Bird—who died last year—succeeded in making a diaphragm which enables them to obtain a yield of 92%, which only leaves 8 parts of salt undecomposed in 10,000 parts of alkali. The important point is to have a diaphragm which is not porous in the strict sense of the word. It is a mistake to think that a diaphragm should be as porous as a slab used for filtering purposes; on the contrary, the liquid should not pass through the septum, but when the electric current begins to act the caustic soda goes through and yields itself at the cathode. Mr. Hargreaves has succeeded in constructing diaphragms more than 5 feet square, capable of withstanding a current density of 20 amperes per square foot and which require an E. M. F. of from 3 to 3½ volts only.

The beauty of Mr. Hargreaves' paper is that everything in it is thought out, discussed and explained at length. It is not, as in so many other cases which could be mentioned, a paean of glory sounded in admiration of his work, which no doubt he loves, but which he does not place in front of everything that has been done before him. His contribution is practically a treatise on electrolysis. Everything in it is as original as Mr. Hargreaves' process itself, and its essential object is to state for what reason one thing was done and not another.

His diaphragm is immersed in the electrolyte only on the side nearest the porous compartment; the other side as well as the cathode is merely left exposed to the air, and would very soon be covered with a layer of caustic soda if a current of steam were not made to sweep away the caustic soda which percolates through the porous partition.

Let it not be said any longer when referring to this electrolytic tank that chlorine is evolved in the positive compartment and that caustic soda is formed in the negative compartment. There is nothing in Hargreaves' negative compartment except a cathode which is close up to the diaphragm through which coze small drops of caustic soda, which is formed in the positive compartment simultaneously with the chlorine evolved.

Mr. Cross seized the opportunity to speak of the famous theory of the migration of ions which has been the subject of more dry discussion than the doctrines of the theologians of the middle ages. You might as well devise a theory as to the causes of the migration of herring shoals or about swallows and of their means of knowing their way, which helps them to return periodically to the same place. The true migration of the ions in a negative compartment containing no liquid is quite clear, just as in a compartment containing mercury. The mercury has nothing to do but act as a receiver or collector of the alkali metal which comes to it from the positive compartment, and which, being absorbed by the mercury, gives rise to the formation of an amalgam. Mr. Cross did not spare his eulogies of Mr. Hargreaves, and stated that whereas the yield in his tanks was from 82% to 95%, the composition of the sodium carbonate varied between 54.6% and 57.6% of Na₂CO₃.

The curious point is that the chemist, in speaking of the electrolytic processes which have come to be worked on a commercial scale, stated that there were only three, viz., those of Castner, Hargreaves and Le Sueur. What can Messrs. Richardson and Holland and the directors of the Electro-Chemical Company have thought of this? He stated at Rumford Falls in America that Le Sueur's process works "satisfactorily." But the elasticity of this satisfying expression is such that one would prefer to see figures quoted.

Messrs. Cross and Bevan published two or three years ago a paper on the experiments they carried out for producing caustic soda and chlorine by means of the Le Sueur process. It does not appear that their results will bear comparison with those obtained by Castner, Hargreaves and Rich-

ardson. Dr. Hurter, chemist to the United Alkali Company, and a firm believer in the theory of the migration of the ions, started by his countrymen, Kohrausch and Huttoff, has explained that this theory applied to imaginary receptacles, filled with certain solutions separated from each other by imaginary diaphragms, and that the essence of this theory, which serves to show what takes place in practice, is that if an electric current is made to pass through a tank containing one electrolyte only, the composition of which remains unchanged, the yield will always be 100%; for instance, a solution of sulphate of copper electrolyzed with two copper electrodes. But if you have a solution of sodium chloride you come in contact with sodium hydrate, hypochlorite, chlorates, etc. All of these are so many electrolytes. One may then inquire as to how the current will distribute itself among them. Will it pass through the chloride of sodium alone, or will it divide itself between that and the caustic soda and the other salts? Do not all these electrolytes share the current just as two copper wires of different section would, which share in different proportions the current passing through them. Caustic soda has a high conductivity; hence it should absorb more current than the chloride of sodium, and it is clear that the current is split up between the electrolytes in proportion to their respective conductivities.

This is quite opposed to the idea of Mr. Hargreaves, who, contrary to Dr. Hurter, as a result of the experiments he has carried out, has come to the following conclusions: 1. The migration of the ions is unilateral and not bi-lateral. 2. That the anion is only the residual product, left by the cathion after it has parted with the anode. 3. The cathode is only the target at which the last cathion of the molecular chain is aimed, and it has no active property by which it can send anything to the anion. 4. It is not necessary that the electrolytic chain should retain the cathion in combination with a corresponding anion all along the chain, and the decomposition of a chloride solution takes place just as well when part of this chain consists of an oxide and not of a chloride, so long as there is only some of the chloride on the surface of the anode. "All this," he wittily adds, "is hardly orthodox, and I can only suggest these opinions as being plausible explanations of certain results which the orthodox theoretical hypothesis has not been able to indicate beforehand."

As a matter of fact, what are the fundamental laws of electrolysis which can be considered as being fixed and immovable? One of them is that referring to the relation and the direct equivalence between the current used and the compounds which are electrolyzed. The other is that of the relation and of the equivalence between the heat of formation and the E. M. F. required for the decomposition of the compounds. There is still Ohm's law, but it applies more to electric conductivity than to electrolysis. In the absence of any certainties, what can be more legitimate than to assume temporary hypotheses or to make certain scientific suppositions, in order to make oneself clear? The point is not to take hypotheses for established facts, and to carry out researches with equity; that is to say, with the determination to interpret the results obtained from the experiments carried out as they should be, and to draw deductions from them legitimately and impartially, without troubling whether they confirm or differ from any opinion which one may have previously had. People start with certain ideas gathered from text books and are quite astonished to find that the phenomena witnessed during the experiments altogether upset these ideas, and then the whole thing has to be gone over again; you have to retrace your steps and start on a fresh track, which, if you have time and courage at your disposal, will lead you to the goal.

At the outset, one may ask whether the copper gauze which presses against the diaphragm does not constitute a conductor or a semi-conductor. But there is nothing in it. The very low E. M. F. required to carry out the process is the best proof of this. Here is the result of the working of 15 tanks during 59 days of 24 hours each:

Average current used per square ft.....	18.7 amperes.
E. M. F. required for each tank.....	3.4 volts.
Effective yield.....	80.3%.
Proportion of NaCl obtained from 100 parts of Na ₂ CO ₃	7.7.

These figures show a certain superiority over the Leblanc process. The chlorine showed a yield of 97.5% and the strength of the chloride of lime produced varied from 37.5 to 39%. If we go by what Mr. Hargreaves says, a thing which we can do with perfect security, as he is quite competent in the matter, there is more advantage to be derived, from a commercial point of view, in making electrolytical carbonate of soda than caustic soda. The carbonate of soda as it comes from the cathode compartments only needs to be boiled and evaporated. It is then in a state of purity, which the crystals obtained by the Leblanc process do not possess.

The experiments which have been carried out at the works of the parent General Electrolytic Company, at Farnworth, near Widnes, in Lancashire, have secured as a basis for the following estimate for a plant of 2,000 electrical horse power:

This power of 2,000 H. P. will enable the decomposition of 5,830 lbs. of sodium chloride to take place daily. The products of electrolysis obtained will be: 26½ tons of chloride of lime and 15 tons of sodium carbonate. The cost of production, everything being included (viz., cost of maintenance, packing, rents, rates and taxes, labor and depreciation), comes out at £2 12s. 6d. per ton.

To realize the extraordinary cheapness of the caustic soda and chlorine that Mr. Hargreaves announces with such boldness, it is necessary to assume as a basis from which a manufacturer on a large scale is to start that 1 H. P. per hour will require the consumption of only 0.77 lb. of coal. We listen attentively to Mr. Hargreaves when he tells us that he has devoted himself to electrolysis since 1875, and that he had subsequently thought of a motor which would enable him to produce 1 H. P. per hour with only 0.75 lb. of coal, which amounts to practically nothing, as coal does not cost 8s. a ton at Widnes.

Mr. Hargreaves' motto, borrowed from Leonardo da Vinci, who himself was a great mechanical engineer, and a savant beyond the ordinary, which did not prevent his being immortalized as a great painter: "*La speranza non falla mai, ma sol falloro i vostri giudizi*," which being translated means that "experiments never lead you astray, but it is your theories which do."

Has not Mr. Hargreaves made a mistake in reviewing as he has the Castner process and condemning it, in the cause of philanthropy, because

according to him mercurial vapors are given off from the central compartment in the Castner tanks? It is only necessary to refer to the description of the Castner system to see that the mercury alone is quite inoffensive and that it is quite impossible in any way for the workmen to feel any bad effects from the working of this liquid metal, which does not act as a cathode, but simply as a moving diaphragm. Sir Henry Roscoe, Dr. Hunter and several chemists or electro-chemists have severely criticised this unjust condemnation of the use of mercury, and they are quite right. They also made a small panegyric about electrolysis, and have foreseen that it would achieve great things. There is no one like a new convert to firmly believe in the faith he has embraced. One of these chemists has probably forgotten that he considerably amused his learned audience when he announced that there were some Frenchmen who pretended to be able to produce chlorate of potash electrolytically and to compete with that which is produced by chemical means. Many of the old opponents of electrolysis have gone back on their old opinions, and to-day there are no electro-chemists who are more enthusiastic and more passionately fond of this new branch of science than themselves.

It is worth noticing that the three systems for producing caustic soda and chlorine by electrolysis which hold the field up to the present are absolutely different from each other. Each of the three has solved the problem of commercial production; that is to-day an accomplished fact which it would be puerile to doubt. Electrolysis can compete with chemical industry as far as the purity and the cheapness of the products are concerned; beside, it is far superior as regards the simplicity of the installation and from being more sanitary.

These three systems are carried out under pretty nearly the same conditions of cheapness; but, as we have already seen, it is the Hargreaves process which promises to turn out caustic soda and chlorine at the lowest price.

Richardson and Holland have a porous partition in their tanks which does not reach the bottom; that is exactly the arrangement which had been adopted long before them by Serikoff and Smith.

Castner appears to have copied Kellner in using mercury for collecting the sodium in the positive and negative compartments and to give it up in the form of caustic soda in a central compartment, where it acts as a central liquid diaphragm.

Hargreaves has two porous partitions between a positive compartment filled with a concentrated solution and two empty negative compartments. Either by oxidation or by osmosis the soda passes through the diaphragms. That is no doubt a marked progress, and is undoubtedly an original idea. This innovation of Hargreaves must be considered to be an immense advance, in spite of what the believers in the bilateral migration of the iron may say. The admirers of Kohlrausch and other German theorists must make the most of it and say good-bye to their hypotheses. Hargreaves' idea, which is prolific in results, has made short work of them. The drawback is that the Hargreaves diaphragms do not last long. They are well made and cost very little; they can be easily made and of any size. But they are not lasting enough. They must be replaced after a few weeks' use, and that is a great disadvantage. These porous partitions are in the form of extremely thin plates made of a composition of asbestos compressed very hard, and which is difficult to break with the hands. It would not be discreet to divulge the nature of this composition and of its mode of manufacture. All that we wish to say is that we are quite persuaded that Mr. Hargreaves, who has already so perfected the making of his porous asbestos paste diaphragms, will succeed in ensuring them the necessary durability which they at present lack, although they are far superior to any which have up to the present been employed. We are certainly far from hearing the least of the improvements which we have a right to expect, because for a beginning in the production on a large scale of soda and chlorine, electrolysis has a good cause to be proud of the results which it has helped to obtain. It is a good thing for all electro-chemists and electro-metallurgists, without exception, that these audacious attempts should have been crowned with success, for it is a great encouragement to those who, now that the first step has been taken in England, may expect to get, in those countries where capital is more timid, the support which is usually missing. Ricquet's motto is just as true as when he conceived the idea of making the "Canal du Midi" in France. "Monnoye fait tout." France is no poorer in talented electro-chemists than England and America.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

PARTITION OF COAL LANDS; INJUNCTION AGAINST MINING.—A party brought suit against a company for the partition of certain coal lands owned by them in common, and the company, in its answer, conceded the right to demand partition. Pending the suit, the first party extended the workings from certain mines owned by him on adjoining land, and began mining coal from the common land. The company then filed a cross-bill to enjoin such mining, alleging that the same was causing irreparable injury to it in its part ownership. The court held that it had power to enjoin such mining during the pendency of the suit, and in view of the complications which would result from it, in the adjustment of the respective interests of the parties, and the possible injury to the common property, such power should be exercised.—*Rainey vs. Frick Coke Company* (73 Federal Reporter, 389) United States Circuit Court.

RESPONSIBILITY FOR EXPLOSIVES.—An interesting case affecting the duties of mining companies and individuals in handling giant powder or explosives has just been on trial in the County Court at Darlington, Lafayette County, Wis. The Wisconsin Lead & Zinc Company in 1892 erected a small cabin or changing house for the miners at one of their mines, where it was customary to place some giant powder upon a frame or rack behind the stove to keep it thawed out or warm enough for use.

In the cold winter weather of January following, the boys who were carting the ores by contract, from the mine to the mill, left their teams at the dump and went into the cabin to warm themselves. The miners had left the cabin and gone to their work. Soon after, another teamster

saw the boys running from the cabin. An explosion quickly followed. One of the boys was killed; the other was maimed for life. The cabin and contents were wholly destroyed.

The surviving teamster brought suit for damages to the extent of \$15,000, alleging negligence on the part of the company in permitting the giant powder to be thawed in that manner.

After the presentation of the plaintiff's case Judge Clementson granted the defendants' application for a non-suit on the ground that negligence had not been shown, the method of thawing the powder being then and now common among the miners; that the cause of the explosion had not been proved, and that the teamster, though possibly a licensee, was not required to go into the changing house, where he knew the powder was kept for the use of the miners.

It was claimed that the powder was placed too near the stove, so that it took fire and burned, thus giving warning to the boys who fled from it, but were overtaken by the explosion.

The Last of the Southern Catalan Forges.—Mr. W. J. Pasley, of Crumpler, Ashe County, North Carolina, owner and operator of Helton Forge, a Catalan forge of the primitive type, has recently sent the *Bulletin of the American Iron and Steel Association* a very fine specimen of hammered bar iron, made at his forge direct from the ore. Mr. Pasley writes us that his forge is located on the north fork of New River, at the mouth of Big Helton Creek, in the extreme northwestern corner of North Carolina. It was built in 1859. It has an annual capacity of about 75 gross tons of hammered bar iron, but its total yearly production seldom exceeds 50 tons. A ready sale is found for its product at 5c. a lb. in the counties of Ashe, Watauga and Alleghany, in North Carolina, and Grayson, in Virginia. The bar iron is made from magnetic iron ore, which is found in abundance in Ashe County.

Although a few years ago the manufacture of hammered bar iron in Catalan forges, direct from the ore, was an industry of considerable importance in several of the Southern States it has in late years become almost extinct, the forges having one by one been abandoned, until to-day Helton Forge is the only establishment in the whole South that is in operation even a part of the time.

On the 1st of January last there were nine establishments in the United States which, when running, made hammered blooms, billets or bars direct from the ore; but of this number Helton Forge is the only one that has been in operation in late years and the only one which makes hammered bar iron. The other eight establishments, of which seven are located in the Lake Champlain district of New York and one in Tennessee, all manufacture hammered charcoal blooms and billets when running, and all of them are Catalan forges of modern type. Not one of the New York forges, however, produced any iron in 1894 or 1895, while the Tennessee forge has never made iron at all except in an experimental way. It is quite possible that at least one of the New York establishments will commence operations, if it has not already done so, during the present year, as a new forge for making hammered charcoal blooms and billets was erected at Standish, Clinton County, in that State, late in 1895.

Helton Forge, however, as above stated, is the sole survivor of an industry which at one time was of considerable importance to the people of the South, who depended upon their "thundergust forges" to a very large extent for their supply of bar iron for agricultural and other purposes. Many of the forges in that section were owned and operated by farmers, who ran them only whenever the local demand for iron would justify them in doing so, and when the water in their mountain streams was high enough to furnish the power to blow their fires and to drive their hammers.

PATENTS RELATING TO MINING AND METALLURGY.

United States.

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

WEEK ENDING JUNE 9TH, 1896.

- 561,571. **PROCESS OF TREATING MIXTURES CONTAINING SULPHIDES.** Frederic P. Dewey, Washington, D. C. assignor of one-half to John H. Walter, same place. Filed September 6th, 1892. The process consists in heating the mixture to a temperature at which the sulphur is oxidized, in an excess of sulphuric acid sufficient to convert the sulphides of silver and copper into sulphates, and bring the sulphate of silver into solution outside of the mass of material treated, thereby oxidizing the sulphur, converting the sulphides into sulphates, and bringing the sulphate of silver into solution in the acid outside of the mass of material acted upon.
- 561,629. **ORE CONCENTRATOR.** Louis R. Tulloch, Angel's Camp, Cal. Filed February 13th, 1895. Combination of a movable concentrator-frame and its belt, mechanism for moving the frame, and means for imparting an independent reciprocating movement to the belt, comprising clutch mechanism, and a connection between the clutch mechanism and the frame-moving mechanism.
- 561,630. **FEED MECHANISM FOR ORE CONCENTRATORS.** Louis R. Tulloch, Angel's Camp, Cal. Filed February 13th, 1895. Combination with an ore-concentrator, the pulp-receptacles for distributing the ore upon the surface of the concentrating belt or table, one receptacle being located in advance of the other, a shaking ore-feed box for conveying the ore to the concentrator, the ore box having a perforated or slotted bottom through which the ore separated by the shaking movement of the ore box makes its escape, a receiving box into which the separated ore is discharged, a receiving box for receiving the body of ore which flows from the bottom of the shaking ore-feed box, and runways for conveying the separated ore to the forward pulp receptacle and the body of the ore to the second pulp receptacle.
- 561,701. **PROCESS OF PRODUCING ACETYLENE GAS.** Edward N. Dickerson, New York, N. Y. Filed November 27th, 1895. The process consists in alternately bringing together calcium carbide and water, and then separating the water from the calcium carbide, and of preventing the evaporation of the water when it is separated from the calcium carbide, by covering the water with a liquid film, thereby preventing the action between the vapor of the water and the carbide when the water and carbide are separated.
- 561,922. **COKE-OVEN.** Norton B. Taylor and John C. Diaz, Wilmerding, Pa. Assignors of one-tenth to Joseph Reefers, same place. Filed January 2d, 1896. A coke oven provided with a vertically-movable bottom, comprising the metallic plate and non-combustible layer adjacent to the plate, the upper edges of the plate being flanged and extended inward over the non-combustible layer, and brick or tiling resting upon the layer and anchored to the plate, combined with a stop and scraper for the bottom.

PERSONAL.

MR. ELLSWORTH DAGGETT, mining engineer, of Salt Lake City, Utah, is at present in New York City.

MR. L. STUART WING, well known in the chemical industry, has just returned from a business trip abroad.

MR. WILLIAM BRADEN, of Braden Bros., mining engineer, of Helena, Mont., is expected in New York shortly.

MR. ADOLPH THIES, the well-known manager of the Haile Gold Mine in South Carolina, is spending a few days in New York.

DR. E. D. PETERS, JR., the well-known copper metallurgist, has gone to Congress, Ariz., for the summer, where he can be addressed.

MR. BERNARD MACDONALD, president of the American Developing and Mining Company, of Butte, is for the time being in New York.

MR. MELVIN P. DALTON, of Denver, has been visiting his home in Massachusetts and now returns to Colorado, where he is interested in the Elk, Paclotus and Yosemite mines.

MR. LUDWIG KLOZ has resigned his position as superintendent of the El Paso Smelting Works, El Paso, Kan., a branch of the Consolidated Kansas City Smelting and Refining Company.

PROF. WILLIAM P. BLAKE, geologist and mining engineer, of the School of Mines, Tucson, Ariz., is at present in Shullsburg, Wis., on professional business.

MR. THEODORE E. SCHWARZ, mining engineer, of Denver, Colo., who has been in Boston for several months past, has visited New York City, and will return shortly to Colorado.

MR. T. A. RICKARD, the well-known mining engineer and State Geologist of Colorado, has gone to Baker City, Ore., on professional business. He will remain there for a week or more.

MR. JOHN B. DAVIS, of Plymouth, Pa., was recently appointed deputy mine inspector of the Fourth Anthracite District. Mr. Davis will act as inspector in place of G. M. Williams, who leaves for Europe in a few days.

MR. W. R. STIRLING has resigned the vice-presidency of the Illinois Steel Company, in order to devote his entire time to the Universal Construction Company, which recently leased the north works of the Illinois Steel Company.

DR. F. M. ENDLICH, who has been ill for nearly two years, is now recovering, and expects to resume his professional work within a very short time. Dr. Endlich is at present at Los Angeles, Cal. His many friends will be glad to learn of his new lease of life.

MR. F. P. SCHULTZ, who is interested in mining near Helena, Mont., and Mr. F. S. Packard, who operates the Turkey Hill gold mines of Auraria, Lumpkin County, Ga., called at the Chicago office of the *Engineering and Mining Journal* recently. Mr. Schultz will remain in Chicago for two or three weeks.

MR. RICHARD A. PARKER, mining engineer, formerly of Marquette, Mich., who has been engaged in professional work as superintendent of the Great Simmer & Jack mine, in the Transvaal, for some time, passed through New York this week, en route to fulfill engagements in California and later to visit the new mining fields of British Columbia.

OBITUARY.

Dr. Charles N. Nes, aged 69 years, died in York, Pa., June 1st. He was the inventor of the Nes silicon method of converting iron ore into steel, and had letters patent on the process from Great Britain, France and Belgium.

MR. HARRISON J. SMITH died at Washingtonville, near Plainfield, N. J., June 16th, aged 42 years. He was general superintendent for the Edison Illuminating Company, of New York. He also had charge of the recent electrical exhibition in New York.

SOCIETIES AND TECHNICAL SCHOOLS.

CIVIL ENGINEERS' CLUB OF CLEVELAND.—A meeting of this club was held in Cleveland, O., on June 9th. An interesting paper was read on "Water Supply and Sewerage, as affected by the lower vegetable organisms."

FOUNDRYMEN'S ASSOCIATION.—At the June meeting in Philadelphia reports were presented of the recent convention of foundrymen. Mr. W. T. Rainey read a paper on "The Manufacture of Coke and its Selection for the Foundry," which was briefly discussed. It was resolved to hold no more meetings till September.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—The 28th annual convention of this society will be held at San Francisco, from June 29th to July 3d. In answer to a circular issued by the Executive Committee in April, 143 members signified their intention to attend the convention. Twenty-seven of

these reside on the Pacific Coast and 104 east of the Mississippi River. The opening session of the convention will be held Monday, June 29th. On July 3d the members will leave for Monterey and visit the "big tree groves." The meetings of the society will be held in the audience hall of the Academy of Sciences. The following committee of members residing in California has charge of all local arrangements: George E. Gray, chairman; George H. Mendell, W. G. Curtis, James D. Schuyler and William B. Storey, Jr.

ENGINEERS' CLUB OF ST. LOUIS.—The 437th meeting of this club was held in St. Louis on June 31. The committee to whom was referred the bill to establish engineering experimental stations throughout the United States recommended that no action be taken on the bill. This bill provides for giving to each State and Territory \$10,000 a year, this sum to be increased by \$1,000 annually for 15 years until the sum amounts to \$25,000 a year for each State and Territory, and to remain at this figure thereafter, for the purpose of providing for engineering experiments in these several States and Territories. In other words, upward of \$1,250,000 annually is to be donated by the general government for engineering experimentation in about 50 different laboratories. Mr. F. B. Maltby read a paper on "Methods and Results of Stadia Surveying." He went into the details of the work regarding the appliances necessary, force required, necessity of sketching, speed with which such work could be conducted and the cost of same. Photographs showing the damage done by the recent tornado were shown and discussed from an engineering standpoint.

INDUSTRIAL NOTES.

The Illinois Steel Company closed down its works at Bridgeport, Ill., indefinitely last week.

The plant of the Union Steel Works, at Alexandria, Ind., has been put in full operation, with a force of 500 hands.

The Tennessee Coal, Iron and Railroad Company closed a contract last week for 500 tons of pig iron with a foundry company in Genoa, Italy.

The Cambria Iron Company, of Johnstown, Pa., is making an extension to its mills which will enable it to roll I-beams up to and including 24 in.

The new 15-gross-ton open-hearth steel furnace of the Franklin Steel Casting Company, of Franklin, Pa., is in active operation. The company also has two 10-ton furnaces. Steel castings only are produced.

The Standard Ore Reduction Company, of New York City, was incorporated last week with a capital stock of \$100,000. Directors: N. H. White, A. V. Huyler, Lee Cooke, D. S. Mason and C. W. Link, Jr., of New York City.

A charter has been granted to the Engineering Company of Philadelphia, with a capital of \$10,000, and its incorporators, James L. Dewees, Jr., Frank A. Richards, August R. Andrews, Paul Dewees and Thomas J. Kent, all of Philadelphia.

The Crystal Flint Company, of New York City, was incorporated recently to deal in granulated or pulverized flint rock. Capital, \$20,000. Directors, J. B. Barrody, of Woodhaven; John A. Mackinson, of Jersey City, and S. H. Bassett, of Brooklyn.

The Leechburg Foundry and Machine Company, of Pittsburg, Pa., has received a contract from the Irondale Steel and Iron Company, Middletown, Ind., for an additional cold mill, to be attached to the old train, also one of its No. 3 bar shears, with engine attached.

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

The Carnegie Steel Company has decided to build a \$1,000,000 addition to its extensive plant. A site has been selected above the Homestead Mills for a large forging and finishing shop to forge heavy propeller and steamship shafts and heavy gun forgings.

The Pittsburg Reduction Company has within the past week put into successful operation the new rolling mill at Niagara Falls. At this mill the company is able to roll aluminum sheets 72 in. wide, and is now working on some orders for sheets 60 in. in width. Heretofore the mills near Pittsburg had a capacity for sheets of 30 in. only.

The South Boston Iron Works, at Middleborough, Ky., is to be taken hold of by the Middleborough Engineering Company, which has been incorporated by English capitalists. The capital stock is \$500,000, and \$150,000 of this will be retained as working capital. Two traveling cranes will probably be added. Operations are to begin July 1st.

A specially designed wheelbarrow for use in handling ores and slag in smelting furnaces, reduction works, foundries, mills, etc., is being manufactured by the Parkhurst & Wilkinson Company, of Chicago. This wheelbarrow is also adapted to do very heavy work wherever it may be required.

The weight of the barrow is 124 lbs. Its tray is made of solid pressed steel, with a T-iron frame. The whole barrow is as nearly indestructible as it can be made by these manufacturers.

The committees of the San Francisco Gas Light Company and the Edison Light and Power Company of San Francisco have agreed upon a basis of consolidation. The capital stock of the new company will consist of 200,000 shares at the par value of \$100 each, or \$20,000,000; 100,000 shares will be allotted to the shareholders of the gas company, 27,500 to those of the electric company, and the balance will be held as a treasury reserve. It will be 60 days before the consolidation can be put in effect, as it will be necessary to examine the books and investigate the condition of each company.

The Cataract Power and Conduit Company, of Buffalo, incorporated with a capital of \$2,000,000, to distribute electricity for light, heat and power in Buffalo; construct conduits, poles or pipes over and under the streets for the conduct of wires and pipes; make machines and equipments for the delivery or practical application of electric or pneumatic or other energy, etc.

The Adamant Cement Company has been organized at Allentown, Pa., with a capital of \$100,000. The Eli J. Saeger farm of 160 acres, at Egypt, has been purchased, and the erection of a big plant for the manufacture of cement will be begun at once. The mills, when completed, will have a capacity of 500 barrels of cement a day and will employ several hundred hands.

The Gardner grinder is now being made with the two discs close together and parallel with each other. This new form of the grinder is adapted to grinding two faces which are opposite and parallel to each other, such as square-headed screws, washers, spanner wrenches, etc. The disc wheels are made of steel, and are ground flat. To the cutting faces of these wheels are glued emery paper or cloth, securely held in place by the spiral grooves on each face of the disc, and sunk therein to form a clearance for the particles of emery and iron to fall in, thus preventing any interference from this source when the wheel is cutting. This feature makes the Gardner grinder an exceedingly fast cutter, and enables it to do from two to ten times the work of a solid wheel in the same time.

TRADE CATALOGUES.

A new pamphlet has just been issued by the Detroit Lubricator Company, of Detroit, Mich., which gives not only a description of their full line of globe and radiator valves, but introduces something entirely new in the way of features and principles not hitherto utilized in valve construction, so that the new catalogue has a professional interest to steam engineers and users distinct from its function of announcing the company's well-known manufactures.

"Goulds Efficient Power Pumps" is the subject matter of a calendar, dated from June, 1896, to January, 1897, which has just been issued by the Goulds Manufacturing Company, of Seneca Falls, N. Y. It is got ten up in the good style and taste usually exercised by this company, when bringing out new trade publications. Catalogues appertaining to the pumps illustrated on this calendar can be had upon application to any of the company's branch offices: 16 Murray street, New York; 236 Congress street, Boston, Mass., and 22-24 North Canal street, Chicago, Ill.

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.

JEFFERSON COUNTY.

COAL MINERS' AGREEMENT.—The Tennessee Coal, Iron and Railway Company has signed a new contract, to run for one year from July 1st, with their 5,000 miners, whereby the men are to be paid 40c per ton for coal mining when pig iron is selling for \$8.50 per ton or less, and an advance of 2½c per ton in wages for every rise of 50c per ton in the price of iron above \$8.50. The mine operators in the district are guided by the Tennessee Company's action, and will immediately make similar contracts with their miners. The new scale gives an advance of 2½c per ton above the present contract basis.

ARIZONA.

PIMA COUNTY.

HARDSCRABBLE & OLD FLUX.—Hon. R. R. Richardson, of Crittenden, is reported to have

bonded these mines for \$40,000. A smelter will be erected at once at Crittenden.

YAVAPAI COUNTY.

CROWNED KING.—This mine and mill are both running to their full capacity.

CALIFORNIA.

AMADOR COUNTY.

(From Our Special Correspondent.)

CONSOLIDATED SOUTH SPRING HILL.—This mine, half a mile south of Amador City, on the mother lode, which has been idle for a long time, has been reopened. There are two shifts of 900 ft. each, and a new one has been sunk 50 ft. with such good results that the company have secured the adjoining property. A 40-stamp mill is kept running at full capacity, and 50 men are employed. The mine is lighted by electricity, and a telephone wire connects the underground system with the house of the superintendent.

SUMMIT.—This mine, half a mile south of Sutter Creek, has been sold to the Central Eureka Gold Mining Company for \$40,000. The ground is patented and contains a full claim. On account of litigation very little work has been done on the property during the past 25 years. Some of the last ore worked paid \$37 per ton. New hoisting works have been put in and it is proposed to sink the shaft at least 1,000 ft.

CALAVERAS COUNTY.

(From Our Special Correspondent.)

GWIN.—At this mine, on the Mother Lode, three miles west of Mokelumne Hill, the old drift has been struck. The ledge is thought to be from 15 to 20 ft. in width, 12 to 14 ft. having been opened up east and west, with neither foot nor hanging wall in sight. There are about 300 tons of ore on the dump, and a survey has been made for a 40-stamp mill.

THORPE MINE.—Reports from this mine state that the fifth level has been cut in about 450 ft. from the surface and drifting has begun on the level. By crosscutting it is expected to strike the vein about 65 ft. from the shaft, and when this has been accomplished a 20-stamp mill will be erected immediately.

EL DORADO COUNTY.

(From Our Special Correspondent.)

***RICHMOND.**—This mine, on the Mother Lode, 14 miles south of Placerville, has been bonded by an English company, who intend to prospect the property on a large scale. They are now sinking, and will put in a new hoist and other machinery at once. There is a 15-stamp mill on the property.

KERN COUNTY.

BRIGHT STAR.—Detrick Bohden, one of the five brothers who own this mine, has struck a 34-ft. ledge of free-milling gold quartz. The section of country is in the northern extreme of Kern County, in a mineral belt that is 100 miles in length. Since the prospectors have been more thorough, ledges are being discovered all along this belt, and more prospecting and work is now being done in that vicinity than was ever known before.

(From Our Special Correspondent.)

AMARIE MINE.—Supt. W. E. Rogers reports that the enlarging of the shaft is progressing satisfactorily. Commencing at the 250-ft. level, 50 ft. has been enlarged, and it is hoped the shaft will be completed in six weeks. Stopping is being done to a limited extent. Fifteen tons of ore were sold to Selby & Co. for \$6,000. The boilers for new hoisting works are in place and machinery for the hoist is now being hauled to the mine. The new strike in the southeastern end of the claim is producing fine ore of high grade.

MONO COUNTY.

(From Our Special Correspondent.)

TRAVERTINE QUARRY.—At this property, located one mile southeast of Bridgeport, active operations will be commenced at once as the company have several large orders to fill. New quarrying machinery has been purchased and is on its way to the mine.

NEVADA COUNTY.

SPANISH.—This mine, west of Nevada City, which has long been idle, will resume operations at once.

PLUMAS COUNTY.

(From Our Special Correspondent.)

LUCKY S.—This mine, 10 miles northeast from Taylorville, which has been under lease to Mrs. Louisa Wegener, with the privilege of buying, for the past year, has been purchased by her for \$9,000. She has already spent over \$30,000 in developing the property and will now increase the working force on the tunnel and add to the number of stamps. There are 400 tons of ore on the dump.

SAN BERNARDINO COUNTY.

MINT GROUP.—A syndicate of Irish capitalists, represented by Charles E. Harbeck, of Dublin, has bought this group of mines, at Kleinfelter, on the Atlantic & Pacific Railroad. The price said to have been paid was \$120,000.

SHASTA COUNTY.

(From Our Special Correspondent.)

LITTLE MAUD.—This mine is located near Iron Mountain. Two good paying veins have been opened up in the east and west drifts. Ore averaging \$20 per ton is being shipped to the Review smelter.

SIERRA COUNTY.

(From Our Special Correspondent.)

ALASKA.—This mine, one-quarter of a mile northeast of Pike City, comprising four claims, is to be reopened and worked on a large scale. The stamp mill, which was recently burned down, is to be replaced by a larger one at once.

SISKIYOU COUNTY.

(From Our Special Correspondent.)

EASTLICK.—This hydraulic mine, in the Oro Fino District, is running full blast. 20 men are employed and the indications are that a large clean-up will be made this year. The Gardner and the Wright & Fletcher hydraulic mines, in the same district, are also being worked to their greatest capacity and the owners expect a handsome clean-up. The giants will probably be kept at work until July 4th.

TUOLUMNE COUNTY.

(From Our Special Correspondent.)

WHEELER & TWIN BROTHERS.—These mines, in Big Oak Flat, have been bonded by Captain Ward. Development work is going on under the superintendency of H. H. Todd.

COLORADO.

BOULDER COUNTY.

MORNING STAR.—J. Clemmons, who has been working this mine, Ward District, for the past two years, is reported to have bought the mine for \$75,000.

CLEAR CREEK COUNTY.

MAYFLOWER.—A streak of lead and gray copper has been encountered in this mine from which a test shipment was made, the ore returning \$60 in gold. The Toleo shaft, at a depth of 60 ft., revealed a 6-in. streak of ore reported to be rich.

(From Our Special Correspondent.)

ASTOR.—This group of mines has been secured by Pueblo people under lease and bond, and it is claimed they propose doing considerable development work during the summer.

BAKER.—This mine, located above Georgetown, is now producing a high-grade mineral, the shipments running from 200 to 1,000 oz. silver to the ton. In early days it was a prominent producer, and, from present appearances, it may be expected to again forge to the front.

CENTENNIAL.—The shaft on this mine has just been sunk to a depth of 600 ft. and drifting from the bottom is under way. This is a gold property in the heart of the silver mines of Georgetown, and it is claimed that the development in the Centennial has demonstrated that beneath the surface, at a greater depth, large bodies of gold-bearing ore can be found.

COSMOS.—This is a new tunnel project to cut the mountains near Georgetown. A big air compressor has just arrived, and an engine house is now being built. It is expected that the air drills will be in operation before July 1st.

CROWN POINT & VIRGINIA.—The shaft at this Idaho Springs mine has now been sunk to a depth of 500 ft., disclosing a body of pay ore measuring 3 ft. in width.

DORIC.—An English company working this property has purchased the St. Joe, Lost Dollar, Silver Dollar and Monarch mines, on Griffith and Saxon mountains, with the object, it is said, of forming a big group and driving a cross-cut tunnel through all of them.

DUNDERBERG.—The shaft at this Silver Plume mine is being sunk under contract. At the same time the upper levels are being satisfactorily worked, and an ore averaging over \$100 a ton is being mined.

FAIRMONT.—On account of lack of water for the air compressors the parties driving this tunnel have taken an old tunnel proposition farther down the hill in Virginia Canon, and will drive it to cut their group of claims at a much greater depth.

GEM.—W. E. Renshaw is now working the mine at the head of Gilson Gulch, and early in the month opened up big bodies of copper ore in the lower levels. It carries 5 oz. gold to the ton.

KNICKERBOCKER.—S. A. Josephi is driving this tunnel, on the Emerson lode above Idaho Springs, and within 200 ft. a body of mineral 8 ft. in width opened out. It has been tested and is of sufficient value for concentrating.

SEATON.—This property, at Idaho Springs, was recently sold for a good amount, and the new purchasers have just installed a hoisting plant capable of handling the dirt to a depth of fully 1,000 ft. Large bodies of ore are blocked out and in sight, with a wide mineral streak. It is reported that the shaft will be sunk to connect with the Newhouse tunnel which is soon to cut this vein at a great depth.

SHIPMENTS.—The Gulf road shows a statement of 27 carloads of high-grade ore shipped from Clear Creek County to the smelters of Argo Denver and Pueblo for the month of May. The Idaho Springs District produced two-thirds of this number.

SILVER AGE.—On account of the good showing in lower levels of this mine, at Idaho Springs, the St. Louis owners have decided upon sinking a new shaft near the mouth of the tunnel to cut the chute. The machinery for sinking has already been installed. Air drills are to be used.

TENTH LEGION.—In driving the bottom level east

an improved showing is being made by this mine, and a shipment just made returned \$59 a ton.

EL PASO COUNTY—CRIPPLE CREEK DISTRICT.

(From Our Special Correspondent.)

The railroad differences between the Colorado Midland and the Midland Terminal are not yet adjusted and unless soon settled it is probable that the mine owners will build a line to Colorado Springs. The Florence & Cripple Creek Railroad and Denver & Rio Grande are handling the freight.

ELKTON CONSOLIDATED MINING COMPANY.—This company has recently declared a monthly dividend of \$10,000. For the week ending May 30th, 10 cars of ore were shipped, six to the smelter and four to the cyanide works. Four cars of the smelting ore sampled \$150 and the two cars \$60. For the week ending 6th inst. eight cars were shipped, four high grade and the balance medium grade. The output for May was \$35,000, leaving a net profit of \$23,000 for the month.

EL PASO.—This mine, owned and worked by the Gold King Mining Company, shows improvement with development. Sinking is resumed below the 300-ft. level and it is expected that shortly after July 1st a station will be cut for another level. It is reported that at the bottom level a rich ore shoot has recently been uncovered, assaying 8 oz. for 3 ft. wide. The shipments of first-class ore are about 250 tons a month.

JOHN A. LOGAN.—This property, on Bull Hill and owned by W. S. Stratton, has again resumed work. A steam hoist has been placed at 200-ft. level and it is intended to sink the shaft 300 ft. below the 400-ft. level, and again prospect at that depth. Mr. Stratton feels more elated over the camp than for some time past. He recently bought the control of the Arcadia stock, a company which owns the Lone Star No. 3, a good prospect situated in Poverty Gulch. The Independence shaft has also reached the seventh level (700 ft. deep) and additional miners are being employed.

MOON ANCHOR.—Superintendent Cobb says, "I am making money for the stockholders and can see my way to do so for some time to come." I do not anticipate any heavy outlay as the machinery and pumps are adequate for some time. The output is about 10 tons a day of medium grade ore from \$60 to \$80 per ton.

NEW YORK TUNNEL AND MINING COMPANY.—This company is situated at the head of Squaw Gulch, and penetrating Bull Hill from the west. This tunnel has a length of 1,120 ft., and was recently let for an additional 100 ft. This tunnel has been worked almost continuously by two men, sometimes four, since November, 1892, and 19 veins have been exposed, on only two of which has any work been done. This stop of Bull Hill seems to be a series of network of veins. The Albany or the Electric tunnel, three or four hundred feet east or higher on the hill do not show such a number of veins.

PHARMACIST.—This property, on Bull Hill, is gradually liquidating its indebtedness, at the rate of \$2,000 per month. The new machinery will be placed on the old shaft, 665 ft. deep, and the old machinery will be used for the sinking of the new shaft.

STAR OF BETHLEHEM.—This property, situated on Bull Hill, and worked under lease by Messrs. Gray and Ray, can now be classed as a regular shipper. Two cars recently sampled 8.7 and 4.4 oz. per ton. The shaft has been sunk 150 ft., and no stopping has been done.

UINTAH TUNNEL.—This is situated in Arequa Gulch and has penetrated Battle Mountain from the north 450 ft., the rate of progress with the machine drills being now nearly 10 ft. per day. It is stated that three veins have been intersected.

UNION GOLD MINING COMPANY.—This company's properties, situated on Bull Hill, are steady shippers. The seventh level, 400 ft., has been started. Recently, in one week the company shipped 100 tons of ore, twenty tons of which sampled 7 oz., and the balance \$70 per ton. The properties are doing well.

LAKE COUNTY.

(From Our Special Correspondent.)

BON AIR.—The development work has opened up some rich ore bodies 300 ft. to the southwest of the shaft which run well in chloride. Shipments of the higher grade ore have been increased.

CRYSTAL LAKES COMPANY.—It is learned here that these people, in the Twin Lakes District, are to begin the driving of 1,000 ft. of crosscut adit into Mt. Elbert to cut the Gordon and Little Joe veins. The company is composed of Philadelphia parties.

GORDON.—Shipments have been resumed; 15 tons a day are handled at the mill, and a few tons of high-grade ore have been packed and sent to the smelter.

GRAY EAGLE & POCAHONTAS.—A new contract has just been closed to ship 60 tons a day of iron to the Philadelphia smelter.

LEADVILLE BASIN MINING COMPANY.—It is expected that in September these people will have transferred to them the Congress, Castle, Villa, Capital, Clipper, Acme and other claims now being operated by the Northern Mining Company. Messrs. Brigham, Naawhimey, H. J. Boardman and other owners of this ground, who reside in Boston, are to be here to look over the ground. It will be remembered that this ground is now in litigation, it having been taken up by A. D. Searle many years ago.

as a placer property, and he still claims the title. By injunction proceedings the royalties of the Northern Mining Company have been tied up for over a year. These royalties now amount to many thousand dollars, and this is involved as well as the actual ownership of the ground. The Boston people are to come here to look over the ground before the case is called in the United States Court.

LOUISVILLE.—About 250 tons a month is the production. The ore is highly zinciferous in character and treatment charges are very heavy.

MAHALA MINING COMPANY.—These people have been doing a great deal of development work for the past 60 days, and have again opened up the big ore chute. Shipments of 100 tons a day have been resumed. Work is being carried on at a depth of 1,000 ft., and the ore produced is a rich sulphide.

MATCHLESS.—The case of J. W. Newell, W. F. Page and W. R. Harp vs. the Tabor Mines and Mills Company was decided June 13th in favor of the plaintiffs. A decree was entered ordering the sale of the Matchless mine to pay the note held by plaintiffs, amounting to \$20,450. In 1894 the money was borrowed from one Everetts, and a mortgage given on the Matchless. Later the note was purchased by the plaintiffs, but defendants refused to pay it, claiming that the money was used by the Tabors as private persons and was not expended on the property. The court held that as long as the mortgage was properly executed by the officers of the Tabor Mines and Mills Company that it was perfectly valid, and he decided for plaintiffs.

NEW ELKHORN MINING COMPANY (LIMITED).—The new shaft in Big Evans gulch is down 200 ft. It has been named the Plummer shaft, after Mr. Plummer, of the De Lamar mine.

O. K.—The lessees, in sinking the shaft preparatory to extensive development work, have just uncovered 16 ft. of fine iron ore. The shaft is down 240 ft.

SMITH-MOFFAT COMBINATION.—Output for May shows an increase of 400 tons, which comes from the Bon Air. The tonnage was as follows: Gray Eagle, 325 tons carbonate, 898 tons iron; Bon Air, 2,181 tons oxidized; Start, 534 tons oxidized; Wolfstone, 1,400 sulphide; Maid of Erin, 2,200 tons, combined of iron and carbonates.

PARK COUNTY.

NO END.—This mine at Alma has been shipping ore from a tunnel for some time, and recently broke into an ore chute running in the direction of the tunnel, from which several cars of ore have been shipped, which is said run from \$900 to \$1,500 per car.

SAN JUAN COUNTY.

IOWA.—This company, at Silverton, has announced its second dividend of \$10,000 from the \$19,000 earnings of May. Only one shift is working on the property and the 40-ton daily output is worked into 8 tons of concentrates, which sell for about \$120 per ton at the smelter.

FLORIDA.

CITRUS COUNTY.

HAMBURG PHOSPHATE COMPANY.—This company has sold all its property at Inverness to the British Phosphate Company, which has its office at Ocala.

GEORGIA.

LUMPKIN COUNTY.

FINDLAY.—The work now under way on this mine is that of stripping the ore body, which is 175 ft. wide and 20 ft. thick.

PICKENS COUNTY.

AMICOLOLA MARBLE AND POWER COMPANY.—Geo. F. Gober and others have chartered this company, capital, \$600,000, to develop quarries, water power, etc., at Marble Hill.

IDAHO.

ADA COUNTY.

VIOLA.—A rich vein of ore, 5 ft. thick, is reported to have been found in this mine recently.

BOISE COUNTY.

SUB ROSA.—A Denver company has started development work on this mine.

ELMORE COUNTY.

ELMORE.—An important strike was recently made in this mine.

HIDDEN TREASURE.—Work on this mine is progressing satisfactorily. The main tunnel is in 460 ft., and the indications are that the vein is near at hand.

HOMESTAKE.—The incline in this mine has been sunk 100 ft. below the tunnel level. The vein there shows our feet of good ore, a large proportion of which is sulphide.

LEMHI COUNTY.

SALMON GOLD MINING COMPANY.—Work on a large scale was started recently on this company's placer property, and the first clean-up will be made soon. The company has a large hydraulic plant.

OWYHEE COUNTY.

DE LAMAR MINING COMPANY.—The strike of the miners has ended by the company granting the increase of 50c. a day in the wages and allowing the men to board where they please.

CHRISTIAN COUNTY.

TAYLORVILLE COAL MINING COMPANY.—This

company's works were entirely destroyed by fire last week and 85 men were in the mine. All except three were rescued.

ILLINOIS.

WHITEBREAST FUEL COMPANY.—This company, as guarantor of the bonds of the Iowa & Illinois Coal Company and the lessee of its property, has addressed a circular to bondholders asking for assents to the funding of the June 1st and December 1st coupons on \$900,000 bonds, amounting to \$59,400. It is proposed to fund them into bonds to draw interest at 6% per annum, payable semi-annually. The Whitebreast Fuel Company funded coupons will fall due in 1908 and the Iowa & Illinois Coal Company in 1920. The company reserves the right to pay off the coupon funding bonds at an earlier date, and in the meantime pay dividends on its shares. The panic of 1893, the coal and railroad strike of 1894, the crop failure of the last-named year, the floating debt which grew out of extraordinary expenses in connection with the completion of mines and sinking-fund engagements, have forced the company to make this request to bondholders. For five years prior to 1893 the two companies earned \$100,000 net on the average against the interest charge of \$59,400. The Atlantic Trust Company is the depository named in the circular.

KANSAS.

CHEROKEE COUNTY.

(From Our Special Correspondent.)

HOLMES LEASE.—Mrs. Holberg and others, in sinking a prospect shaft on the Holmes lease, struck a fine lead prospect at 38 ft. in open ground and are sinking in pay dirt. They started the shaft near the old shaft, in which, at 102 ft., they had not found any pay dirt, but a short time after Mrs. Holberg became one of the company they struck it rich.

KELSEY & COMPANY.—On the Smith Brothers lease this company has built a concentrating plant that can concentrate 250 tubs of ore each shift and will make over 6 tons of zinc ore. They are drifting at 75 ft. on a large face of zinc ore in open ground. They have been troubled with water since the late rains but have it out now.

LITCHFIELD MINING COMPANY.—Near the Union schoolhouse, this company last week opened up a fine lead at 95 ft. in open ground and are hoisting good pay dirt. There is a great deal of prospecting with steam drills in this neighborhood.

SHELBY MINING COMPANY.—On the Hart lots the company has struck a fine run of lead at 50 ft. in soft ground.

MAGOFFIN COUNTY.

GILL OIL COMPANY.—This company, operating near Hendricks, will put in two additional oil wells at once.

MARTIN COUNTY.

CROKER & COMPANY.—This company, of Dayton, O., has secured leases in the neighborhood of 1,000 acres, near the recently developed oil field on Marrowbone, and will bore for oil at once.

KENTUCKY.

JOHNSON COUNTY.

GREASY CREEK CANNEL COAL COMPANY.—This company has been chartered at Paintsville, by J. D. Rittenhouse, of Jackson, O., and others, to develop coal mines. J. S. Rittenhouse, of Myrtle, Ky., is manager. Capital stock, \$100,000.

KNOX COUNTY.

EXPORTING CANNEL COAL COMPANY.—This company is surveying a 14-mile railway to their property—a cannal coal-field of 20,000 acres in extent near Flat Rock. The vein is said to be 45 in. of coal of good quality.

MUHLENBURG COUNTY.

HILLSIDE COAL COMPANY.—This company, at Mercer Station, has put in a snaking screen outfit, which will enable it to improve quality and cleanliness of coal.

MICHIGAN.

IRON—MARQUETTE RANGE.

REPUBLIC.—The new shaft of this mine is about 225 ft. and is being sunk as rapidly as possible. A new 300-H. P. Allis engine was received this month and is to take the place of the present engine in use at No. 5 shaft, as soon as the foundations can be completed. Nearly 400 hands are employed.

MINNESOTA.

(From Our Special Correspondent.)

DULUTH ORE RECEIPTS.—About 12,500 tons of ore are the daily receipts at the Duluth docks of the Duluth, Missabe & Northern Railroad, for which the road gets 80c. a ton freight. The Duluth & Iron Range Railroad is hauling about the same amount, but may increase soon.

DULUTH & WINNEPEG RAILROAD.—The litigation affecting the Duluth & Winnepeg Railroad, growing out of the receivership of the road and the control by the Canadian Pacific interests, has been settled in the United States Circuit Courts, and the line will very soon become not only a more active competitor for ore traffic, but will be extended into the Northwest to connect with the main line of the Canadian Pacific Railroad, west of Winnepeg, and will become one of the most important links in the transportation problem of the Northwest. It is generally understood that work is to begin very shortly.

LAKE RATES.—The ore rate to Lake Erie from the

head of the lakes has dropped to 90c., and is very weak at that figure. It is not likely to go much lower.

IRON—MESABI RANGE.

(From Our Special Correspondent.)

ADAMS MINING COMPANY.—This company has shipped its stock piles, and is now sending out about 2,000 tons daily from its shafts. It is beginning work in No. 2, and will increase its output at once. The increase at the Adams will necessitate a small reduction at the Mountain Iron, both being operated by the Lake Superior Consolidated Mines.

ÆTNA IRON COMPANY.—At this property, where Stevens & Crockett have a contract for making a mine, 100 men are at work, and considerable stripping has already been done.

CINCINNATI MINING COMPANY.—This company is shipping about 450 tons of ore a day, a considerably better record than at any time in its history.

FRANKLIN MINING COMPANY.—At the Victoria shafts a steam shovel is being put in place for loading the stock, and shipments will be increased there. The Franklin Mining Company has appointed Mr. Clarence M. Boss, mine inspector of Gogebic county, Mich., superintendent and manager of its mines, both on the Mesabi and in Michigan, and he has taken possession. Mr. Boss will be located at Duluth.

GENOA IRON COMPANY.—This company is hoisting ore from No. 1 shaft, and is sinking No. 2. Tracks are being laid to the mine from the line of the Duluth & Iron Range Fayal branch, and shipping can commence in a few weeks. Several mine buildings are going up near the mine for the company's employees, and include cottages, office, warehouse and the mine buildings proper. A short distance east of the Genoa is the Elba mine, also belonging to the Minnesota Iron Company, and here the work of preparing the ground for sinking is under way. A deposit of ore in the same section, 26, which is not now in the possession of the Minnesota, will probably become part of the Elba at no distant time.

IRON—VERMILION RANGE.

(From Our Special Correspondent.)

MINNESOTA IRON COMPANY.—This company is shipping the 300,000 tons sold by it to the Carnegie Steel Company from its Chandler and Minnesota mines. The prices obtained were the pool rate, and the ore will go forward very rapidly. These sales represent, however, only a part of the high-grade ore the company had in stock at these mines. The Minnesota Iron Company is testing with diamond drills in its property in section 23, town 63-12, just east of the town of Ely. This is one of the numerous heretofore unopened locations of the Minnesota that give indications of becoming an excellent hard ore mine.

SOUTHALL MINING COMPANY.—J. H. Southall, of St. Paul, and J. Sterling Smith, of Duluth, are to incorporate this company of Duluth. The mine which the company will operate is situated about seven miles west of Ely, on the line of the Duluth & Iron Range. The mine was recently located by Capt. James Bale, and is said to be very rich in hard, blue, specular ore, assaying 69.5 metallic ore and .022 phosphorus.

MISSOURI.

JASPER COUNTY.

(From Our Special Correspondent.)

JOPLIN ORE MARKET.—The output of ore last week was very light, as a large number of the mines were not worked because the water was up in the drifts covering up the ore. The sales of ore were larger than the week before, and most of the surplus ore is now out of the way. The top price paid was \$21 per ton for zinc ore with an average of \$18 per ton; \$16 per thousand was paid for lead with the usual 50 cents added for hauling. The following was turned in from the different camps in the districts: Joplin, zinc, 1,071,270 lbs.; lead, 218,520 lbs.; value, \$14,121; Webb City, zinc, 259,110 lbs.; lead, 30,760 lbs.; value, \$3,146; Cartersville, zinc, 1,072,140 lbs.; lead, 241,090 lbs.; value, \$15,431; Galena, Kan., zinc, 2,728,000 lbs.; lead, 450,000 lbs.; value, \$32,434; Oronogo, lead, 14,420 lbs.; value, \$164; Zincite, zinc, 16,230 lbs.; value, \$162. Total for the district: Zinc, 5,166,740 lbs.; lead, 961,090 lbs.; value, \$65,866.

BLACKEY MINING COMPANY.—At Shaft No. 1 they are cleaning up the crush zinc ore and are also drifting at 100 ft. on a good run of lead that lies on top of a 25-ft. face of zinc ore in hard ground. They will drift on the latter as soon as they work the lead run out. At Shaft No. 2, in sinking at 124 ft., they broke into a large cave 45 ft. long, 10 ft. high and 8 ft. wide, nearly filled with zinc ore, and the roof covered with crystals of lead ore. This cave produces some of the finest specimens of pink spar, tiff, zinc and lead ore of any place in the camp. This mine is located one mile west of Joplin, on the Gramby land, and is now visited by many specimen collectors.

CENTER CREEK MINING COMPANY.—Last week, for the first time in 20 years, the Center Creek company failed to sell any ore. The late storms raised the little stream that flows through the company's land until it overflowed the mines and ran into the shafts and filled them up. The company has 13 big pumps running day and night and slowly beating the water, but it will take about three months before the miners can work in the lower ground.

This company at one time sold every week over a million pounds of zinc ore.

IRENE S. MINING COMPANY.—On the Eleventh Hour lease the Irene S. plant is running steadily, and is producing six tons of zinc ore each shift. They are drifting at 185 ft., and they have a pump in their shaft and easily keep the water down.

JACK MINING COMPANY.—On the Keller land, two miles south of Webb City, in sinking at 75 ft. this company opened up a big lead prospect in black ground. The dirt is rich in lead, and in sinking over 2,000 lbs. is taken out each shift, with some chunks that weigh over 300 lbs.

MONTANA.

GRANITE COUNTY.

GOLDEN SCEPTER MINING COMPANY.—Ore was discovered recently at a depth of 562 ft. in the Jumbo mine owned by this company. The total number of feet of development work in tunnels, crosscuts, etc., on this mine amounts to over 5,230 ft. A 100-stamp mill is being constructed and the entire plant of this company is to be operated by electricity. One pair of improved 23-in. turbine water wheels, producing 500 H. P., will be directly connected to a large generator for supplying electricity for a 40-H. P. motor to be placed in the mill, a 200-H. P. motor to be placed at the mine for driving compressors, a 60-H. P. motor to be placed at the mine for driving crushers and for supplying electric light to the mill, mine and adjoining town. One 26½-in. special turbine wheel to be used for driving 100 stamps, supplied with pulley and belt for connection with the main line shaft in the mill. This wheel will develop 185 H. P. when running at a speed of about 346 revolutions per minute. One special turbine wheel, 81 H. P., for operating the trolley railroad. This wheel, when running at a speed of 338 revolutions per minute and using about 2,000 cu. ft. of water per minute, will generate not less than 101 H. P.

HIDDEN TREASURE.—Two Kinkead quartz mills have recently been erected on this property. Each mill will crush 10 tons in 24 hours through a 40-mesh screen and one concentrator. Engine and mill can be set up and running in 48 hours. These two Kinkead mills will equal a 10-stamp mill and will crush 20 tons each day.

PURTAN.—The lessees of this mine started the pumps at work and are lowering the water in the shaft to the 100-ft. level, when they will commence taking out ore for shipment.

RED LION MINING COMPANY.—At the meeting of this company recently the following officers were elected: President, J. R. Boyce; vice-president, D. R. Beck; secretary, M. J. Fitzpatrick; treasurer, John H. Curtis; J. B. Losee, Dr. Leiser and the officers compose the board of trustees. Some experiments are to be made with a new process for treating the gold ore, and, if successful, extensive work will be carried on at this mine.

JEFFERSON COUNTY.

HARVEY.—Only exploring work has been done on this property for some time. Messrs. Miller and Norris have purchased a one-third interest in the property, and will begin developing work at once.

WINTERS PLACERS.—The water in Basin Creek is very high, owing to the excessive snowfall last winter and this spring. During this month it is expected that work will begin in earnest. These placers have been steady producers for years. They are situated in what is known as the Upper Basin District, about 12 miles up Basin Creek from the town of Basin. Some years ago the present owners acquired from Henry Bratnober and others their interests, scattered along the Upper Basin, and the entire property for a distance of five miles or more, together with all the water rights, etc., passed into the control of Messrs. Winter, Braun and Heber, who have worked the diggings with one giant with good success since. At the upper end of the diggings nature has provided a natural reservoir for water, in which millions of gallons of water could be stored, and the actual working season prolonged into at least six or seven months of each year. The average working season now, under ordinary circumstances, lasts from 12 to 16 weeks. The country in the vicinity of the placers is annually subject to very heavy snowfalls, and the season for gold washing is generally late before operations can begin.

LITTLE NELL.—A quarter interest in this mine has been sold to Dr. Charles H. Head, of Helena, for \$25,000 cash. This mine is a steady producer of silver ore.

LONE STAR.—This mine, carrying some high-grade ore, has been bonded for \$30,000.

MADISON COUNTY.

ROCHESTER BASIN.—The mines in this vicinity are developing into promising properties. The veins are small, but the ore is all high grade. A carload was recently sent from the Index to the Colorado smelter and it is said the returns were very satisfactory. The Company mine is also making regular shipments.

MEAGHER COUNTY.

BENTON GROUP.—About 40 men are now at work on this group. A shaft is being sunk from the lower tunnel, starting from a point 1,200 ft. from the mouth of that tunnel, and ore is found all the way down.

BIG SEVEN.—The force at this mine is at work on a tunnel to strike the lead about 150 ft. below the bottom of the shaft. So far the ore taken out in

the course of development work has more than paid all expense.

GALT MINING COMPANY.—This company has had a survey made to determine whether the ore body recently struck in the Queen tunnel belonged to them or the Queen, and the result of the survey is said to prove conclusively that it is on the Galt ground.

NEVADA.—Work was stopped at this mine about a month ago on account of surface water, but has now been resumed with a small force.

SILVER BOW COUNTY.

ANACONDA MINING COMPANY.—A new shaft house is being erected by this company on the ground between the Gray Rock and High Ore No. 1. A shaft will be sunk to the 1,400 level, and from there crosscuts for development will be run.

BOSTON AND MONTANA MINING COMPANY.—This company expects to reach the 600-ft. level on the Atlantic shaft before July 1st, when crosscutting will begin.

BOSTON & MONTANA MINING COMPANY.—An answer was filed by this company recently, to the suit of James A. Murray for a sale and partition of the Irene lode mining claim, of which the company owns two-thirds interest and Murray one-third. The answer denies that the ownership in common is productive of any inconvenience to any of the parties, and claims that the property can be apportioned without the necessity of a sale and asks that the mine may be partitioned according to the respective interests of the parties. This company expects to reach the 600 ft. level on the Atlantic shaft before July 1st, when crosscutting will begin.

NEVADA.

LINCOLN COUNTY.

APRIL FOOL.—The first shipment of gold bullion from this mine, at DeLamar, weighed in at about \$2,000.

NEW MEXICO.

SAN MIGUEL COUNTY.

SURPRISE.—The true vein has recently been uncovered at this mine.

SIERRA COUNTY.

RICHMOND.—Rich ore has been struck in the lowest level of this mine at Hillsboro.

OHIO.

AUGLAIZE COUNTY.

HORSESHOE OIL COMPANY.—A few weeks ago this company began drilling for ore. They struck Trenton rock and went 30 ft. in the sand and found a strong flow of gas. They were 140 ft. down, and a few days afterward the well was shot with 400 quarts of nitro-glycerine, and for this gave a steady stream of clear water, rising to the height of 15 ft. through a 7-in. pipe. The well was abandoned and the gas has been left burning. Neither it nor the water has made any sign of diminishing. Every three-quarters of an hour the well shows the greatest life. There seems to be a collection of gas and water at the lowest extremity, and this combined comes through the 7-in. pipe. The flame shoots 20 to 30 ft. into the air, and the gas spreads to the water, which also shoots the same height.

WASHINGTON COUNTY.

BIG INJUN.—This well on the Dye farm, a mile west of the Raven Rock, was drilled deeper, and its production increased to 17 barrels an hour.

OREGON.

BAKER COUNTY.

EXPLORING SYNDICATE OF MINES AND MINING.—This French syndicate is making extensive improvements at the Flagstaff mine.

JOSEPHINE COUNTY.

H. A. CORLISS & Co.—This company is mining in Dry Diggings District, and has about \$1,500 in gold dust; one piece valued at \$90 was taken from their diggings.

PENNSYLVANIA.

ANTHRACITE COAL.

LUKE FIDLER COLLIERY.—Operations were resumed at this colliery this week after an idleness of two years. Expensive improvements have been made, both inside and out.

PHILADELPHIA & READING.—The engineering department of this company is busily engaged in making alterations and improvements along the line of the Plymouth branch from Conshohocken to Oreland, where a connection is made with the North Penn Railroad, with a view of using these tracks for carrying all coal from the mines bound for tidewater points to a point on the New York Division of the Reading Company near Jenkintown. At the present time all the anthracite coal for tidewater points is sent over the main line of the Reading road to West Falls, where a connection is made with the Port Richmond branch, and then the coal is carried to the yards at Wayne Junction. Owing to these heavy shipments there are always more or less coal and freight cars at the Wayne Junction yards, and delays are of frequent occurrence. To avoid this it is proposed to use this yard only for freight business. The improvements to the Plymouth branch are the strengthening of bridges, as the engines used on the main line are considerably heavier than those in use on the branch road, trestling construction and Y's at Oreland and Jenkintown. There will also be some new track, as well as substitution of heavier

rails. To make this change it will require the main line to deliver the business to the New York Division at Bridgeport. The trams then will be taken across the Schuylkill River and south to a point near Conshohocken to meet the Plymouth branch to Oreland, thence on the North Penn tracks to a point on the New York Division, just north of Jenkintown station. The changes will require several weeks to complete. An engine-house and turn-table are also to be erected at Bridgeport.

YORK COUNTY.

YORK & PEACH BOTTOM SLATE COMPANY.—This company recently held its annual meeting in York. The annual report was presented and a number of plans proposed, among which was the increasing of the capital stock to \$75,000 or \$100,000. Should this be done, the quarry would be greatly enlarged and put in fine condition. It would then be possible to manufacture 20,000 to 30,000 squares of the finest roofing slate annually, a quantity nearly equal to the entire output of the Peach Bottom region at this time. The election resulted in the choice of the following directors: Edward M. Vandersloot, C. J. Wallace, C. H. Stallman, John M. Brown, Gable Marks, W. H. Sanders, Theo. R. Hebb, S. J. Barnett, Geo. W. Reider, Geo. S. Yinger, J. T. McLean, W. H. Shelley. The directors met and organized by the re-election of the old officers: E. M. Vandersloot, president; J. D. Jenkins, secretary; R. H. Shindel, treasurer.

SOUTH CAROLINA.

BEAUFORT COUNTY.

PHOSPHATE MINING COMPANY.—This company, of Beaufort, and of Bristol, England, has decided to go out of business and is offering the entire plant, the dredge John Kennedy, tugs Bristol and Kinkora, and lighters, machinery, etc., for sale. The Phosphate Mining Company was incorporated in 1885, and commenced operations in Beaufort River, afterward working Morgan River, and finally Coosaw River, and was successful until the storm of 1893.

TENNESSEE.

ANDERSON COUNTY.

BLACK DIAMOND COAL COMPANY.—This company is building 200 new coke ovens at Coal Creek.

MORGAN COUNTY.

BRUSHY MOUNTAIN COAL MINES.—Work has begun on the 50 new coke ovens to be built by this State at Brushy Mountain. The work will be done by the convicts. General Manager Jesse T. Hill says they are doing a good business at the mines and that they expect to turn out 1,000 tons of coal during the winter season.

SULLIVAN COUNTY.

PIG STONE GAP COLLIERY COMPANY.—The coke plant of this company has been ordered resold upon an upset bid of 20%, by Gen. R. A. Ayers. The first bid at the next sale will therefore be \$31,200.

TEXAS.

EL PASO COUNTY.

INTERNATIONAL SMELTER.—The machinery of the old International copper smelter at El Paso, according to reports, is being overhauled under the superintendency of J. S. Tebbets, manager for the Duquesne Mining and Reduction Company, which owns valuable copper properties in Arizona, now being developed. The ore is being shipped to El Paso. The company is controlled by George Westinghouse and associates.

UTAH.

JUAB COUNTY.

DIAMOND MINING COMPANY.—A strike is reported to have been made in the shaft of the Independent claim at a depth of about 200 ft.

FOUR ACES.—The shaft at this mine has been sunk through iron to a depth at which excellent ore has been found.

GODIVA.—Work was started June 10th on a new road from Eureka to this mine. It is said that as soon as the road is completed the old hoist on the Colorado Chief will be taken down and erected on the Godiva in readiness for more extended mining operations.

GOLDEN EAGLE, EAGLE No. 1 & ROSSIE.—R. G. Wilson and G. T. Bridges have sold a one-fourth interest in these claims to George S. Chisholm, of Elgin, Ill., the stated consideration being \$1,500.

IBEX.—A fine body of ore has been struck in this mine, the face of the tunnel being in a large body of mineral that averages high in gold and 10% copper to the ton, says the Salt Lake Herald. The tunnel is 355 ft. in length and at the point of contact with the ore the vertical depth is about 425 ft., thus giving a large area of stopping ground.

SHOEBRIDGE BONANZA.—The shaft on this property at Silver City has attained a depth of 40 ft.

PIUTE COUNTY.

CRYSTAL GOLD AND SILVER MINING COMPANY.—This company, of Marysville, was recently incorporated. A force of men has been put to work on the wagon road in Cottonwood Creek, and after certain necessary repairs have been made, work on the mine will be commenced. The ore is high-grade silver-lead and gold. The property has been quite extensively developed, and at present there are about a thousand tons of ore on the dump, half of which is good shipping ore, while the balance would pay to handle by milling. As the underground workings having caved in in places, it will require

considerable work to place the mine in a good condition. The formation is a contact between porphyry and quartzite.

FOREIGN MINING NEWS.

CANADA.

BRITISH COLUMBIA.

(From an Occasional Correspondent.)

CARIBOO DISTRICT.—The spring is opening very slowly to the great delight of the hydraulic workers, who are hard at work, for the prospect of the snow lingering on the mountains promises them a longer season than usual. Considerable local excitement has been caused by four miners having struck pay ground close to town in "Little Valley Creek," at a place so high up from the old bed of the creek that though it had been grazed over and walked over for years no one had thought of trying the ground before. Each man is taking out about an ounce per shift, with the crudest appliances, and the valley has been staked for miles.

Quartz has not received attention for years until recently. Mr. William Hamilton Merritt, mining engineer of Toronto, Ont., is now here investigating the Consolidated Empire and some other claims, in the interest of English capitalists. Mr. Marsh is also reconstructing the Government test mill, with a view of treating the Black Jack ore by the cyanide process. The veins occur in a talcose schist, often ramifying in stringers in all directions. The chief values lie in the concentrates, the free gold as a rule running low. At Quesnelle mouth, one hydraulic dredge has just started to work and another is building. Their success is earnestly hoped for.

(From Our Special Correspondent.)

ROSSLAND, June 12, 1896.
During the last week or so there has not been any special activity in the sales of local mining stocks. Those who have been purchasing shares in the various local mining enterprises have not found it an easy matter to sell stock as readily as they bought it.

Like all other mining camps, the Trail Creek country has its quota of speculators who are in great haste to get rich, and whose methods and business have been well condemned elsewhere. The Trail Creek region has made the first attempt in the history of this camp to "call" stocks on the exchange. This was begun a few days ago by a firm of local brokers, but after one or two attempts the project has been abandoned.

Perhaps it would have met with more success in the early days of last month, before a large quantity of stock had been disposed of by private sale.

The disposition of newcomers who are supposed to be intending purchasers of mining stocks in the Trail Creek country seems of late to be one more of inquiry than of actual investment. The promoter of the great majority of promising mines in the camp, which have been thus far fairly developed and backed by capital, appear to be more desirous of developing the properties than of selling them. Of course, much of their stock, once it is offered and purchased, becomes public property and it is difficult to control the company, unless, like the Le Roi and War Eagle, it becomes a close corporation.

So far with the brokers, there has been a lack of anything like concerted action. Every new firm of brokers has started on its own account and there is little or no exchange of ideas, and perhaps a total lack of co-operative action. This will, no doubt, be remedied in the near future, and to infuse confidence, any prospect of the kind, if attempted, will require ability and experience from the starting point. At present there appears to be a disposition to defer the subject, though one or two attempts at least have been made to effect a preliminary organization.

Some of the brokers, in addition to their bulletins, are issuing sheets containing the names of the various mines the stock of which is offered for sale, the prices being given opposite every name.

The following figures appear to be the prevailing ones this week: Jumbo, \$1.05; War Eagle, \$1.75; Josie, 52c.; O. K., 32c.; Iron Mask, 82c.; West Le Roi Josie, 16c.; Poorman, 15c.; Virginia, 30c.; St. Elmo, 14c.; Good Hope, 8c.; Evening Star, 14c.; Phoenix, 10c.; Great Western, 15c.; Eureka Consolidated, 8c.; Green Crown, 6c.; Nest Egg, 13c.; Silverine, 10c.; Gertrude, 11c.; High Ore, 10c.; Monte Cristo, 20c.; Mayflower, 15c.; Crown Point, 20c.; Caledonia Consolidated, 7c.; Deer Park, 8c.; Palo Alto, 10c.; Vulcan, 3c.

Of sales in the absence of a regular stock exchange it is very difficult to obtain reliable and disinterested data.

The summer crop of rumors and fictions is a very abundant one, and the figures given are ridiculous in their magnitude. Of the sales reported which appear to be bona fide are the Iron Duke and Granite No. 2, situated on the northeast slope of Columbia Mountain. The figures given are \$5,000. There are also some other properties on the slope of Lookout Mountain. The companies which are to work these properties are about to be incorporated.

The dullness in the stock market is offset by the great activity prevailing in the development of the camp, which bears indirectly on the mineral industry of the Trail Creek country. The Columbia & Western Railway Company is now carrying passengers and freight between Rowland and the town of Trail, and shipments of ore via that road are about to commence. Though a diminution of passenger traffic is visible in the stages which run to Northport, yet considerable ore is carried by

teams from the Le Roi and War Eagle mines, and much ore could be carried over this road during the present summer, as its destination is beyond the Trail Creek smelter, and existing contracts have to be carried out.

The development of the Jumbo into a first-class mine is now one of the visible propositions. The owners of this mine are building a good road from their mine to the main road at Northport, about a mile and a quarter from the town of Rossland, and the men at work on this road and those cutting the right of way for the Red Mountain Railway are almost in sight of one another. Railway and mining development are almost abreast, and perhaps at no period in the past has there been such activity visible as at present.

NELSON & FORT SHEPHERD RAILWAY COMPANY VS. PARIS BELLE GOLD MINING COMPANY, ET AL.—Chief Justice Dene, of Victoria, has rendered judgment in favor of the Nelson & Fort Shepherd Railway Company, plaintiffs, against Nicholas Jerry, Chester Glass and the Paris Belle Gold Mining Company. The judgment declares that the location and record of the Paris Belle mineral claim by Jerry was void; that the plaintiffs are entitled to exclusive use and possession of Section 35, Township 9, Kootenay District, subject to such surface rights, if any, as may be required by any person or persons lawfully engaged in mining upon lands for the purpose of getting ores, etc., out of any mineral claim legally located and recorded on said lands the mineral contained in such claim. It is understood that the defendants intend to appeal.

ROSSLAND & TRAIL CREEK RAILWAY COMPANY.—This company has located at Rossland and has begun to carry freight and passengers between Rossland and Trail. The construction engine on this road has now reached a point opposite Le Roi mine. The greater bulk of the ore will be shipped to the Trail Creek smelter. There is great activity in assessment and development work. About ten propositions in and around Rossland have now the necessary machinery for shipping ore.

INDIA.

COLAR GOLD FIELD.—The four principal companies operating in this field report as follows for the four months ending April 30th:

	1895. Oz.	1896. Oz.
Champion Reef.....	22,356	25,741
Mysore.....	21,057	34,397
Nundydroog.....	12,524	14,267
Ooregum.....	21,834	24,526
Total.....	77,771	98,931

It should be explained that part of the Mysore increase this year arises from the fact that the February return included 7,000 oz. obtained last year but not reported, as it was the practice of the former manager to hold back a portion of the gold in order to equalize the results in case of a bad month. This practice has been forbidden and the gold is now reported as produced. Even deducting this 7,000 oz. there was a large increase for the four months. The Champion Reef property is turning out so satisfactorily that the directors have resolved to increase the number of stamps from 100 to 400. The Nundydroog is also putting up 30 additional stamps, which will make the whole number in the mill 70 stamps. The Mysore company has recently struck the lode in a crosscut on the 1,380-ft. level, the lowest in the mine, and the report is that at this point the vein is 7 ft. wide and assays over 4 oz. to the ton. The average return of all the companies is a little over 1 oz. per ton worked.

NEW SOUTH WALES.

BROKEN HILL PROPRIETARY COMPANY.—An important memorandum has just been issued by the Melbourne directors of this company with regard to the method of publication of the output, and the future operations of the undertaking. Hitherto the output of the mine has been announced weekly, but as the operations have gradually become more complex in their nature, and now involve the refining of the metals and the recovery of by-products, including gold, copper and antimony, which have not been taken into account in the weekly estimates, it has been thought desirable to estimate the returns once in every four weeks. The weekly statement of the lead produced and the silver contained therein has become incomplete and unreliable as a true index of the total value of the mine's production. With regard to future operations, the directors have been advised by the general manager that the true interests of the mine call for a reduction in the extraction of oxidized ore for smelting purposes, and an increased treatment of the sulphides, and they have, therefore, decided upon a large addition to the concentration plant to a capacity of about 6,000 tons weekly. At the same time additions are being made to the existing plant, so as to deal with a portion of the products of concentration, and "active work is proceeding in the exploration of the vast bodies of sulphides underlying the oxidized ores." The amount of sulphides already proved is estimated at 2,019,000 tons, the assays giving an average of 24.3% of lead, 21.9% of zinc and 18½ oz. of silver per ton. In addition to the amount of sulphides actually proved, it is stated that in the upper levels a further quantity of about 600,000 tons may be safely counted upon. Of oxidized ores there still remains a quantity, estimated at 1,250,000 tons, with a supposed value

of 12% of lead and 15 ozs. of silver per ton, though the full quantity may not be recovered, as some of it is within portions of the mine seriously affected by the "creeps." The memorandum refers to the advantage to be derived from treating the oxidized ores with the sulphide concentrates, and concludes by stating that "it is now proved beyond question that the Broken Hill sulphides can be profitably worked, and though the output of the Proprietary mine will be lessened during the immediate future, the prospects of the mine for a long life of remunerative work have greatly improved."

NEW ZEALAND.

HAURAKI GOLD MINING COMPANY.—This company's reports show the following results for the five months ending May 31st, the mill having 15 stamps at work. Tons ore crushed, 1,706; product, 10,733 oz. gold; average return per ton, 6.29 oz.; net profit, \$113,534. The company has paid two quarterly dividends, in March and June, each of 1s. per share; this is at the rate of 100% yearly.

SPAIN.

ALMADEN QUICKSILVER MINES.—From a statement in the financial estimates recently submitted to the Spanish Cortes, it appears that the government has decided to renew the lease of the Almaden quicksilver mines to the Rothschilds, but no particulars have been given.

LATE NEWS.

The Southern Transportation Company has been recently formed in Houston, Tex., by P. B. Clarke, Birmingham, Ala.; J. C. Smith, Newark, N. J.; J. S. Price, John F. Dickson and W. G. Sears, of Houston. The object of this company is to further the market for Alabama coal, and the intention is to place a line of coal barges between Greenville, Miss., and Houston, Tex., the latter place to be the distributing point for the coal. The barges will be towed down the river to the Gulf and thence by sea to Houston. This is a further extension of the Southern Railway Company's plans for increasing its coal trade.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, June 19.

Statement of shipments of anthracite coal (approximated) in tons of 2,240 lbs., for the week ending June 13th, 1896, compared with the corresponding period last year:

	1896.		1895.
	Week.	Year.	Year.
Pennsylvania Railroad.....	65,446	1,551,005	1,634,179

PRODUCTION OF BITUMINOUS COAL, in tons of 2,000 lbs. for week ending June 13th, and for years from January 1st, 1896 and 1895:

	1896.		1895.
	Week.	Year.	Year.
Shipped East and North:			
Allegheny, Pa.....	41,618	1,080,175	1,938,788
Barclay, Pa.....	614	20,296	.....
Beech Creek, Pa.....	54,235	1,430,105	1,352,475
Broad Top, Pa.....	6,136	195,219	179,486
Clearfield, Pa.....	55,160	2,133,401	2,560,500
Cumberland, Md.....	70,345	1,344,449	1,347,182
Kanawha, W. Va.....	47,829	1,415,567	1,423,428
Phila. & Erie.....	843	31,426	24,563
Pocahontas Flat Top.....	.....	.....	.....
Totals.....	276,810	7,630,637	8,881,422

† Week ending June 7th.

	1896.		1895.
	Week.	Year.	Year.
Shipped West:			
Monongahela, Pa.....	20,279	466,195	360,822
Pittsburg, Pa.....	31,782	860,066	861,472
Westmoreland, Pa.....	36,677	929,625	876,767
Totals.....	88,738	2,255,886	2,099,061

Grand totals..... 365,548 9,886,523 10,980,483

Production of coke on line of Pennsylvania Railroad for the week ending June 13th, 1896, and year from January 1st, 1896, in tons of 2,000 lbs.: Week, 78,989 tons; year, 2,963,824; to corresponding date in 1895, 2,511,641 tons.

Anthracite.

Reviewing the present situation of the anthracite coal market we would say that both the retailers and wholesalers are doing a fair amount of business at prices quoted on the May circular. There is some uncertainty as regards the proposed July advance, but we are reliably informed that there is a probability of an increase.

The demand for coal in the line trade is good, and it is said that better prices are being realized than those obtainable at tide.

Prices f. o. b. are as follows: Stove, \$4; egg and chestnut, \$3.75; broken, \$3.50. These prices are subject to the usual commission of 15c.

The production of anthracite coal during the month of May, 1896, amounted to 3,125,170 long tons, as against 3,013,190 tons in April, showing an increase of 111,980 tons for May. For the five months ending May 31st, 1896, the total output was 15,584,458 tons, which compares with 16,780,262 tons in 1895, and 14,281,177 tons in 1894. From this it will be seen that although the production for 1896 was less than that for 1895 by 1,204,804 tons, it exceeded the output for 1894 by 1,303,281 tons. The stocks on hand on May 31st, 1896, amounted to 739,503 tons, while those for April were 860,011 tons. A decrease of 120,508 tons for the month of May. It is anti-

ated that the output for June will be about 3,250,000 tons.

The mines of some of the leading producers have been running during the month of May, 1896, on an average of 3 to 4 days per week.

NOTES OF THE WEEK.

The Retail Coal Exchange of New York held its ninth annual excursion on June 15th. As usual, many points of general interest were visited, among them Clayton, Montreal and Plattsburg. A large number of well-known coal dealers were in attendance.

Bituminous.

There is a little more activity in the soft coal trade on shipments, and the coal moving forward has somewhat increased. This activity is due principally to a slight drop in freight rates and to the liberal supply of available vessels. Orders with freight limits at the lower rates have come into the market and the lists of chartered vessels in shippers' hands are quite extensive in comparison with what they have been. This has accordingly increased the mine shipments, and it is a question if all the companies are holding strictly to the "recommendation" of the Executive Committee of the Association to work only at half time. There is continued activity all along the line, and the improvement is apparent to every one in the trade. The lowering of the ocean freight rates will probably have the effect of inducing other shipments, and most of the producers are inclined to anticipate better times, for a while, at least. We do not hear of any cutting in prices in consequence of this activity. The orders that are being shipped now have been on the books of the producers at a freight limit, and it is probable that the dealers East are not very well stocked with coal and will require shipments to fill up their wants very soon.

The territories consuming the most coal at the present time are the East, with the Sound second and New York Harbor third.

Trade local to the shipping ports is dull, and the middlemen are doing but a small amount of business.

All-rail trade does not seem to increase with the tide water market, and South American business is practically at a standstill.

Transportation from mines to tide is excellent on all the roads, and accordingly there are no complaints. The car supply is not so good, though they are very nearly up to the wants of all producers.

The ocean freight rate market is weak with a more plentiful supply of vessels all round. We quote current rates of freight from Philadelphia: To Boston, Salem and Portland, 60@65c.; Providence, New Bedford and the Sound, 60c.; Wareham, 80@85c.; Lynn, 75@90c.; Newburyport, 75c.; Portsmouth, 65c.; Dover, \$1.10 and towage; Saco, 85c. and towage; Bath, 65c.; Gardiner, 65@70c. and towage; Bangor, 65@70c., alongside. For the lower ports 5 to 10c. above these rates are asked.

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

NOTES OF THE WEEK.

The Southern Railway Company and the Alabama Coal Association have combined for the purpose of supplying the different points on the lower Mississippi with Alabama coal. A dispatch from Greenville, Miss., states that coal chutes will be built at that place to transfer the coal from the cars to the barges, which are now under construction. These barges will be towed down the Mississippi direct to the different markets. The estimate is that 500,000 tons of coal can be sold annually to the river plantations alone.

Buffalo.

June 18.

(From Our Special Correspondent.)

Notwithstanding the prospects for an advance in anthracite coal quotations in July the local trade of Buffalo continues to rule very dull; orders are few and far between from near-by towns and villages, and Western and Canadian customers are almost a myth!

Bituminous coal is also quiet, manufacturers buying only in car lots—not being flush of money in consequence of slow collections. Prices unchanged with ample stocks for all requirements.

Lake freights declined 10c. per net ton to Lake Michigan ports last Thursday afternoon, and since many charters have been made on that basis. Lake superior rates are steady.

The shipments of coal westward by lake from this port from June 7th to 13th, both days included, aggregated 77,980 net tons, distributed as follows: 31,250 tons to Chicago; 23,000 tons to Milwaukee; 2,000 tons to Duluth; 5,500 tons to West Superior; 2,240 tons to Kenosha; 500 tons to Green Bay; 3,000 tons to Racine; 2,800 tons to Ashland; 3,200 tons to Manitowoc; 2,500 to ports not named, and 1,900 tons to Fort William. The rates of freight were as follows: 60@50c. to Chicago; 55@45c. to Milwaukee and Manitowoc; 30c. to Duluth and West Superior; 50c. to Kenosha and Racine; 45c. to Green Bay and 25c. to Ashland and Fort William, closing with quite a brisk demand for vessels, but without any indications of changes in quotations.

Chicago.

June 17.

(From Our Special Correspondent.)

Anthracite.—The anthracite coal trade of Chicago is slow, though there is much firmness manifested in prices. Coal is only being sold in moderate amounts. The entire tonnage of the week would not foot up very large. There is expectation of another advance in hard coal taking effect July 1st. The increase, it is said, will be 25c. per ton, but it may possibly be only 15c. Out-of-town trade is inactive, dealers there continuing to put off buying coal until actually forced to do so. Prices of hard coal for Chicago are f. o. b. cars, grate or broken, \$5.10; egg, stove and chestnut, \$5.35 with yard prices \$5.25 for grate or broken, and \$5.50 for egg, stove or chestnut.

Bituminous coal continues inactive, but a limited tonnage of it having been placed during the week. There is no increase in buying manifested by the manufacturing concerns, and supplies by them are only laid in for temporary want.

Pittsburg.

June 18.

(From Our Special Correspondent.)

Coal.—River coal men are still waiting on the June rise. Under the circumstances the miners are far from being a happy lot. The pools and harbor are full of coal, with fully 20,000,000 bushels loaded waiting shipment. This amount is considerably more than can be sent on one rise. Most of the towboats are now laid up undergoing necessary repairs to be ready for the first rise. There is little doing in the pools, and the coal being mined is for local purposes. The railroad coal trade continues dull. The reduction in freight rates has not had the stimulating effect that was expected, and only limited amounts of coal are being bought by the lake shippers who continue to supply the lake trade from their own mines.

Farmers near Jeannette, Pa., have discovered a rich coal mine in P n township, not less than 9 ft. of excellent coal at a depth of 293 ft. Specimens of the coal were taken to Pittsburg, and upon being analyzed were found to be superior to the Connellsville coal both for fuel and coke. The belt consists of 978 acres and is along a Pennsylvania Railroad side track, easily accessible, and will only be sold on condition that it will be operated.

Connellsville Coke.—The trade is far from being encouraging with no immediate prospect of an improvement. Production increased over 1,200 tons, but the demand fell off about 3,000 tons, and the difference remains as stock coke in the yards. An increase in demand was shown from eastern points, but there was a big falling off from western points and Pittsburg. Furnace men reported to be going out of blast received no more coke, and the orders from a number of others were reduced; of course this means that they will soon go out at Dunbar, Pa. The Atlas Coke Works, which has been idle the past five months, has resumed operations; this plants consist of 100 ovens. The Frick Coke Company closed down 100 ovens, leaving but 210 ovens out of 500 in blast. Summary of the region shows 10,978 ovens in blast, with 6,969 idle. In the running order of the ovens in blast 4,577 ovens made 6 days, 6,517 made 5 days, 90 ovens 4 days, and 165 ovens 3 days, an average of 5.37 days as against 5.05 days the week previous. The shipments of coke from the region amounted to 5,873 cars, as against 6,053 cars the week previous, a decrease of 182 cars. They were distributed as follows: To Pittsburg, 1,793 cars; to points west, 2,953 cars; to points east, 1,127 cars.

Henry M. Laughlin, of the firm of Jones & Laughlin, owners of the American Iron Works, has designed improvements on Belgian retort coke ovens and a block of 20 are under construction in the yards of the Eliza furnace. In the new oven all the gas is utilized in burning the coke. No attempt will be made to save the by-products, although this can be done with this class of oven. The object is to burn the coke in shorter time.

Shanghai, China.

May 22.

(Special Report of Wheelock & Co.)

Coal.—There is little or nothing for us to chronicle in Japan coal during the past fortnight; practically no business has been done. Cardiff is not inquired for and there is no likelihood of any demand for some time. At present the market for Sydney Wollongong is in a very depressed state, deliveries being exceptionally poor. There is a rumor among the natives that a fairly large quantity of Kaiping has been contracted for which they think will serve their purpose as well as the Australian product, especially at present prices. Quotations are as follows per ton: American anthracite, 9.00 tael; Welsh Cardiff, 10.50 tael; Australian Wollongong, 9.00 tael. For Japan we quote 5.75 tael per ton for Takasima lump, 4.25 tael for Namazuta lump, and 3.00@3.25 tael per ton for other sorts.

Kerosene Oil.—Business has not been very large the last two weeks, entirely owing to the very small stocks we now have, especially of Devoc's; if some of the vessels that are due at any moment do not turn up, the market will, in a very few days, be entirely bare of stocks. The few transactions which have taken place have been at a slightly lower rate. A steamer cargo of Russian Batoum has been sold to arrive at 1.62 tael per case. The only arrival is 95,000 cases Russian. Our stocks, including this arrival, now amount to 47,000 cases American and about 98,000 cases Russian. We quote: American

Devoc's, 1.70 tael per case; Russian Batoum, 1.62½ tael, and Batoum bulk, 1.52½ tael per case.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, June 19, 1896.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending		From		From	
	June 21, 1895.	June 19, 1896.	Jan., '95.	Jan., '96.	Jan., '95.	Jan., '96.
Anthracite.	32	20,124	41	25,906	550,650	703,938
Coke.....	122	131,800	135	161,170	3,378,440	4,141,309
Charcoal....	18	3,961	19	6,130	99,601	130,150
Totals....	172	155,885	195	193,206	3,993,691	4,975,397

The iron market continues very quiet in all quarters, and the future is still very uncertain. Some brokers in the trade anticipate an early improvement, in sympathy with the revival in general business which they expect will follow the positive declaration on the currency question made by the Republican convention at St. Louis this week; but others point out the facts that there is still nearly five months of campaigning to come, which will divert attention from business, and that after all very much depends on the composition of the Congress to be elected in November.

While the currency question, upon which the general financial situation depends, has a great deal to do with the situation of the iron trade, it must not be forgotten that there is another element to be taken into account. The fight with the trusts and combines which are now throttling the trade is going to have a most marked effect for some time to come, and its result is very doubtful.

The steel combine seems to be wavering a little in its policy just now. The tentative talk of higher prices for billets seemed to have just the opposite effect from that intended, and only confirmed buyers in their determination to hold back. This week we hear from sources supposed to be well informed a report that prices are to be reduced. Little reliance, perhaps, is to be placed on this talk, but it shows that the buyers' attitude is having some effect.

In spite of the decreasing production the pig-iron market is not at all strong, and there is a tendency to reduce prices apparent in several quarters.

NOTES OF THE WEEK.

The Tennessee Coal, Iron and Railway Company has made a sale of 500 tons of pig iron to go to Genoa, Italy. At the same time a second sample lot of 10 tons will be sent to another concern.

The Louisville & Nashville Railroad Company has made a rate of \$1.60 per ton from Birmingham to New Orleans on cast-iron pipe or pig iron for export. This is a reduction of 80c. per ton on the old rate.

New York.

June 19.

The market has been very dull this week as a rule, and dealers have spent more time in talking politics than anything else. The action on the currency plank at St. Louis has been well received, but there has been hardly time yet to show what effect it is going to have on the markets. Some ironmen are talking of a boom like last year's, but this seems rather premature. There is, however, a more confident feeling, though it has not yet developed into any actual improvement in business.

Pig-Iron.—Business has not been large, and there is an increasing pressure to sell. While no change has nominally been made on Northern or on the higher grades of Southern pig, soft iron has been so generally offered at lower prices that we reduce the quotation this week. Some buyers are beginning to think that this is a good time to lay in stock, and there has been more inquiry.

We quote for large lots, tidewater delivery, Northern brands: No. 1 foundry, \$12.25@13; No. 2 foundry, \$11.25@12; gray forge, \$11@11.50. For Southern irons, same delivery, we quote: No. 1 foundry, \$11.50@12; No. 2 foundry, \$11@11.50; No. 1 soft, \$10.75@11.25; No. 2 soft, \$10.25@10.75; forge, \$10@10.50.

Cast Iron Pipe.—A few small contracts are noted this week. The bids for the Brooklyn contract ranged from \$8.1,979 for a 66-in. steel pipe line up to \$1,661,629 for a double line of 48-in. cast pipe. There were nine bids for steel pipe and light for cast iron. As the bids cover all the work, and as only the gross amounts are given out, it is impossible to give the exact figures for the pipe.

Spiegeleisen and Ferro-Manganese.—Only a few small sales of ferro-manganese are reported. Prices are unchanged at \$19.50@20.50 for imported spiegeleisen and \$47@47.50 for ferro.

Steel Billets and Rods.—There is little business doing here. The pool price continues \$21.75 for New York delivery. Rods are quoted \$27. Buyers still refuse to come forward, and some mills are getting anxious for business. We note a report that an offer has been made to deliver wire rods in Liverpool at a shade below the English makers' price.

Merchant Iron and Steel.—Business continues very light, and there is no quotable change. We quote for common bars 1.10@1.20c.; refined bars, 1.25@1.50c.; soft steel bars, 1.25@1.35c. Other quotations are: Steel hoops, 1.50@1.60c.; steel axles, 1.65@1.80c.; links and pins, 1.65@1.75c.; tire steel, 1.80@1.95c.; spring steel, 2@2.20c.; open-hearth ma

chinery steel, 1'45@1'60c. All prices are for deliveries on dock, New York.

Plates.—Little is doing in plates, and prices are about the same as for some weeks past. Universal mill plates are 1'45@1'55c. For other sorts we quote: Tank, 1'40@1'50c.; boiler shell, 1'45@1'55c.; good flange, 1'65@1'75c.; firebox, 2@2'40c. Charcoal iron plates are 2'25c. for shell, 2'75c. for flange, and 3'25c. for best firebox. Rivets are 2'15@2'25c. for steel and 3@3'25c. for iron.

Structural Iron and Steel.—No large buildings are on the market just now. We quote for angles, 1'45@1'50c.; channels, 1'65@1'75c.; tees, 1'60@1'70c.; beams, 1'70@1'80c. for large orders and 2@2'20c. for small lots.

Nails.—The combination price for steel wire nails continues unchanged at \$2.55 per keg, carload lots, Pittsburgh delivery. Cut nails are \$2.30 per keg, carload lots, at Pittsburgh. Buyers complain of the high price, and business has been very small.

Steel Rails and Rail Fastenings.—Nothing is doing at the pool price, which continues to be \$28.75 per ton at tidewater. Girder rails are \$28@32 per ton at tidewater.

Little is doing in rail fastenings. We quote for fish and angle-plates, 1'25@1'35c.; spikes, 1'60@1'70c.

Old Rails.—Old steel rails are quoted \$10.50@12, Jersey City delivery. One or two sales of old steel rails, suitable to relay for light work, have been made; quotations are \$20@32, New York harbor delivery.

Scrap Iron.—While demand is not very active all the good scrap offered seems to be taken. We quote \$10@11.50 per ton for good machinery scrap; \$9@10 for ordinary cast scrap, and \$6@7.50 for stove-plate and mixed.

Buffalo. June 17.

(Special Report of Rogers, Brown & Co.)

The pig-iron market as seen from this standpoint remains quiet and uneventful. The waiting feeling continues to predominate, and it remains to be seen whether the generally expected clearing of the political skies will have the long looked for stimulating effect. Certain it is, however, that enough business has been, and is still being put off and held back to warrant all in expecting an unusual amount of business to be crowded into the remaining months of the year providing the troublesome questions are quickly settled to the satisfaction of the majority of the business men throughout the country. We quote on cash basis f. o. b. cars Buffalo, as follows: No. 1 foundry strong coke iron, Lake Superior ore, \$13.50; No. 2 foundry strong coke iron, Lake Superior ore, \$13; Ohio strong softener No. 1, \$13.50@14; Ohio strong softener, No. 2, \$13@13.50; Jackson County silvery No. 1, \$15.25@15.50; Southern soft No. 1, \$12.40; Southern soft No. 2, \$11.90; Hanging Rock charcoal, \$18; Lake Superior charcoal, \$14@14.50.

Chicago. June 17.

(From Our Special Correspondent.)

There is no change whatever to report in the condition of the iron trade at this point, buying in all lines continuing small. There has been rather more inquiry in certain lines. Structural material is dull with but few contracts of any kind in sight. Billets and rails are only in slight demand.

Pig Iron.—The week's business in pig iron has been on about a par with the preceding week, sales continuing wholly for carload up to 100-ton lots. Consumers are evidently expecting lower prices, and there is but little real strength in the situation at present. The sales of Northern iron surpassed the Southern during the week. There are several good-sized contracts to be bid on, but it is hard to tell when they will be let. We quote Lake Superior charcoal, \$13.50@14; local coke foundry No. 1, \$12@12.25; local coke foundry No. 2, \$11.50@11.75; local coke foundry No. 3, \$10.75@11; Southern coke No. 1, \$11.85; Southern coke No. 2, \$11.60; Southern coke No. 3, \$11.10; Southern No. 1, soft, \$11.60; Southern No. 2, soft, \$11.35; Jackson County silver-les, \$14.50@16; Ohio strong softeners, \$15@15.50; Alabama car-wheel, \$16.85@17.35.

Bar Iron.—There is a slightly increased business in bars, though the aggregate sales represent but a small total. Inquiry is fairly good. Prices on common iron 1'30@1'35c.

Billets and Rods.—There have been only a few thousand tons of billets sold here during the week. Rods are very quiet. Billets are quoted \$21.25.

Steel Rails.—Small lots of rails are being sold, but there is nothing very large in sight. Rails are quoted at \$29 and up according to specification.

Merchant Steel.—The week's business has been poor and inquiry is small. A few contracts for season's supply have been let. Quotations are as follows: Open hearthspring, tire and machinery steel, 1'85@1'95c.; smooth finished machinery steel, 1'60@1'65c.; smooth finished tire, 1'55@1'65c.; tool steel, 5'50 to 7'50c.; specials, 11c. and upward.

Old Rails and Wheels.—Only a few small sales in either line are observed. Old wheels are quoted \$13; old iron rails, \$13.50.

Scrap.—Only a small demand is noticed for scrap. Quotations are: Railroad forge, \$11.50@12; dealers' forge, \$10@10.50; No. 1 mill, \$8; heavy cast, gross ton, \$9@9.50; malleable cast, \$9.50@10; axles, \$15; cast borings, \$4@4.25; wrought turnings, \$5.25; axle turnings, \$6.50; mixed steel, \$7.75.

Cleveland. June 17.

(From Our Special Correspondent.)

Iron Ore.—A few sales have been reported during the past week at slight advances over the regular price, but it is the belief of the dealers that these special sales signify only temporary conditions that will not obtain long. The recognized price of standard Bessemers is \$4, but several small cargoes, it is reported, were disposed of at an advance of from 10c. to 15c. over that figure. To day the price was the same as usual, and there were no indications of a change. The increase in the price of standard non-Bessemer hematites, which was expected last week, arrived a week later. The regular quotations here have been in the neighborhood of \$2.60, but several sales were made at \$3. A conservative tendency predominates, however; on the market, and it is probable that the quotations made heretofore will be the standard for some time to come. Mesabi non-Bessemers are firm at \$2.40@2.45. The lake transportation rates on ore remain unchanged. From Marquette to Ohio ports the rate is 80c., from Escanaba 55c., and from the upper lake ports 95c.

Pig Iron.—There have been a few minor changes in the quotations on pig iron during the week. Foundry iron sales are reported at \$12.75@13.25, an advance of 50c. The other quotations are: Lake Superior charcoal, \$13@14; Ohio Scotch, \$12.25@12.75, Bessemer, \$12.75, an advance of 25c.

Philadelphia. June 19.

(From Our Special Correspondent.)

Pig Iron.—Consumers of iron are permitting their yard stocks to run very low. Brokers have made no headway in canvassing, and foundry buyers refuse to load up. A few very tempting offers were made this week, but they say they will wait and see. A very short time will bring a marked change. Mill owners are in about the same frame of mind. Efforts were made to load up a few of them with iron, but though the prices were all right and the brand what was wanted, sales beyond current requirements were not effected. Some brokers predict a spurt, but there is hardly enough ordered business on the books to warrant the hope. No. 1 foundry continues at \$12.50, No. 2 at \$12. A four-thousand ton lot for cast pipe sold at \$10.50. Forge is \$10.75@11.25; Bessemer, \$13.50.

Steel Billets.—Everything remains as it was. Prices are nominally \$21.50.

Merchant Bars.—Some encouraging business was done this week in refined steel bars at 1'40@1'50. In iron bars the usual figures are quoted, but a very moderate amount of business is done. The usual quotation is 1'20. An improvement is expected before long.

Sheets.—Mills continue to work and a demand is looked for soon that will run down stocks. Large consumers are waiting.

Skelp.—Prices cannot weaken, as the very lowest possible quotations have been made. Brokers say there are two or three options out.

Pipes and Tubes.—There is no action in the market at this time. Prices are firm and manufacturers await developments.

Merchant Steel.—Tire steel is moving in small lots. Spring steel is under inquiry for fall delivery.

Nails.—The dullness is due to the fact that dealers and retailers are looking for a reduction in prices before long.

Plate.—There is nothing to report as to sales. Tank and universals are quoted at 1'45; shell, 1'55; flange, 1'65; fire-box, 1'80@2.

Structural Material.—No important business has been done this week and there have been no inquiries. Manufacturers are confident, they say, that the mills will run with reasonable regularity through the summer months.

Steel Rails.—There is no business to report.

Old Rails.—No sales; business could be done at \$14.

Scrap.—Very little business is doing. Heavy steel scrap is quoted at \$13; axle turnings, \$9; car wheels, \$12.50; choice railroad, \$14.

Pittsburg. June 18.

(From Our Special Correspondent.)

Raw Iron and Steel.—Business affairs during the last week have developed little appreciable improvement; in fact to a certain extent it was a waiting market. At the same time several things have contributed to inspire hopefulness among business men generally; not the least improvement of these has been the adjournment of Congress. The question is, what are we coming to? This is what the furnace people are asking themselves at present. The price of ore is up. So is coke, and yet the price of pig iron has not advanced; this condition of things cannot last much longer. Either the price of pig iron will have to advance, or they will have to bank their furnaces. The whole tendency in the manufacture of foundry pig iron at this time is toward the most improved methods; we can no longer manufacture our products in the way our forefathers did; if we propose to stay we must keep up with the procession. At present the market for iron and steel cannot be called distinctly worse or better than it was at date of our last report. The facts that controlled the situation then control it

now, and the same indisposition exists to make any engagements for the future so long as the present uncertainty prevails in regard to production. At the same time the amount of deferred business is increasing, and when the demand does come it will be all the more active. For the present, however, the outlook is not promising. The possibility of disturbance over the wage question in the West has a deterring influence upon certain consumers, while the accumulated stocks of pig iron make others hold back and cause some uneasiness on the part of producers.

Latest.—Business this week has been very much neglected, all eyes being turned to St. Louis. Prices rule about the same; sales were at various prices. All things considered there is little room for complaint. When the money question is fairly settled we may look for an active trade.

COKE SMELTED, LAKE AND NATIVE ORE.				BLOOMS, BILLETS AND SLABS AT MILL.			
Tons.		Cash.		Tons.		Cash.	
3,000	Bessemer, July, Aug., Sept., Pitts.	\$12.75		3,000	Billets, July, Aug., Sept., at mill.	\$20.25	
3,000	Bessemer, July, Aug., Pitts.	12.75		2,500	Billets, July, Aug., Sept., at mill.	20.25	
2,000	Bessemer, July, Aug., Pitts.	12.60		1,600	Billets, June, at mill.	19.35	
1,800	Bessemer, June, July, Pitts.	12.60		800	Billets, June, July, at mill.	19.90	
1,200	Bessemer, June, July, Pitts.	12.65		600	Billets, June, at mill.	19.60	
1,500	Bessemer, June, July, Aug., Pitts.	12.75		500	Billets, June, at mill.	19.75	
1,000	Bessemer, spot, Valley.	11.65		250	Billets, June, at mill.	19.00	
1,000	Bessemer, June, July, Pitts.	12.25			MUCK BAR.		
750	No. 1 Foundry, July, Aug., Pitts.	12.75		450	Neutral, deliv'd, Pitts.	\$20.60	
500	Bessemer, June, Pitts.	12.40			BLOOMS, BILLETS, BAR ENDS.		
500	Gray Forge, June, Pitts.	10.89		700	Bar and bloom ends, Pitts.	\$13.25	
500	Gray Forge, June, Pitts.	10.75			STEEL WIRE RODS.		
500	Gray Forge, June, Pitts.	10.75		850	5-gauge, f. o. b., mill, Pitts.	\$28.00	
500	Gray Forge, June, Pitts.	10.75			SKELP IRON.		
500	Bessemer, June, Valley.	11.75		550	Sheared, Pitts.	\$1.40 4 m.	
300	No. 2 Foundry, prompt, Pitts.	12.25		400	Wide grooved, Pitts.	1.20 4 m.	
200	No. 2 Foundry, prompt, Pitts.	12.00		200	Narrow grooved, Pitts.	1.20 4 m.	
					SKELP STEEL.		
				400	Sheared, Pitts.	\$1.30 4 m.	
				300	Wide grooved, Pitts.	1.10 4 m.	
				250	Narrow grooved, Pitts.	1.10 4 m.	
					SHEET BARS.		
				600	Delivered, Pitts.	\$22.40	
					FERRO-MANGANESE.		
				750	Delivered, Pitts.	\$49.50	

METAL MARKET.

New York, Friday Evening, June 19, 1896.

Gold and Silver.

Prices of Silver per Ounce Troy.

June.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.	June.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.
13	48 1/2	31 3/4	68 3/4	.531	17	48 1/2	31 3/4	68 3/4	.531
15	48 1/2	31 3/4	68 3/4	.532	18	48 1/2	31 3/4	68 3/4	.532
16	48 1/2	31 3/4	68 3/4	.531	19	48 1/2	31 3/4	68 3/4	.532

Silver has been steady and firm during the past week. No new features have developed. The incipient home speculation based on the prospect of the "free-coinage" movement succeeding has dwindled to nothing. Current demand still seems to be from the Continent.

The United States Assay office in New York reports the total receipts of silver at 131,000 oz. for the week.

Gold and Silver Exports and Imports.

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

	Specie and bullion.		In ores.		Total excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
GOLD					
April	\$3,782,266	\$1,142,502	\$5,426	\$95,119	E. \$2,550,071
1896..	16,916,572	23,747,264	80,319	453,022	I. 7,203,305
1895..	33,514,726	19,033,291	310,912	432,354	E. 14,359,393
SILV.					
April	5,139,978	568,662	14,665	1,490,055	E. 3,095,926
1896..	20,420,322	4,391,752	554,109	5,513,136	E. 11,039,543
1895..	15,254,515	2,596,547	.....	3,810,759	E. 8,847,209

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

Gold and Silver Exports and Imports, New York

For the week ending June 18th, 1896, and for years from January 1st, 1896, 1895, 1894, 1893 and 1892:

Week	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
We'k	\$876,150	\$136,879	\$1,098,285	\$136,103	\$1,701,453
1896..	29,649,427	17,107,099	17,672,596	1,071,901	E. 29,143,132
1895..	32,534,147	19,825,487	16,373,170	802,182	E. 28,279,648
1894..	62,823,944	9,488,783	18,104,612	775,887	E. 70,663,886
1893..	68,872,845	5,956,154	15,123,210	1,254,578	E. 76,785,323
1892..	39,636,129	6,262,133	11,051,206	790,821	E. 43,667,381

Of the gold exported during the week \$850,000 went to Germany and the remainder to the West Indies; of the silver \$1,950 went to Germany, \$1,635 to the West Indies, and the remainder to London. The specie imported came chiefly from Central and South America.

Average Monthly Price of Silver

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

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

FINANCIAL NOTES OF THE WEEK.

The events which have attracted most attention during the present week were the action of the Republican Convention at St. Louis on the financial question and the publication of a statement by the President on the same question. Both have been of a nature to reassure and encourage the advocates of sound money and to increase confidence in the future among business men.

The Republican party declaration is as follows: "The Republican party is unreservedly for sound money. It caused the enactment of the law providing for the resumption of specie payments in 1879; since then every dollar has been as good as gold. We are unalterably opposed to every measure calculated to debase our currency or impair the credit of our currency. We are therefore opposed to the free coinage of silver except by international agreement with the leading commercial nations of the world, which we pledge ourselves to promote, and until such agreement can be obtained the existing gold standard must be preserved. All our silver and paper currency must be maintained at parity with gold, and we favor all measures designed to maintain inviolably the obligations of the United States and all our money, whether coin or paper, at the present standard, the standard of the most enlightened nations of the earth."

This section received a very emphatic vote, a substitute offered having been rejected by a vote of 818 to 105. About 40 delegates, headed by Senator Teller, of Colorado, left the convention after this vote.

The President's statement is a declaration in favor of maintaining the public credit and against the free coinage of silver quite as emphatic and plain as his well-known opinions would lead us to expect. Its effect has been to strengthen the sound-money advocates in the Democratic party, and to make the probable declaration on the money question at the Chicago convention much more doubtful than it seemed to be a short time ago.

The exports of gold have not been heavy this week. About \$800,000 went out on Wednesday's steamers, chiefly to Germany, and none is so far reported taken for shipment by Saturday's steamers, although exchange is somewhat higher than it has been for several weeks.

The exchange drawn against the recent sale of Anaconda mine stock has lessened the demand for gold for the time.

The last gold for the latest issue of bonds has now been paid into the Treasury. The proceeds of the bond sale were \$111,166,232. The gold held when the bonds were offered (January 6th last) was \$61,531,626. That amount added to the receipts from the bonds would give a total of \$172,697,858. As the actual gold reserve to-day is \$103,000,000, nearly \$70,000,000 must have been withdrawn from the Treasury since January. In fact the amount must have been greater, since we have made no allowance for the amount received by the Treasury through the mint, in exchange for notes, etc.

The statement of the United States Treasury on Thursday, June 18th, shows balances in excess of out-

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

	June 11.	June 18.	Changes.
Gold	\$106,398,898	\$103,817,105	D. \$2,581,793
Silver	31,866,695	33,840,505	I. 1,973,812
Legal tenders	88,935,510	91,211,115	I. 2,275,605
Treasury notes, etc.	33,730,447	31,089,131	D. 2,641,316

Totals..... \$260,991,745 \$262,957,556 I. \$1,965,811

Govt. bank deposits 19,471,874 16,419,923 D. 3,051,951

Total United States Treasury notes issued under act of July 14th, 1890, in general circulation and in the Treasury, \$130,641,280. Against these are held in the Treasury 11,497,994 coined standard silver dollars, and the silver bullion purchased at a cost of \$119,143,286, making a total of \$119,143,286.

Specie shipments from San Francisco by sea in May included \$661,924 silver, and \$785,555 gold. For the five months ending May 31st the amounts and descriptions of specie shipped from San Francisco compare as follows:

	1895.	1896.
Silver bars	\$4,161,848	\$2,336,440
Mexican dollars	2,083,773	3,323,404
Peru sols	5,288	46,890
Silver coin	250,443	52,000
Gold bars	42,461	42,461
Gold coin	3,668,782	9,341,948
Gold dust	270	2,130

Total..... \$10,170,414 \$15,145,273

The destinations of the above shipments were as follows:

	1895.	1896.
Hongkong	\$3,261,913	\$1,754,796
Shanghai	2,533,100	2,283,850
Japan	224,374	1,696,790
Central America	268,298	2,600
Honolulu	50,000	197,296
Mexico	4,650	3,416
New York	3,825,079	9,206,508

Total..... \$10,170,414 \$15,145,273

The increase this year was chiefly in gold coin shipped to New York. The total shipments of silver were \$5,758,734 this year, against \$6,501,362 in 1895.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending June 13th, gives the following totals, comparisons being made with the corresponding weeks in 1895 and 1894:

	1894.	1895.	1896.
Loans and discounts	\$165,733,600	\$507,925,540	\$474,728,300
Deposits	570,483,700	508,816,000	496,829,340
Circulation	9,823,000	13,246,500	11,510,500
Specie	99,389,600	66,296,300	62,391,900
Legal tenders	119,147,900	113,893,600	82,481,500

Total reserve..... \$218,497,500 \$180,162,900 \$144,884,400

Legal requirement... 142,620,925 142,204,000 124,297,350

Surplus reserve... \$75,876,575 \$37,958,900 \$20,677,050

Changes for the week this year were increases of \$586,400 in specie, \$1,516,700 in legal tenders, and \$2,190,750 in surplus reserve; decreases of \$2,549,800 in loans, \$350,600 in deposits, and \$214,400 in circulation.

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

	Gold.	Silver.	Total.
Asso. Banks of New York	.....	.....	\$62,394,900
1895.....	.....	.....	66,269,300
Bank of England	\$245,396,060	.....	245,396,060
1895.....	190,739,155	.....	190,739,155
Bank of France	407,145,000	\$251,735,600	658,880,600
1895.....	419,139,303	251,325,199	670,464,502
Imp. Bank of Germany	.....	.....	233,620,000
1895.....	.....	.....	269,200,000
Austro-Hungarian Bank	136,590,000	64,226,000	200,816,000
1895.....	96,188,000	67,606,000	163,794,000
Netherlands Bank	13,177,000	35,020,000	48,197,000
1895.....	21,470,000	35,318,000	56,788,000
Belgian National Bank	.....	.....	19,930,000
1895.....	.....	.....	21,345,000
Bank of Spain	42,028,000	55,168,000	97,196,000
1895.....	40,021,000	61,992,000	102,013,000
Bank of Italy	61,275,000	10,365,000	71,640,000
1895.....	59,440,000	10,220,000	69,660,000
Imp. Bank of Russia	.....	.....	459,605,000
1895.....	.....	.....	329,170,000

The return for the Associated Banks of New York is of date June 13th; all the others are of date June 15th, except the Bank of Italy, which is dated May 10th, and the Bank of Russia, whose return is dated May 1st-13th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England reports its gold only, not considering silver at all. The Imperial Bank of Germany and the Belgian National Bank do not report gold and silver separately.

Shipments of silver from London to the East for the year up to June 4th are reported by Messrs. Pixley & Abell's circular as below:

	1895.	1896.	Changes.
India	£1,662,480	£1,745,798	I. £83,318
China	1,084,567	472,476	D. 612,091
The Straits	294,735	483,032	I. 188,297
Totals	£3,041,782	£2,701,306	D. £340,476

Arrivals for the week this year were £174,000 in bar silver from New York, and £35,000 from Chile; a total of £209,000. Shipments for the week were £54,000 in bar silver to Japan, and £2,500 to India; a total of £56,500.

Indian exchange continues strong, mainly on account of remittances for the purchase of the new issue of rupee paper, and the price of Council bills in London has again risen, the average for the sales being 13'95d. per rupee.

The foreign merchandise trade of British India for the fiscal year ending March 31st is reported as below, in rupees:

	1894-95.	1895-96.
Exports	103,737,460	109,553,300
Imports	70,167,400	49,330,790
Excess, exports	33,590,000	40,222,600

The increase in the net export values was therefore 6,632,600 rupees, or 19 7/10%. There was a decrease in the imports of cotton goods from England, and at the same time an increase in the exports of raw cotton. The movement of the precious metals for the year is reported as follows:

	Gold		Silver	
	1894-95.	1895-96.	1894-95.	1895-96.
Imports	7,766,300	5,929,300	7,827,700	8,329,710
Exports	6,730,400	2,533,300	1,427,690	1,729,000
Excess	E. 4,974,100	L. 2,526,000	L. 6,375,100	L. 6,600,700

The exports of gold which were a notable feature in 1894-95 largely ceased last year, owing to the course of exchange and the higher price of silver. At present the gold in the country is closely held, and practically none is going out.

Domestic and Foreign Coins.

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

	Bid	Asked.
Mexican dollars	\$0.53 1/2	\$0.54 1/2
Peruvian soles and Chilean pesos	4.65 1/2	4.65 1/2
Victoria sovereigns	4.96	4.96
Twenty francs	3.88	3.92
Twenty marks	4.80	4.85
Spanish 25 pesetas	4.78	4.85

Other Metals.

Copper.—The market remains very firm, and holders have throughout advanced their prices, in consequence of the advance in the speculative brands in London, which at the beginning of the week were quoted at £50 and a little over. The result has been that the volume of business has suffered, and quite naturally. Consumers have, during the past two or three weeks supplied themselves freely and can look on, at least until they have distributed some of their purchases and until the market quotations are more firmly established. The position of copper is unquestionably very good. The demand here leaves nothing to be desired, while it continues to be phenomenal in Europe. Exports remain very heavy, and absorb all the excess of production since the early part of the year. Unless something unforeseen happens, it is not likely that prices will give way; on the contrary, it may be fairly assumed that they will harden still more. The largest producers of Lake copper are out of the market, or asking 12c.; but from some of the smaller mines, and from second hands, the metal is obtainable at 11 1/2c. Electrolytic copper has still to be quoted at 11 1/2c. for cakes, wire bars or ingots, and cathodes at 10 1/2c. to 11c., while casting copper remains irregular at 10 1/2c. to 10 3/4c., with rather a limited demand.

In London the market has been excited, and very large transactions have taken place from day to day. At the opening of the exchange on the 15th inst. there was a scramble to secure copper, and prices advanced to £50 7s. 6d., but gave way later in the day to £50. On the 16th, a further decline set in, and prices went down to £49 12s. 6d., but on the 17th, the lowest prices were reached in the afternoon, when business was done at £48 12s. 6d.

At these prices a good many buyers came in, and on the 18th, £49 5s. to £49 7s. 6d. was paid for both spot cash and three months prompt. The market then hardened further, and closes at £49 15s. to £49 17s. 6d. for spot and £49 17s. 6d. to £50 for three months prompt. While in the early part of the week forward copper was dealt in at the same figures as spot, a margin of 2s. 6d. has again been established at the close. The main business done was more or less of a speculative character, and the higher prices asked for fine copper have checked business, and only limited transactions took place. Offers from the United States met with no response, being all considered too high. For refined and manufactured we quote: English tough, £52 5s. to £52 10s.; best selected, £52 15s. to £53 5s.; strong sheets, £50 to £50 10s.; India sheets, £50 to £50 10s.; yellow metal, 5d.

According to our cable, the visible supplies in Europe have increased 500 tons, which, considering the enormous shipments from this side, is an exceedingly good result.

The following figures give the production (in tons of 2,240 lbs.) of copper in the United States, and also by the chief foreign mines, and the exports from

the United States for May and the five months end-May 31st:

	May, 1896.	Five mos. 1895,	Five mos. 1896.
Production fine copper, long tons:			
Reporting mines in U. S.	15,533	58,971	79,353
Pyrites and outside sources U. S.	1,200	8,000	6,000
Reporting foreign mines	7,495	35,519	35,200
Total production, long tons	24,228	102,490	120,555
Exports from U. S., fine copper,	10,481	24,893	48,221

The increase in the United States production for the five months this year was 18,384 tons, or 31.2%, while there was a gain of no less than 23,628 tons, or 94.9%, in the United States exports.

Tin has ruled firm throughout the week, and prices have advanced to 13.60 for spot and forward 13.00@13.70. The arrivals have been rather heavy, and further supplies will be landed next week.

Prices in London were early in the week pushed up to £62, but this advance could not be fully maintained, and the closing prices are £61 5s. @ £61 7s. 6d. for spot and £61 15s. @ £61 17s. 6d. for three months prompt. The statistical position does not show any improvement.

Shipments of tin from the Straits for the first half of June were 2,780 tons, of which 580 tons were for the United States.

Lead is very dull. The quotation remains 3@ 3.02 1/2 c., but the business done has been of a retail character.

Foreign prices have also eased off somewhat, and Spanish lead is quoted in London at £10 17s. 6d. @ £10 18s. 9d., and English lead 5s. higher.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is unchanged; common is lightly salable at 2 7/8, and corroding at 2 7/16. Demand is light and offerings are very liberal.

Spelter continues irregular, and we have to quote prime western nominally 4@4.05c.

The foreign market is somewhat easier, and good ordinaries are quoted £18 7s. 6d. @ £18 10s., and specials 2s. 6d. @ 5s. more, these prices being for spot; but for forward the quotation is 5s. @ 10s. lower.

Antimony does not show any change. We quote 6 1/2 c. for Hallett's, 7 1/2 c. for Cookson's, and 6 1/2 c. for U. S. Star.

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

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

For chemical ware, best hammered metal, Messrs. Eimer & Amend, New York, furnish the following quotation, the prices given being respectively for orders of over 250 grams; for orders of over 100 grams and less than 250 grams, and for orders of less than 100 grams: Crucibles and dishes, 50c., 5c. and 52c. per gram. Wire and foil are 47c., 48c. and 49c., per gram. The current retail price for crucibles is 60c. per gram.

Quicksilver.—The New York quotation continues unchanged at \$37 per flask. The London price is £6 10s. per flask, with £6 8s. 9d. named from second hands.

Quicksilver receipts at San Francisco in May were 2,584 flasks; for the five months ending May 31st they were 16,139 flasks against 10,900 for the corresponding period last year, and 12,534 flasks in 1894. Exports by sea in May were 713 flasks; for the five months they were as follows: British Columbia, 3; Central America, 575; Mexico, 2,500; New Zealand, 10; Hong Kong, 3,000; New York, 2,500; total, 8,083 flasks, against 6,578 flasks for the five months in 1895.

Average Monthly Prices of Metals

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

Month.	1893.	1895.	1894.	1893.	1892.
Copper:					
January	9'87	10'00	10'13	12'13	11'01
February	10'34	10'00	9'63	12'00	10'00
March	11'03	9'75	9'81	11'88	10'38
April	10'88	9'75	9'50	11'38	11'50
May	11'15	10'25	9'80	11'00	11'63
Tin:					
January	13'02	13'25	20'16	19'99	20'50
February	13'44	13'35	19'69	20'30	20'00
March	13'30	13'20	19'09	20'71	20'25
April	13'34	14'00	19'75	20'81	20'50
May	13'54	14'65	20'21	19'96	20'80
Lead:					
January	3'08	3'10	3'19	3'37	4'70
February	3'19	3'12	3'31	4'22	4'12
March	3'14	3'12	3'37	3'96	4'21
April	3'07	3'08	3'43	4'08	4'15
May	3'03	3'16	3'39	3'89	4'22
Spelter:					
January	3'75	3'28	3'56	4'39	4'69
February	4'03	3'20	3'85	4'39	4'69
March	4'20	3'23	3'89	4'28	4'89
April	4'19	3'30	3'62	4'38	4'68
May	3'98	3'50	3'47	4'41	4'79

Imports and Exports of Metals.

New York.*	Week, June 11.		Year, 1896.	
	Expts.	Imps.	Expts.	Imps.
Aluminum..... lbs.				
Antimony ore..... short tons		25	10,100	1,880
regulus..... casks		175		1,103
Brass, old..... short tons	5		113	59
Copper, fine..... long tons	11,201		35,301	1,256
matte..... "	1456		7,949	11
ore..... "				
sulphate..... "	331		4,287	
Iron ore..... "				
pigs, bars, rods..... "		50		2,805
sulphate..... "				
ferro-mangan'ise..... "				
ferro-silicon..... "				
Manganese ore..... "				
Spiegeleisen..... "		427		18,931
Lead ore..... "				
pigs and bars..... "	1265	909	18,085	17,939
Magnolia metal..... "				
Nickel..... "	50		447	5
Steel, billets, rods..... "		501		13,481
Tin..... "		1310		215
Tin and black plates, boxes..... "				6,876
Zinc (spelter)..... long tons	138	25	425	112

* Metal Exchange Reports. † Week ending June 18.

Philadelphia.††	Imports.	
	Week, June 12.	Year, 1896.
Antimony, casks.....	35	102
Copper ore, long tons.....		11,481
Ferro-Manganese, long tons.....	57	380
Ferro-Silicon.....		60
Iron ore, long tons.....	9,309	116,000
pig.....		350
and steel scrap, long tons.....		618
Manganese ore, long tons.....		4,564
Spiegeleisen.....	57	134
Tin.....		265
Tin and black plates, boxes.....		27,073

†† From New York Metal Exchange Reports.

Baltimore.**	Week, June 18.		Year, 1896.	
	Exp.	Imp.	Exp.	Imp.
Bismuth metal, bales, cases.....				26
Chrome ore..... long tons			30	4,894
Copper, fine..... "	91		14,257	
matte..... "				
sulphate..... "	10		1,588	
Iron ore..... "		6,199		189,051
pigs, bars, ingots, blooms..... "		39		2,012
Iron oxide..... bags				300
pyrites..... long tons		2,786		150
Ferro-manga-nese..... "				1,357
Ferro-silicon..... "				70
Lead..... "	290		1,893	
Limestone..... short "				2,743
Manganese ore..... long "				3,718
Spiegeleisen..... "				348
Steel..... "				19
Steel wire, bundles..... "	1,097		3,299	
Tin, long tons.....	94		27	52
Tin and black plates, boxes.....		3,033		92,305
Zinc (spelter) long tons.....				117

** From our special correspondent.

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

Aluminum:	
No. 1, 98% pure rolling ingots, per lb.....	50@55c.
No. 1, 98% pure ingots for re-melting, per lb.....	48@53c.
No. 2, 91% pure.....	38@42c.
Ingots from scrap, per lb.....	35@40c.
Aluminum-nickel casting metal, per lb.....	40@45c.
Bismuth, per lb.....	\$1.30@1.75
Phosphorus, per lb.....	50c@55c.
Platinum, per oz.....	\$14@15
Tungsten, pure, powder per lb.....	70c.
Tungstic acid, per lb.....	45c.
Ferro-tungsten, 60% in ton lots, per lb.....	60c.

The variations in price are chiefly on size of order.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, June 19.

Heavy Chemicals.—Much of the attention that ought to be paid to the interests of the heavy chemical market is now being devoted to political matters, hence there is but little change to report this week in the way of business. Both wholesalers and retailers have been awaiting the results of the St. Louis convention in anticipation of renewed business activity. The demand for bleaching powder is fair and the consumption light. Alkali is rather dull for prompt delivery, but there is more request for forward contracts. The market for sal-soda is very firm, and it is likely to continue so for some time. Bicarb. soda is reported as being in good demand. Our quotations this week are: Caustic soda, 60%, \$2.22 1/2 @ \$2.42 1/2; 70@74%, \$2.12 1/2 @ \$2.25; 76%, \$2.20 @ \$2.25 per 100 lbs. Alkali, 58%, 80@85c. for 50-ton lots and over, and 90@95c. for smaller quantities. Bleaching powder, prime brands, \$1.75 @ \$1.85; Continental, \$1.70 @ \$1.80 per 100 lbs. Bicarb. soda, English, 1'50 @ 1'60c.; American, 1'50c. per lb.; high grade, like "Arm and Hammer," 3'5c. (in kegs) f. o. b., less usual discount. Sal-soda, English, 70@ 72 1/2 c.; American, 60c. (in barrels), 80c. (in kegs), per 100 lbs.

Acids.—It is now settled that the higher cost for

brimstone is to rule throughout the year, and, accordingly, the manufacturers of sulphuric acid are making an effort to obtain a general advance of 5c. per 100 lbs. in the selling price of acids. This increase, it is thought, will nearly offset the advance in the cost of raw materials. There is no new business to report in the acid market this week; hence the manufacturers have not been able to make any quotable change in actual prices. The current business consists chiefly of deliveries on annual contracts which were made at low figures at the early part of the year, and which cannot be changed for some months to come. The pyrites acid makers have not changed their quotations as yet, and are ready to take new business at current prices. We quote as follows in New York and vicinity, in lots of 50 carboys or over: Acetic acid (in barrels), \$1.25 @ \$1.40; muriatic acid, 18°, 70 @ 80c.; 20°, 75 @ 85c.; 22°, 95c. @ \$1.10, according to make and quantity. Nitric acid, 36°, \$3.25 @ \$4.25; 40°, \$4 @ \$4.50; 42°, \$4.50 @ \$5.50. Oxalic acid, \$7.25 ex-dock and \$7.50 ex-store. Mixed acids, according to mixture. Sulphuric acid, 66°, 75 @ 95c.; 10 @ 15c. higher for small quantities; chamber acid, \$6 @ \$6.50 per ton at factory. Blue vitriol, \$3.87 1/2 @ \$4, according to size and order.

Brimstone.—The market for Sicilian brimstone continues quiet, although prices have an upward tendency. It is reported that the projectors of the so called combination of Sicilian mine owners have succeeded in securing signatures which are enough in number to assure the formation of this organization. We quote \$18 for best unmixed seconds, for spot and shipments, and 50c. less for thirds.

Fertilizing Chemicals.—The demand that is coming from the South is considered good; otherwise the market has a jobbing appearance. We quote: Sulphate of ammonia, gas liquor, \$2.30; bone, \$2.20 @ \$2.30. Dried blood, high grade, \$1.37 1/2 @ \$1.42 1/2; low grade, \$1.25 @ \$1.35 per unit f. o. b. Chicago. Azotine, \$1.75. Concentrated phosphate (80% available phosphoric acid), 60c. per unit. Acid phosphate, 13% to 15%, av. P₂O₅, 54 @ 65c. per unit at seller's works in bulk. Dissolved bone black, 17% to 18%, P₂O₅, 87 1/2 @ 90c. per unit. Acidulated fish scrap, \$10 @ \$11 and dried scrap with few or no scales, nominally \$16.50 @ \$17.50 f. o. b. fish factory. Tankage, high grade, \$19 @ \$20; low grade, \$18 @ \$19. Bone tankage, \$21; ground bone, \$22 @ \$22.50. Bonemeal, \$19.50 @ \$23.

Sulphate of Potash: 90-95%, New York and Boston, \$1.96 1/2; Philadelphia, Baltimore and Norfolk, \$1.98; Southern ports, \$2. Double Manure Salts: 48-53%, New York and Boston, \$1.01; Philadelphia, Baltimore and Norfolk, \$1.02; Southern ports, \$1.03 1/2. Muriate of potash remains inactive. The new prices are 1.78c. at New York and Boston; 1.79 1/2 c. at Philadelphia, Baltimore and Norfolk, and 1.81 1/2 c. at New Orleans for 80@85% (basis of 80%), in lots of 50 tons and upward.

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

Nitrate of Soda.—We quote, per 100 lbs., as follows: 1'80c. for spot, and 1'80 @ 1'85c. to arrive.

Charleston, S. C. June 13.

(From Our Special Correspondent.)

Shipments of phosphate rock from Charleston for May were as follows, in tons:

	1894.	1895.	1896.
Crude rock (2,240 lbs.).....	17,545	14,331	11,728
Ground (2,000 ").....	100		
Total, tons.....	17,645	14,331	11,728

The Cotton States Fertilizer Company, composed of all except two of our fertilizer companies, has apparently dissolved. This company has discharged 31 out of 38 of its clerks, and some of the companies are now advertising their goods under their own names, an action which was prohibited during the existence of the combination. They have fought very hard to keep up this organization, but it had to surrender eventually, as many of the companies were dissatisfied with the way in which it was being carried on. They will carry over 100,000 tons of manufactured goods into next year's business, though it is reported that 25,000 to 30,000 tons have recently been sold and the last quotations I have been able to obtain in bulk from sellers are \$6 @ \$6.25 for 13 1/2 @ 14% acid phosphate and ammoniated goods; 8, 2 and 1 at \$13 in bags and tax tags, and 8, 1 and 1 at \$11.50 f. o. b., sellers' factories. Land phosphate rock, 58%, kiln dried, about \$3 f. o. b. mines; 60%, \$3 f. o. b. same, and ground rock, 57 @ 58c., \$5, sellers' bags, returnable.

Liverpool. June 9.

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

There is nothing of an encouraging nature to report as regards the chemical market, only a retail business passing, while quotations are nominally unchanged.

Soda ash is quiet, and the nearest spot range for tierces, according to market, is about as follows: Leblanc ash, 48%, £4 @ £4 5s.; 58%, £4 5s. @ £4 10s. Ammonia ash, 48%, £3 2s. 6d. @ £3 10s.; 58%, £3 7s. 6d. @ £3 12s. 6d. per ton, net cash; bags 5s. per ton less. Soda crystals are selling to moderate extent at £2 7s. 6d. per ton, less 5% for barrels and 7s. less for bags. Caustic soda is dull, but at the same time prices

are well maintained, and we quote nearest spot range, as to market, as follows: 60%, £6 5s. @ £6 10s.; 70%, £7 5s. @ £7 10s.; 74%, £8 5s. @ £8 10s.; 76%, £9 @ £9 5s. per ton, net cash.

Bleaching powder is quite neglected and nominally quoted at £7 @ £7 5s. per ton, net cash for hardwood packages, according to destination. Chlorate of potash is almost unsalable at the moment, and 4½d. per pound is about nominal spot value. Bicarb. soda is in fair demand, and firm at £8 15s. per ton, less 2½% for the finest quality in 1 cwt. kegs, with usual allowances for larger packages. Sulphate of ammonia is not quite so firm, although £8 7s. 6d. @ £8 10s. per ton, less 2½% may still be called about spot range for good gray, 24% @ 25% in double bags f. o. b. here, as to quality.

Nitrate of soda is rather easier at £8 2s. 6d. @ £8 5s. per ton, less 2½% for double bags f. o. b. here, according to quality. Carb. ammonia, lump, 3d. per pound; powdered, 3½d. per pound, net cash.

Valparaiso, Chile. May 9.

(Special Report of Jackson Brothers.)

Nitrate of Soda.—This market has been stagnant since our last circular, the few sales made being principally between producers. The former limits are maintained, however, and producers show no inclination to give way for the present. The total production during April, the first month of the agreement, has not been exactly ascertained, but is estimated at 3,100,000 quintals. We quote for 95%, May delivery, 5s. 7d.; June, 5s. 7½d.; July, 5s. 9½d.; August, 5s. 10d.; September-October, 5s. 11d. For 96%, May and June, 5s. 10½d. is named by sellers. The price of 5s. 7d. at current freights stands in 7s. 3½d. per cwt., net cost and freight without producing commission. Sales for the fortnight figure up only 192,000 quintals.

Freights continue firm and vessels are maintaining their limit. We quote for nitrate in iron bot toms, 23s. 9d. per ton to United Kingdom ports. To the United States rates are nominally at 22s. 6d. to Hampton Roads or orders.

MINING STOCKS.

Complete quotations will be found on pages 606 and 607 of mining stocks listed and dealt in at:

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

Chicago and Cleveland, page 604.

NEW YORK, Friday Evening, June 19.
The mining stock market this week shows but little change from our last report. If anything, the stocks have had a downward tendency at the close. There have been some inquiries from outside sources for certain classes of stocks, but the business transacted during the week has not been large in volume.

Of the Comstocks there were 17 stocks dealt in this week, each showing a falling off in price at the close to-day. Chollar opened at \$3.10 and closed at \$2.90 with sale of 400 shares. This company has levied an assessment of 25c., payable July 14th. Consolidated California & Virginia was dealt in at the opening of the week at \$2.75, rose to \$2.90, and dropped to \$2.35, with sales of 600 shares. There were sales of 4,100 shares of Comstock Tunnel, at 80¢, 1,300 shares of Sierra Nevada at 85¢ @ \$1.05, 1,100 shares of Savage at \$1.85 @ \$2.05, 1,100 shares of Occidental Consolidated at \$1.25, 400 shares of Best & Belcher at \$1.40 @ \$1.45, 500 shares of Hale & Norcross at \$2 @ \$2.35, 500 shares of Union Consolidated at 80¢ @ 90¢, 300 shares of Ophir at \$1.60, 200 shares of Gould & Curry at \$1.30 @ \$1.50, 200 shares of Mexican at 95¢, 300 shares of Crown Point at 70¢, 200 shares of Belcher at 80¢, 200 shares of Yellow Jacket at 55¢, 100 shares of Potosi at \$1.50.

The Colorados were dealt in as follows: 250 shares of Victor at \$8 (ex-dividend), 200 shares of Portland at \$1.90, 500 shares of Golden Fleece at \$1.50 @ \$1.70, 100 shares of Mollie Gibson at 75¢, 500 shares of Isabella at 65¢, 100 shares of Anaconda at 62¢, 1,100 shares of Little Chief at 19¢ @ 20¢, 1,400 shares of Mount Rosa at 13¢ @ 16¢, 300 shares of Leadville Consolidated at 14¢. Of the lower priced stocks there were sales of 1,600 shares of Pharmacist at 10¢; 1,300 shares of Creede & Cripple Creek at 5¢ @ 6¢, and 300 shares of Specimen at 8¢. We are informed that the improvements now in progress on the Florence mill of Cripple Creek are nearing completion, and it will be ready for operation on July 20th. It is also said that this mill will treat the ore from the Anaconda gold mine. The Union Gold Mining Company declared a dividend of 1c. per share (\$11,000), payable June 25th.

There were two California stocks traded in this week, Bulwer, with sales of 600 shares at 30¢ @ 30c., and Brunswick Consolidated, with 4,000 shares at 17¢ @ 18c.

Horn Silver, a Utah stock, returned to the Consolidated Stock and Petroleum Exchange this week, and records dealings of 400 shares at \$2.25.

Phoenix of Arizona was also dealt in. Sales of 100 shares have been made of this stock at 3c.

The Mining and Industrial Exchange of New York was opened for business on June 15th with the following: President, Stephen H. Emmens; vice-president, R. K. Warren; treasurer, J. B. Kellogg, and secretary, Alexander Seaman. President Emmens, in his opening speech, laid stress upon the fact that this exchange was in no respect a reorganization of the defunct concern.

Boston.

June 18.

(From Our Special Correspondent.)

The market the past week for mining stocks has been quite active under the lead of Boston & Montana, and Old Dominion for coppers, and Pioneer and Mercer for the gold stocks. Boston & Montana enjoyed quite a little boom under the influence of higher quotations for the metal on both sides of the water, and advanced from 88½ to 91½, the highest point for the year. A reaction followed from the flood of stocks put on the market, carrying the price back to-day to 88½, with the closing sale at 89. Sales for the week aggregated about 40,000 shares. Old Dominion Copper, in the early dealing advanced to \$19½, but large blocks of stock were forced upon the market, and the result was a lower record, selling down to \$15½, with the closing slightly firmer at \$16.

Outside of these two stocks the business has been very light. A slight investment demand carried Calumet & Hecla up from \$305 to \$308, and Quincy from \$118 to \$120. Tamarack was more freely offered, and after selling at \$90 it declined to \$86, which was the closing sale. Osceola was quite strong, and advanced from \$27 to \$29½, closing firm. Kearsarge advanced also from \$11 to \$14½, closing at \$13½. Atlantic was also in better demand, and advanced to \$21½, but closed at \$20½. Tamarack, Jr., declined from \$13½ to \$12½ on moderate sales. Wolverine sold at \$7½ @ \$7½, closing at latter price. Butte & Boston was steady at \$2½ @ \$2½.

We note a sale of Lake Superior Iron Company at \$28½, a decline of ½% from last sale, January 22d.

In the gold stocks interest has centered almost entirely in Pioneer and Mercer, both of which have been severely hammered and show great declines. Pioneer declined to \$4½, with large sales, but on the report that the suits against the company and its fiscal agents had been amicably settled it advanced to \$6½, with reaction to-day to \$5; a closing sale was at \$5½. Mercer was also freely sold on report of the probability of a \$2 assessment, and declined from \$13½ to \$8½, with only a fractional reaction. Gold Coins sold at 55¢ @ 50c.

The market closed dull, but fairly firm, at the declines.

Chicago.

June 17.

(From Our Special Correspondent.)

The trading was fairly active throughout the week. The entire list closed firm and in some instances several points higher. The dividend recently declared by the Delaware Chief caused the stock to jump from 30¢ to 36¢. Imperial preferred gained 1½c. for the week and closed strong at 25c. The Imperial dividend of 1% was paid June 10th through the secretary of the Chicago Mineral and Mining Board.

Chicago & Montana Gold Mining Company, recently listed, was called for the first time this week. It opened at 6½c. and advanced to 8½c.

Purchasing orders for the various listed stocks have not been as plentiful as brokers would like, but an improvement is hoped for.

The following table gives the highest prices with sales of the stocks recorded on the Chicago Mineral and Mining Board for the week ending June 11th:

Stocks.	June 11	June 12	June 13	June 15	June 16	June 17	Sales.
Alchemist	.....	.....	.....	.....	.....	.....	.....
Boston & C. C.	.....	.....	.....	.....	.....	.....	.....
Capstone	.....	.....	.....	.....	.....	.....	.....
C. C. & C. G.	.....	.....	.....	.....	.....	.....	.....
C. C. Golden Group	.....	.....	.....	.....	.....	.....	.....
C. C. G. M. B. & L. Co.	.10%	.10%	.10%	.10%	.10%	.10%	21,500
Chl. & G. Mt.	.....	.....	.....	.....	.....	.....	.....
Chl. & Mont.	.....	.....	.....	.....	.....	.....	.....
Chula Vista	.....	.....	.....	.....	.....	.....	.....
Cosmopolitan	.06%	.06%	.06%	.06%	.06%	.06%	60,500
Delaware Cf.	.30%	.31%	.31%	.31%	.34%	.36%	34,500
Finance	.04	.....	.04	.04	.04%	.04%	23,800
Great Fissure	.....	.12%	.12%	.12%	.12%	.....	37,500
Hawkeye	.....	.....	.....	.....	.....	.....	.....
Imperial	.....	.....	.....	.....	.....	.....	.....
Investors' and Prospectors' Little Gem	.....	.....	.....	.....	.....	.....	.....
Lucille	.10%	.10%	.10%	.10%	.10%	.10%	19,000
Medina G. M. Co.	.....	.....	.....	.....	.....	.....	.....
Peerless G. M. Co.	.07%	.07%	.07%	.07%	.07%	.07%	24,500
Rhyolite	.13%	.....	.13%	.13%	.13%	.....	26,500
Royal Age	.....	.....	.....	.....	.....	.....	.....
Sunmyer	.04%	.04%	.04%	.04%	.04%	.04%	61,000
Sunnyside	.....	.....	.....	.....	.....	.....	.....
Gilpin	.11%	.11%	.....	.....	.11	.11	4,000
Union Gold	.35	.....	.....	.....	.....	.....	500
Utah Mercur.	.05	.05	.05	.05	.05	.04%	68,000

Total shares sold, 453,700.

Colorado Springs.

June 12.

(From Our Special Correspondent.)

Business has been rather more active this week, and a good many sales are reported. Outside buying orders for stocks were larger in number, and generally there is a better feeling.

A notable event is set down for next Thursday, June 18th. On that day the Colorado Springs Mining Stock Exchange will move into its new building and hold its first call in the handsome room which has just been completed. Other mining exchanges in the country may have larger and more elegant quarters, but it is doubtful whether there is any more attractive or complete structure than this.

The Colorado Springs Exchange is in a very flourishing condition, and starts work in its new building under most favorable auspices.

Messrs. Gardner & Co. furnish the closing quotations of the Colorado Springs Mining Stock Exchange for the week ending June 18th, as follows:

Name of Company.	June 12	June 13	June 15	June 16	June 17
Alamo	.03%	.04%	.04%	.05	.05
Anaconda	.60	.60	.60	.60	.60
Argentum-Juniata	.54%	.59%	.55%	.55%	.57
Blue Bell	.04	.04	.04	.04	.04
Cripple Creek Con.	.15	.15	.15%	.15%	.15%
Golden Fleece	1.60	1.80	1.63	1.63	1.55
Isabella	.64%	.65	.66	.66%	.66
Mollie Gibson	.72	.71	.79	.80	.76
Mount Rosa	.10%	.10%	.15	.15	.14
Pharmacist	.07%	.08%	.09%	.09%	.09%
Portland	1.82	1.85	1.87	1.89	1.90
Silver State	.....	.....	.....	.....	.....
Union	.33%	.34	.37	.38	.36
Work	.10%	.10%	.11%	.12%	.12%

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

Name.	June 12	June 13	June 15	June 16	June 17	June 18
Bankers	.....	.....	.....	.....	.....	.....
Des Moines	.....	.....	.....	.....	.....	.....
Gold & Globe	.20%	.20%	.20%	.22	.20%	.21
Gold Standard	.08%	.09	.09%	.08%	.09	.08%
Jefferson	.18	.18	.18%	.18	.20	.18
Keystone	.....	.....	.....	.....	.....	.....

Cleveland.

June 17.

(From Our Special Correspondent.)

The movement in iron ore stocks has been light this week. With one exception—the buying price of Republic Iron Company stock—there is no change in the market. The brokers express the belief that as soon as the national political conventions are over, there will be a larger movement of securities of all kinds, and the iron ore stocks will feel the effects of it considerably. The quotations for this week follow:

Name of Company.	Par val.	Bid.	Ask.
Aurora	\$25	\$6	\$8
Chandler	25	31	35
Cleveland-Cliffs Iron Co.	100	15	.....
Cleveland-Iron Co.	25	70	75
Lake Superior Iron Co.	100	30	31
Lake Superior Consolidated	25	20	21
Pittsburg & Lake Angeline	25	75	.....
Republic Iron Co.	25	17.50	18

Salt Lake City, Utah.

June 13.

(Special Report of James A. Pollock.)

Business in the local mining stock market during the past week was only fair, although buying orders were quite numerous, especially in the investment section, to which both outside and local attention is being again generally directed.

Ajax closed somewhat stronger, with buying orders again numerous. Operations at the properties have been suspended for a few days in order that some material repairs may be made. It is understood work will be resumed at once. Alliance and Gas were both inactive. Anchor continues very quiet, with sales again around the dollar mark. Bullion-Beck has declared a June dividend of 15c. per share, payable June 20th. Bogan continues work, but without change in the formation in the shaft. The offers of Centennial-Eureka were very limited, the usual quotations being maintained. There is still nothing from the option and the insiders are looking for no definite information before July. Dalton continued weak with comparatively little business done in the stock. Dalton & Lark was without activity and remained unchanged as to quotations. Both Daly and Daly West continued strong. Four Aces was not very active and quotations remained about the same as for the previous week. Galena paid the usual dividend of 5c. per share June 10th, and the stock continued strong. There was slightly increased inquiry for Geyser and the stock sold higher than during the previous week. During the week the Horn Silver properties were closed down for several days on account of labor troubles, but operations have been resumed and it is thought the usual number of men will be on the pay rolls by Saturday. The stock was somewhat stronger, due to increased inquiry. Lucky Bill has held its annual meeting; the 2c. assessment becomes delinquent on the 13th. It is understood that a contract for the further development of the Little Pittsburg properties is to be let at once. Mammoth again displayed good strength and sold above the previous week's quotations. During the absence of a quorum the Mercur directors have not yet held the June dividend meeting.

The stock remained practically unchanged, although there was considerable dealing in it. Overland continues to show an improvement. Ontario remained practically unchanged. Silver King has paid its June dividend of 25c. per share. The stock was offered only in very limited amount, with the demand strong. The Sunshine showed a continued improvement. Several owners of the stock have declined to give a 90-day option at \$3.25 per share. Swansea was in good demand and the stock reached the highest point in its history. Utah paid its June dividend of 2c. per share, June 10th.

San Francisco.

June 18.

(From Our Special Correspondent.)

The stock market this week has shown some marked fluctuations, and upon the whole it has been rather a lively week for operators. On Monday there was a pretty strong opening, and prices were good enough to encourage hopes of a further rise. Later in the day some selling orders brought about a reaction, and lower prices were the rule. On Tuesday there was rather an uncertain feeling brought about by the reaction of the previous day, and by the negative character of the weekly report from the mines, and this state of feeling culminated on Wednesday in a general break in quotations, which was further aided by a flood of selling orders. The rush of stocks was too much for the market and a considerable drop was recorded all around. On Thursday, however, the bulls pulled themselves together and a partial recovery was forced, the belief that stocks for actual delivery were scarce helping the market very much. Buying orders, induced by the fall in quotations, began to come in, and on Friday there was a firmer feeling and a general improvement. On Saturday there was rather a quiet day and prices were steady; but they close generally at a lower level than a week ago.

Some closing quotations are: Chollar, \$2.85@2.90; Consolidated California & Virginia, \$2.65@2.70; Hale & Norcross, \$2.20@2.30; Savage, \$1.85@1.90; Ophir, \$1.80@1.85; Potosi, \$1.50@1.55; Gould & Curry, \$1.35@1.40; Best & Belcher, \$1.20@1.25; Mexican, \$1@1.05.

There was not much stir in the Bodies, and the closing quotations are: Bodie Consolidated, 59c.; Bulwer, 30c.; Mono, 5c. The Bodie Consolidated election comes next week, and it seems probable that the party which now controls Bulwer will take the other company also.

The Reward Gold Mining Company of Nevada County has levied an assessment of 3c. per share, delinquent July 2d.

The Morning Star Gravel Mining Company of Placer County has declared a dividend of \$6 per share. This is the 60th dividend of the corporation.

The Pine Hill Gold and Silver Mining Company of El Dorado County has levied an assessment of 5c. per share, delinquent July 13th.

Mining assessments falling delinquent in June amount to \$110,720. Nevada mines want \$44,720, California mines \$49,500, an Arizona mine \$25,000, and a Lower California mine \$1,500.

THE NEW EXCHANGE.

Business on the Gold Mining Exchange continued about as usual this week, and the California shares dealt in there did not show the fluctuations which marked the Comstock operations. The volume of business for the week was quite up to the usual mark.

Some quotations to-day were as follows: Amalie, \$2.50; Sebastopol, 40@50c.; Edna, 42@45c.; Savannah, 40@44c.; Lockwood, 33@37c.; Grant, 12@13c.

Several new applications for the examination of mining properties have been received. The experts of the Exchange have begun the investigation of a large property in Butte County which is owned by Eastern parties.

BY TELEGRAPH.

SAN FRANCISCO, CAL., June 19.—The opening quotations to-day were as follows: Best & Belcher, \$1.05@1.10; Bodie, 50c.; Bulwer, 30c.; Chollar, \$2.80; Consolidated California & Virginia, \$2.25; Crown Point, 59c.; Gould & Curry, \$1.25; Hale & Norcross, \$2.05@2.10; Mexican, 89c.; Mono, 6c.; Occidental, \$1.40; Ophir, \$1.50; Potosi, \$1.40; Savage, \$1.95; Sierra Nevada, 82@85c.; Union Consolidated, 85c.; Yellow Jacket, 87c.

London.

June 6.

(From Our Special Correspondent.)

The South African mining market has had new life put into it by the release of the political prisoners, as was only to be expected. All week the market has been strong and prices have advanced substantially all round. From now onward the gold mining industry of the Transvaal will be unfettered by political uncertainties. The chief item of news is the projected amalgamation of the Barnato interests into one gigantic company. It is proposed to amalgamate the Barnato Bank, Barnato Consolidated, Johannesburg Consolidated, Johannesburg Waterworks, New Primrose, May and Langlaagte Royal. The details of the scheme are not yet at hand, nor is the object made very clear, but the publication of the news has had the effect of moving quotations up.

In spite of the increased, business in South African West Australians have continued very active. New Zealand stocks, however, have been the most prominent, and have been booming strongly. Copper shares continue very strong. Anacondas are in demand, and the anxiety of French investors to obtain the stock increases.

The announcement made by the directors of Broken Hill Proprietary has created much interest as it shows that the probability of the life of the mine being indefinitely prolonged is greater now than six months ago. Additional plant is being erected to treat 6,000 tons of sulphides per week, and the consumption of oxidized ore is being correspondingly decreased.

Paris.

June 9.

(From Our Special Correspondent.)

The chief attention this week, as for several weeks past, has been given to the shares of the copper companies, which have all been exceedingly active and have all made advances in price, which

accord with the gains in the quotations for the metal itself. Thus Rio Tinto during the week went from 569.50 fr. to 581.50 fr.; Tharsis from 148.50 fr. to 154 fr.; Cape Copper from 63 fr. to 67 fr., while Boleo ended at 1.490 fr., having made the extraordinary advance of 100 fr. in a week. Some speculators attribute these advances as well as the rise in copper itself to the manipulation of the Exploration Company, whose motive is to dispose of its Anaconda stock; but it appears that, while there may be some truth in this talk, the copper situation is really very strong in itself, and there is a solid basis for the advances. They may very easily go too far, it is true, and a reaction is possible; but that does not at present disturb the operators.

The zinc and lead stocks are quite strong, though much less active than the copper shares. It appears that the new agreement of the zinc producers will very probably be concluded, and the only thing which remains to be settled is the division or allotment. This is a very important point, however, and it may possibly upset the whole arrangement.

There has been a reaction in the metallurgical shares, and they seem to have reached about the highest point one may expect for the present. This week several of them have declined a little, but values are still high and the loss was slight.

The market for South African stocks seems to be reviving a little. There has been hardly any improvement in prices, but more attention has been paid to the shares, which have shown hardly any movement for some time past. The situation in the Transvaal is improving, thanks to the shrewdness and moderation of President Kruger chiefly. The efforts of the Johannesburg-London clique—which has used the London Times as a tool in its efforts to keep up ill feeling and force a war—seem likely to be defeated.

It appears from the letters of Chinese correspondents that in that country a curious question of bi-metalism has arisen. In consequence of the low price of silver and the demand for copper the relative value of the copper cash, which are the minor coins of the country, has risen, and the exchanges are disturbed in consequence. It appears that the export of these cash or their use as metal in fabricating utensils or the like is strictly forbidden by law, but in China one knows many ways of evading the law and the copper disappears from circulation. Consequently the Mexican dollar, for which one could formerly obtain 1,200 or 1,250 cash, now commands no more than 900. In short, the coins are worth more as metal than as money, and the trouble cannot be settled by the proclamations of the mandarins.

So, you see, you are not alone in currency troubles. If, with you, the silver question is disturbing values, in China it is the copper question. It is another illustration of the dangers of interfering with currency.

Much interest is still felt in the changes in taxation proposed by the new ministry, and there is some grumbling at the delay which M. Coehery, the Minister of Finance, has considered necessary before submitting the full details of his plans to the Chamber. The income tax is to be a prominent feature and the revenue from *rentes* is not to be exempt, it appears. Holders of public securities will have to report their receipts from them, as well as from other sources.

The Cretan affair continues to be a source of anxiety; it is a new point of danger in the always dangerous Eastern question, and makes one more desirous than ever to see the Turk finally expelled from Europe. Otherwise political affairs are quiet for the present.

We are still watching with interest—and some astonishment—your political moves as they affect the currency question.

MEETINGS.

Name of Co.	Location of office.	Date.	Time.
Arvilla Tunnel.	505 Mining Exchange Building, Denver, Colo.	July 14	3 p. m.
Bankers Gold.	205 Earnest & Cramer Building, Denver, Colo.	" 10	10 a. m.
Con. Night Hawk & Nightingale Gold.	1525 18th St., Denver, Colo.	June 24	3 p. m.
Golden Rule.	American House, Denver, Colo.	" 24	10 a. m.
Leon Gold.	415 1/2 Mont'g'ry St., San Francisco, Cal.	" 24	11 " "
Parrot, Silver & Copper.	Butte City, Mont.	" 30	11 " "
Rossler & Hasselbacher Chemical.	73 Pine St., New York, N. Y.	" 20	1 p. m.
Stanley Con.	11 East First south St., Salt Lake City, Utah.	July 14	2 " "

ASSESSMENTS.

Name of Co.	Loc'n.	No.	Delinq.	Sale.	Amt.
Alta.	Nev.	52	June 9	June 30	.10
*Belle Isle.	"	26	July 15	Aug. 12	.10
Hogan Silver.	Utah	3	" 16	July 6	.05
Camp Floyd Gold.	Utah	2	June 27	" 13	.01
Central Eureka.	Cal.	1	" 22	" 18	.03
*Chollar.	Nev.	42	July 14	Aug. 4	.25
*Emerald.	Utah	"	" 6	July 27	.01
Eureka Con.	Nev.	"	" 8	Sept. 5	.10
*Fogus.	Cal.	"	" 11	Aug. 15	.10
Gibraltar Con.	Cal.	9	June 25	July 10	.04
Horseshoe Bar. Con.	"	4	" 22	" 14	.50
Lady Emma.	"	"	May 25	June 25	.20
Lucky Hill.	Utah	19	June 13	July 11	.02
Mohawk Con.	"	"	June 1	June 29	.015
Mono Gold.	Cal.	37	July 6	July 27	.10
Mt. Diablo.	Nev.	4	" 2	" 23	.05
North Banner Con.	Cal.	39	June 23	" 14	.05
*North Belle Isle.	Nev.	24	July 13	Aug. 10	.10
North Eureka.	Utah	1	May 30	June 27	.065
Occidental Con.	Nev.	23	July 7	July 28	.15
Overman.	"	75	June 5	June 25	.10
Peabody.	Cal.	6	" 3	" 24	.10
Peruvian Con.	Utah	"	" 22	July 8	.02
Savage.	Nev.	80	" 3	June 23	.20
Silver King.	Ariz.	11	" 16	July 14	.25
Siskiyou Con.	Cal.	11	" 8	June 29	.01
Skagit Cumb'rd Coal.	Wash.	1	" 12	July 11	.03
Surprise.	Cal.	1	May 30	" 1	.20
Thorpe.	"	2	June 22	" 13	.10
Wide Awake.	"	31	" 8	June 29	.05
Ybarra Gold.	Mex.	4	" 21	July 9	.15

*New assessment.

DIVIDENDS.

NAME OF COMPANY	Current Dividends.		Paid since Jan. 1, 1896.	Total to date.
	Date.	Amount.		
Aetna Con.	June 10	\$10,000	\$20,000	\$60,000
Alaska-Mexican.			34,200	137,031
Alaska Treadwell.			150,000	2,825,000
Anaconda.			750,000	700,000
Aurora Iron.			50,000	2,500
*Big Six.			600,000	4,025,000
*Boston & Mont.	June 20	15,000	95,000	2,045,000
*Bullion Beck & Ch.			1,500,000	44,850,000
*Calumet & Hecla.			16,000	79,000
*Cariboo.	June	30,000	210,000	1,740,000
*Centennial-Eureka.			5,000	25,000
C. O. D.	June	12,500	62,500	62,500
Dalton & Lark.			600,000	
Dominion Coal.	June 20	10,000	20,000	55,000
*Elkton Con.			54,380	89,348
*Florence.			16,150	36,000
*Galena.			45,000	60,000
Gold Con.			90,000	491,179
*Golden Fleece.	June 15	2,250	19,500	28,875
*Gold & Globe Hill.			30,000	2,130,000
Hecla Con.	June 25	31,250	25,000	3,159,918
Highland.			188,500	5,900,000
*Homestake.			30,000	5,130,000
Horn Silver.	June 25	22,500	30,000	140,000
*Iron Mountain.			100,000	450,000
*Isabella.	June 25	25,000	100,000	175,000
*Le Roi.			100,000	450,000
*Mercur.	July 15	247,500	495,000	3,240,000
Minnesota Iron.	June 20	40,000	240,000	400,000
*Mont. Ore Pur. Co.	" 15	6,000	18,000	18,000
*Moon-Anchor.			6,000	186,000
Moose.	July 1	20,000	50,000	79,000
Napa Con.	June 1	15,000	75,000	13,250,000
Ontario.			75,000	2,022,500
Oscuela Con.			1,000	1,000
Ottawa Con.	June 15	30,000	120,000	745,000
Quincy.			40,000	8,070,000
*Silver King.			225,000	875,000
*Slocan Star.			100,000	100,000
Small Hopes.			25,000	3,275,000
Smuggler-Union.	July 1	50,000	100,000	100,000
*Union.	June 25	11,600	23,500	73,000
*Utah.			13,000	143,000
*Victor.	June 15	20,500	120,000	585,000
Victor M. & L.			9,000	35,000
War Eagle.			25,000	157,500
Totals.			\$598,000	\$7,096,590

* May dividend paid.

Hossland, British Columbia. June 5.

(From Our Special Correspondent.)

This week has been more active than last with the brokers. The actual cash returns of sales and transfers nearly reach \$30,000. There are now 14 mining brokers in the camp and at least a dozen of them give the quotations of the local mining stocks daily. Some of these brokers do not profess to do an outside business; they are aiming at business which may come to them out of the ordinary channels of the mining world.

The number of shares of the new enterprises said to have been sold during May reached a total value of \$350,000. Under the present laws of Canada and the province of British Columbia mining companies formed in any country outside of the Dominion are only required to register in the province in which they carry on their work. The bulletin boards give the following as the street quotations of the various mining stocks: War Eagle, \$1.85; Jumbo, \$1.10; Josie, 55c.; O. K., 34c.; Iron Mask, 30c.; West Le Roi-Josie, 16c.; Poorman, 15c.; Virginia, 60c.; Lily May, 25c.; Great Western, 30c.; Nest Egg, 12c.; Caledonia Consolidated, 67 1/2c.; Mayflower, 16c.; St. Elmo, 15 1/2c.; Good Hope, 8 1/2c.; Gertrude, 10c.; St. Mary, 6c.; Monte Cristo, 15c.; Eureka Consolidated, 6c.; Consolidated, 6 1/2c. Sales of the following stocks were made during the last few weeks: Poorman, 3,000 shares at 4 1/2c. and 5,000 shares at 15c.; Eureka, 2,000 shares at 5c. and 60,600 shares at 3 1/2c.; Miami, 10,800 shares at 4 1/2c. and 8,000 shares at 4c.; Vulcan, 5,000 shares at 2 1/2c.; Monte Cristo, 3,000 shares at 15c.; Nest Egg, 37,000 shares at 12c.; Great Western, 1,000 shares at 15c.; Mayflower, 1,000 shares at 15c.; Caledonia, 5,000 shares at 6c. These sales do not represent all that have taken place, but they undoubtedly represent the greater bulk of the stock offered and sold at the various prices given.

STOCK QUOTATIONS.

BOSTON, MASS.*

Table of stock quotations for Boston, Mass. listing companies like Allouez, Arnold, Atlantic, etc., with columns for location, par value, and daily price movements from June 12 to June 18.

* Official quotations Boston Stock Exchange. Total sales, 79,063.

NEW YORK.*

Table of stock quotations for New York listing companies like Adams, Ajax, Alamo, etc., with columns for location, par value, and daily price movements from June 13 to June 19.

* Official quotations N. Y. Stock and Con. Stock & Petroleum Exchanges. Total shares sold, 22,410.

INDUSTRIAL COAL AND COAL RAILROAD.*

Table of stock quotations for Industrial Coal and Coal Railroad listing companies like Balt. & Ohio, Ches. & Ohio, etc., with columns for par value and daily price movements from June 13 to June 19.

* Official quotations N. Y. Stock Exchange. Total shares sold, 129,000.

COLORADO SPRINGS, COLO.†

Table of stock quotations for Colorado Springs, Colo. listing companies like Ajax, Alamo, Am'rican, etc., with columns for par value and daily price movements from June 8 to June 13.

† Official quotations and sales Colo. Springs M. Stock Assoc. * Board of Trade Exchange.

ST. LOUIS, MO., STOCKS. Week ending June 16.

Table of stock quotations for St. Louis, Mo. listing companies like Central Lead, Doe Run Lead, etc., with columns for company name, office, par value, bid, asked, and last dividend.

SAN FRANCISCO, CAL.*

Table of stock quotations for San Francisco, Cal. listing companies like Alta, Belcher, Best & Belcher, etc., with columns for location, par value, and daily price movements from June 13 to June 19.

* Official telegraphic quotations, San Francisco Stock Exchange.

BALTIMORE, MD.* Week ending June 17.

Table of stock quotations for Baltimore, Md. listing companies like Balt. M. & S. N. C., Conrad Hill, etc., with columns for location, par value, bid, asked, and last dividend.

* Official quotations Baltimore Stock Exchange.

MISCELLANEOUS SECURITIES. June 18.

Table of miscellaneous securities listing companies like American Coal, Cnateaugay Ore & Iron R. R., etc., with columns for company name, location, par value, bid, and asked.

LONDON. June 5.

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

DENVER, COLO. June 8, 9, 10, 11, 12, 13.

Table with columns: NAME OF COMPANY, Par val, June 8, June 9, June 10, June 11, June 12, June 13, Sales. Lists companies like Idaho, Colorado, etc.

PARIS. Week ending May 29.

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

MEXICO. Week ending June 11.

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

VALPARAISO, CHILE. June 11.

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

SHANGHAI, CHINA. May 22.

Table with columns: NAME OF COMPANY, Country, No. of shares, Value, Last dividend, Price. Lists companies like Jelebu Mfg. & Trad., etc.

PHILADELPHIA, PA. June 11, 12, 14, 15, 16, 17.

Table with columns: NAME OF COMPANY, Loc'n, Par Val, June 11, June 12, June 14, June 15, June 16, June 17, Sales. Lists companies like Acety. L.H. & P., etc.

SALT LAKE CITY, UTAH. Week ending June 13.

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

PITTSBURG, PA. Week ending June 16.

Table with columns: NAME OF COMPANY, Loc'n, Par val, Bid, Ask, Sell'g price. Lists companies like Mansfield, etc.

HELENA, MONT. Week ending June 10.

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

DULUTH, MINN. Week ending June 13.

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

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table containing two columns: 'DIVIDEND-PAYING MINES' and 'NON-DIVIDEND-PAYING MINES'. Each column lists company names, locations, capital stock, shares, assessments, and dividends. The table is organized into multiple columns with headers for 'Name and Location of Company', 'Capital Stock', 'Shares', 'Assessments', and 'Dividends'.

G., Gold. S., Silver. L., Lead. C., Copper. B., Borax. * Non-assessable. † The Deadwood previously paid \$275,000 in eleven dividends and the Terra \$75,000. ‡ Previous to the consolidation in August, 1884, the California had paid \$31,320,000 in dividends and the Cons. Virginia \$42,390,000. Note.—Corrections to this table are made monthly. Correspondents are requested to forward changes or additions so as to reach us before the end of each month.

CLASSIFIED LIST OF ADVERTISERS.

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

Air Hoists.
 Whiting Foundry Equipment Co.

Aluminum Bronze
 Fairbanks Co.

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

Amalgam Plates.
 Western Plating and Mfg. Co.

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

Architects and Builders
 Berlin Iron Bridge Co.
 Pittsburg Bridge Co.
 Pollock, Wm. B., & Co.

Assayers and Chemists' Supplies
 Alsworth, Wm.
 Baker & Adamson.
 Baker & Co.
 Becker, Christian.
 Bullock & Crenshaw.
 Denver Fire Clay Co.
 Elmer & Amend.
 Henry Hill Chem. Co.

Attorneys, Corporation
 Emig, C. E.
 Hammersley, Hamilton & La Maistre.

Automatic Boiler Feeds
 Penberthy Injector Co.

Babbitt's Metal
 Besley, Chas. H., & Co.

Bakers and Bakers
 Arkell, E., & Co.
 Bartlett & Co.
 Bonbright, W. P. & Co.
 Breitung, E. N.
 Crandall & Huff.
 Trip, Cr. Syn. Inv. Co.
 Decker, R. H.
 Duer, G. C.
 Dorsey Investment Co.
 Fitts, G. W., & Sons.
 Fletcher, C. S., & Co.
 Freyschlag, Kirby & Grant, E. H.
 Handy & Harran.
 Hendrickson, W. J.
 Heron Bros.
 Hodgins, L. W.
 Hicks & Benzie.
 Johnson, L. L.
 Keith, F. M.
 Key, J. J.
 Kinney, M.
 Kneeland, C. F. & Co.
 Leipheimer, N.
 Lentz, John S.

Belting
 Carpentier, Geo. B., & Co.
 Hendrie & Bolthoff Mfg. Co.
 Jeffrey Mfg. Co.

Belt Lacing
 Bristol Co.

Blasting Caps
 Metallic Cap Mfg. Co.
 Renshaw Westphalen Explosive Co.
 Schroeder, Fr.

Blasting Batteries Caps and Fuse
 (Himax Fuse Co.)
 Lau, J. H., & Co.

Blowers, Pressure
 Comersville Blower Co.

Boilers
 Denver Eng. Wks. Co.
 Enterprise Boiler Co.
 Fraser & Chalmers.
 Heine Safety Boiler Co.
 Philadelphia & N. A. Wks. Ltd.

Brattice Cloth
 Besley, Chas. H., & Co.

Brewers
 Pabst Brewing Co.

Brick Machinery
 Freres, E. M., & Co.

Bridges
 Berlin Bridge Co.
 Pittsburg Bridge Co.

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

Car Wheels.
 Whiting Foundry Equipment Co.

Casings
 Inghon, Victor, & Co.
 New York Diamond Drill Co.
 Lexow, Theodor.

Chain and Link Belting (See Belting.)

Chemicals
 Baker & Adamson.
 Bullock & Crenshaw.
 Elmer & Amend.
 Henry Hill Chem. Co.

Coal
 Derwind, White Coal Mfg. Co.
 Davis Coal & Coke Co.
 Simonds & Wainwright.

Chilled Castings.
 Whiting Foundry Equipment Co.

Coke Cutters
 Ingersoll-Sergeant Drill Co.
 Jeffrey Mfg. Co.
 Leyner, J. Geo. (See Machinery.)
 Link Belt Machinery Co.

Compressors.
 Clayton Air Compressor Works.
 Newark Iron Works Co.

Concentrators, Crushers, Pulverizers, Separators, Etc.
 Albe, F. D., & Co.
 Blake, Theo. A.
 Bradley Pulverizer Co.
 Colorado Iron Works Co.
 Denver Eng. Works Co.
 Dodge Mining Machinery Co.
 Englebach Mach. Mfg. Co.
 Fraser & Chalmers.
 Hue Vanner Concentrator.
 Hendrie & Bolthoff Mfg. Co.
 Krupp, F.
 Link Belt Machinery Co.
 McCully, R.
 Scoville, H. H., & Co.
 Stedman Foundry & Mach. Co.
 Walburn-Swenson Mfg. Co. (See Machinery.)

Contractors. (See Machinery.)

General Dealers and Producers.
 American Metal Co.
 Arizona Copper Co.
 Atlantic Mining Co.
 Balbach & Ref. Co.
 Baltimore Cop. Wks.
 Bath, H., & Son
 Bridgeport Copper Co.
 Canadian Copper Co.
 Copper Green Mfg. Co.
 Detroit Foundry & Mach. Co.
 Elliott's Metal Co., Ltd.
 Corruent Iron.
 Berlin Iron Bridge Co.
 Cincinnati Corrugating Co.
 F. W. R. & Co.
 Sikes Steel Roofing Co.
 Cranes.
 Whiting Foundry Equipment Co.
 Crucibles, Graphite, Etc.
 Denver Fire Clay Co.
 Dixon, Jos., Crucible Co., & Machine Works.
 Cyanide.
 Roessler & Hasslacher Chemical Co.

Diamonds
 Bishop, Victor, & Co.
 Lexow, Theodor.
 New York Diamond Drill Co.
 Diamond Drill Co.
 Bishop, Victor, & Co.
 Bullock Mfg. Co., M. C.
 Lexow, Theodor.
 New York Diamond Drill Co.
 Sultzman Machinery Co.
 (See Air Compressors and Rock Drills.)

Draughtmen.
 Young, Wm. H.

Drawing Materials
 A. S. Co.
 Besley, Chas. H., & Co.
 Dietzgen, E., & Co.
 (See Engineering Instruments.)

Dredges
 Bucyrus Steam Shovel & Dredge Co.
 Marion Steam Shovel Co.
 South & Co.

Dryers.
 Brown, Horace T.
 Cummer, F. D. & Son Co.
 Denver Eng. Wks. Co.
 Dump Cars.
 Denver Eng. Works Co.
 Hendrie & Bolthoff Mfg. Co.

Educational Institutions
 Arizona School of Mines.
 Columbian University.
 Chicago School of Assaying.
 Correspondence School of Mines.
 Lehigh University.
 Mass. Inst. of Technology.
 Michigan Mining School.
 Rose Polytechnic Institute.
 Worcester Polytechnic Inst.

Electrical Batteries
 Macbeth, James, & Co.

Electrical Machinery and Supplies
 Besley, Chas. H., & Co.
 Card Electric Co.
 Denver Eng. Wks. Co.
 Electrical Engineering Co.
 General Electric Co.
 Jeffrey Mfg. Co.

Elevators, Conveyors and Hoisting
 Brown Hoist & Conv. Mach. Co.
 Caldwell, H. W., & Co.
 California Wire Wks.
 Cooper, Hewitt & Co.
 Crook, W. A., & Bros. Co.
 Denver Eng. Wks. Co.
 Electrical Engineering Co.
 Field & Goetsman.
 Fraser & Chalmers.
 (See Wire Rope Tramway and Machinery.)

Emery Wheels & Co.
 Besley, Chas. H., & Co.
 New York Belting & Packing Co., Ltd.

Engineers, Chemists, Metallurgists
 See Directory Pages 1, 5 and 6.

Engineers' Instruments and Supplies.
 A. S. Co.
 Buff & Berger.
 Bullock & Crenshaw.
 Dietzgen, E., & Co.
 Fauth & Co.
 Gurley, W. & L. E.
 Engine.
 American Engine Co.
 Buckeye Engine Co.
 Bullock, M. C. Mfg. Co.
 Enterprise Boiler Co.
 Ellison, Wm., & Son.
 Fraser & Chalmers.
 Heine Safety Boiler Co.
 Lagerwood Mfg. Co.
 (See Machinery.)

Excavators
 Bucyrus Steam Shovel & Dredge Co.
 Marion Steam Shovel Co.
 South & Co.
 Vulcan Iron Works.

Fire-Brick and Clay
 Chur, A. T.
 Franzen.
 Brown, Horace.
 Dodge Mining Mch Co.
 Hoskins, Wm.
 (See Machinery.)

Fuses, Powder
 Ingersoll-Sergeant Drill Co.
 Fuses, Safety.
 Climax Fuse Co.
 Gas Engines.
 Norman, J. J., & Co.
 Gas Works.
 Pollock, Wm. B. & Co. | Wood, R. D., & Co.
 Langen Recording, etc.
 Jeffrey Mfg. Co.

Gearing
 Besley, Chas. H., & Co. | Denver Eng. Wks. Co.
 Chester Steel Cast Co. | Fraser & Chalmers.
 (See Machinery.)

Grease, Graphite, Etc.
 Besley, Chas. H., & Co. | Dixon, Jos., Cruc. Co.
 Harwood, Ltd.
 Pierce & Miller Engineering Co.

Heavy Machinery
 Denver Eng. Works Co.
 Fraser & Chalmers.
 Howe, J. H., & Co.
 New York Belting & Packing Co., Ltd.

Injectors.
 Penberthy Injector Co.

Insulating Wires and Cables
 Okeana Rubber, Etc.
 New York Belting & Packing Co., Ltd.

Insurance Companies
 Hartford Steam Boiler Inspect'n and Ins. Co.
 Mutual Life Insurance Co.

Joint Fittings
 Tight Joint Co.

Lead Linings for Chlorination Tubs.
 Raymond Lead Co.

Lecocometes
 General Electric Co.
 Hunt, C. W. Co.
 Pass, C., & Son, Ltd.
 Asbestos Paraffine Co.
 Lubricators.
 Detroit Lubricator Co.

Machinery.
 Dealers in Mining, Milling and Other Machinery.
 Allis, Edw. P., & Co.
 Bacon, E. C.
 Bockett Pdy. & Mch. Co.
 Besley, Chas. H., & Co.
 Blake, T. A. & Co.
 Boston Ore Mach'y Co.
 Bradley Pulverizer Co.
 Buckeye Engine Co.
 Caldwell, H. W., & Co.
 Card Electric Co.
 Carpentier, Geo. B., & Co.
 Channon, H. Co.
 Colorado Iron Works.
 Comersville Blower Co.
 Crandall & Huff.
 Crook, W. A., & Bros. Co.
 Davis-Colby Ore R. Co.
 Denver Mfg. Mach. Co.
 Denver Eng. Wks. Co.
 Dodge Mfg. Mach. Co.
 Ellison, Wm., & Son.
 Engelbach Mach. Mfg. Co.
 Field & Goetsman.
 Fraser & Chalmers.
 Hammond Mfg. Co.
 Heine Safety Boiler Co.
 Hendrie & Bolthoff Mfg. Co.
 Ingersoll-Sergeant Drill Co.
 Jeffrey Mfg. Co.
 Jessup, W., & Sons, Ltd.
 Leyner, J. Geo.
 Lidgerwood Mfg. Co.

Manure Spreaders.
 Taylor Iron & Steel Co.
 American & Dev. Mfg. Co.

American Metal Co.
 Am. Zinc-Lead Co.
 Baker & Co.
 Bath, Henry & Son.
 Besley, Chas. H., & Co.
 Bridgeport Copper Co.
 Cherokee & Lanyon Spelter Co.
 Cookson & Co.
 Elliott's Metal Co., Ltd.
 Eureka & Pacific Co.
 Foster, Blackett & Wilson.
 James & Shakspeare.
 Metallurgical Works and Ore Purification Process.
 American Dev. & Mfg. Co.
 Amer. Zinc Lead Co.
 Baker & Co.
 Balbach Sm. & Ref. Co.
 Baltimore Copper Co.
 Bridgeport Copper Co.
 Canadian Copper Co.
 Cookson & Co.
 Denver Eng. Wks. Co.
 Elliott's Metal Co., Ltd.
 Eureka & Pacific Co.
 Foster, Blackett & Wilson.
 Fraser & Chalmers.
 General Gold Extraction Co.
 Mine Cars.
 Crandall & Huff.
 Denver Eng. Wks. Co.
 Hendrie & Bolthoff Mfg. Co.
 Hunt, C. W., Co.
 Neosville Foundry & Machine Co.
 Sheffield Car Co.
 Whiting Foundry Equipment Co.
 (See Machinery.)

Mine, Mill and Smelters Supplies.
 Carpenter, Geo. B., & Co.
 Crandall & Huff.
 Denver Eng. Wks. Co.
 Dodge Mining Machinery Co.
 Gates Iron Works.
 Park'at & Wilkinson.
 Roessler & Hasslacher Chemical Co.
 Stieren, William E.
 (See Machinery.)

Mining and Iron Companies.
 American Dev. & Mfg. Co.
 Atlantic Mfg. Co.
 Arizona Copper Co.
 Nickel.
 Canadian Copper Co.

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 Electrical Plant & Electrical Industry.
 Wake, Geo. F. Mfg. Co.
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 Denver Eng. Wks. Co.
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1456 WANTED—A DRAUGHTSMAN WHO has had experience in designing and building blast furnaces. State qualifications, references, etc. Address P. Z., ENGINEERING AND MINING JOURNAL.

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

POSITION WANTED BY A YOUNG MAN, 35 years old, 16 years' experience in mining and milling in Arizona, California, Nevada, etc., at present employed in Central America. Is an assayer and surveyor. Good references. Address ARIZONA, ENGINEERING AND MINING JOURNAL. No. 17,434, June 27.

WANTED—POSITION AS RESIDENT manager or superintendent; 15 years' practical experience; now with the largest company in Northern Mexico as mine superintendent; Spanish American country preferred; highest recommendations. Address AMERICANO, ENGINEERING AND MINING JOURNAL. No. 17,432, July 4.

YOUNG MAN, GRADUATE C. E. '91, WITH experience, Ph. D. in chemistry '96, Yale, desires position in chemistry or chemical engineering. Best references as to ability and energy. Address CHEMICAL ENGINEER, ENGINEERING AND MINING JOURNAL. No. 17,433, June 27.

A SUPERINTENDENT OF AN ACID WORKS of long and successful experience, desiring change of location, would like to correspond with manufacturers desiring such service. Unexceptionable reference. Address S. A. M., ENGINEERING AND MINING JOURNAL. No. 17,439, June 27.

WANTED—BY A CAPABLE MINING EN- gineer, a position by the 1st of August as manager with a first-class gold, silver or copper mining company in Mexico or elsewhere; age 52 years; 27 years' practical experience; also a thorough knowledge of chemistry and bookkeeping in English and Spanish. Presently engaged with the largest mining and metallurgical company in the Republic of Mexico. Object change of location. Address, for 30 days, MEXICO, ENGINEERING AND MINING JOURNAL. No. 17,438, July 4.

A METALLURGIST, LEAD AND COPPER' in charge of large works in Mexico, wishes engagement with reliable company in the States. Successful experience. Best references. Address MEXICO, ENGINEERING AND MINING JOURNAL. No. 17,427, June 27.

YOUNG MAN OF SIX YEARS' EXPERIENCE in copper mining and smelting, as assayer, chemist and metallurgist, desires position. Speaks Spanish. References. Address CAPABLE, ENGINEERING AND MINING JOURNAL. No. 17,427, June 27.

FIRST-CLASS ACCOUNTANT WANTS PO- sition with mining company, reduction works or manufacturing corporation. Has a fair knowledge of machinery and some experience in mining propositions. All references. Will go anywhere for fair salary. Address "Accountant," ENGINEERING AND MINING JOURNAL. No. 17,445, June 27.

CHEMIST AND ASSAYER, SIX YEARS in responsible positions now in charge of a Lake Superior laboratory, desires position in Southwest. Refers to present employers. Address "V." Box 399 Ironwood, Mich. No. 17,437, July 26.

MINING ENGINEER, GERMAN, GRADU- ate Academy of Mines, Berlin, 17 years' experience in mining (also gold), good millman and assayer, wants position. References. Address SURVEYOR, ENGINEERING AND MINING JOURNAL. No. 17,442, July 4.

WANTED.—POSITION BY A MACHINIST and electrician. Address E. A. PORTER, 652 Cass St., Milwaukee, Wis. No. 17,445, July 11.

CHEMICAL ENGINEER.—A MERICAN young man, technical graduate, with long and successful experience as assistant manager and engineering and chemical expert with large manufacturing concerns, is open for engagement. Has a record as a pushing organizer and manager of manufacturing work. Special experience with compressed gases and electro-chemical work. Address EXCELLENT REFERENCES, care of ENGINEERING AND MINING JOURNAL. No. 17,446, July 11.

Contracts Open.

WATER-WORKS.

Board of Commissioners.

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

Sealed proposals will be received at the office of this Board until July 6th, 1896, for building water-works complete, or for any of the following parts thereof:

(a) For furnishing about 1,078 tons of cast-iron pipe and specials of sizes between 8 and 4 in. diameter.

(b) For furnishing forty-five hydrants, sixty 4-in., twenty 6 in., and seven 8-in. valves with boxes, also relief and reducing valves, and one 8-in. meter.

(c) For distributing and laying about 47,000 ft. of cast-iron pipe, sizes 8 to 4 in.

Distributing and setting 87 valves with boxes, sizes 8 to 4 in.

Distributing and setting 45 hydrants, also setting relief and reducing valves, building manholes, etc.

For building an intake reservoir and appurtenances and a rubble and concrete dam at storage reservoir.

Persons may bid on one or all of the above divisions, but must keep prices separate for each division.

No extra allowance above the contract price agreed upon will be made under any pretext whatever.

A certified check for three per cent. of the total amount of bid, payable to the President and Treasurer of the Board of Water Commissioners, must accompany each proposal.

The bidder whose proposal is accepted must be prepared to enter into a contract within five days thereafter, giving bonds acceptable to said Commissioners for an amount equal to one-half the bid.

Plans and specifications may be seen, and forms of proposals can be procured on application at the office of the Secretary of the Board of Water Commissioners, Deckertown, New Jersey, or at the office of C. C. Vermeule, Civil Engineer, 71 Broadway, New York City.

Proposals must be endorsed "Board of Water Commissioners, Proposals for Water-Works." The said proposals will be publicly opened by the Board and announced on the 6th day of July, 1896, at the hour of 12 o'clock noon. George A. Wilson, William S. Vanderhuff, Charles C. Kye, Board of Water Commissioners. Attest: William S. Vanderhuff, Secretary.

COAL.—Sealed bids, addressed to the board of water commissioners, Atlanta, Ga., and indorsed "Bids for coal," will be received until July 1st, 1896. The bids invited are for, approximately, seven thousand (7,000) tons, or as much as is needed for a year's supply, delivered to Chattahoochee station No. 1, and Hemphill station No. 2, as ordered (not over ten (10) cars at one time at either station). Coal to be paid for as per weights of our track scales at the stations and; weights certified to by the engineer in charge. Bids submitted must be for both run of mine and screened coal. PARK WOODWARD, Supt. Atlanta Waterworks.

OFFICE OF THE COMMISSION OF PUBLIC WORKS, HUDSON, N. Y., June 19th, 1896.

PROPOSALS.

Sealed proposals will be received at the office of the Commission of Public Works, until July 1st, 1896, at 12 m., for the construction of a caisson filter and intake at the Hudson Water Works.

Plans and specifications may be seen at the office of the City Clerk.

C. H. EVANS, F. F. FOLGER, B. S. JOHNSON, Commissioners. WM. S. HALLENBECK, Secretary.

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	36	1/2	8	20	54	93	126	161
	39	1/2	8	21	58	99	135	172
	42	1/2	9	23	61	106	143	183
	45	1/2	9	24	65	112	151	194
	48	1/2	10	25	69	118	160	204
	51	1/2	11	26	73	124	167	214
	54	1/2	11	28	77	129	175	224
	57	1/2	12	30	81	134	182	234
1/2 Column.	60	1/2	13	32	87	151	205	261
	63	1/2	14	33	93	161	219	279
	66	1/2	15	37	99	171	232	296
	69	1/2	16	39	105	181	242	313
	72	1/2	17	41	109	190	258	329
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	81	1/2	19	47	126	219	296	379
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	90	1/2	22	53	143	248	335	428
	93	1/2	23	55	149	258	349	446
1/2 Page...	102	1/2	24	57	155	268	362	464
	108	1/2	25	59	161	278	375	482
	114	1/2	26	61	167	288	389	500
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1/4 Page...	126	1/2	28	65	179	308	415	536
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A. H. FOWLER, Secretary

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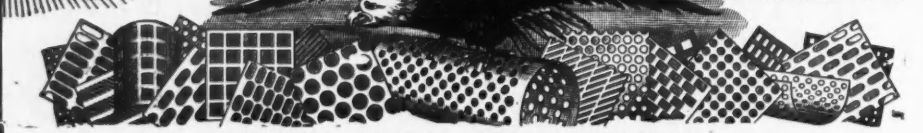
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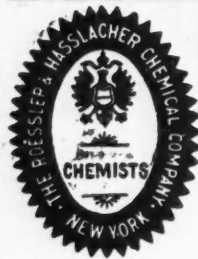
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