

to have the right to redeem these 2½ per cent. Consols at par. Our 4 per cent. bonds repayable at par in 1825 are selling at only 118, while the English bonds (Consols) which will shortly carry only 2½ per cent. interest, and are repayable at par about the same time as our bonds, are selling at 118.

The Brussels Bimetallist Congress.

The cause of international bimetallism is by no means dead; on the contrary it is making substantial progress, and especially in Great Britain, where nearly every prominent political economist of less than 70 years of age is a bimetallist. On the 20th inst. there was at Brussels a very important meeting of bimetallists representing, unofficially, most of the European countries, and it was decided to establish a permanent bimetallist congress with the object of discussing such suggestions as are brought before it, and finally arriving at the most desirable practical plan for an international adoption of bimetallism.

This is the first rational step that has really been taken of an international character, for in all the monetary congresses of the past, in 1878, 1881 and 1892, no plan whatever was ready or presented, and such an official congress, called together without any pre-arranged plan, could never be empowered by the respective governments to do anything; failure was therefore inevitable. Now it may reasonably be expected that a workable plan will be formulated, and will be understood and generally approved by the several governments before the next official monetary congress convenes.

The names of the principal representatives of the various nations at this conference were as follows: Herren von Mirbach de Wabnitz and Arendt, for Germany; Sir William Houldsworth and Messrs. Grenfell and Schackssommer, for Great Britain; M. Raffalovich, for Russia; M. Rochussen, member of Council of State, for the Netherlands; Counts Alexandre Karolyi and Koloweat, for Hungary and Austria, respectively; M. Bonesco, for Roumania, and M. Raeder, for Denmark.

The first session of the congress was exclusively devoted to the establishment of a bureau. The second session opened under the presidency of M. Beerneart, Belgian Minister of State. The congress commenced its labors with a speech by M. Allard, a Belgian bimetallist, and one of the directors of the National Bank, who explained at length the object of the congress, namely, to place the question of bimetallism on a practical basis, removed from any question of any school.

Herr Arendt, member of the Reichstag, supported the speech of M. Allard, and the session was concluded by a speech by the French delegate Fougereolle.

How can Americans best promote the success of the bimetallist cause? Assuredly by rejecting all propositions that would lead to a depreciated currency and that would identify, in the public mind, bimetallism with depreciated or dishonest money.

The Westralian Goldfield.

The report of Bergrath Schmeisser who has made a semi-official examination of the resources of this new gold-producing district has been looked forward to with great interest. When we say semi-official we mean that the distinguished scientist holds an official position under the Prussian Government and had to obtain special permission to make this investigation on behalf of the London & Western Australian Investment Company, more or less a branch of the very successful "Exploration Company," of London.

As we pointed out last week, last year's large product "breaking the record" absolutely disappeared from sight and has not made any addition to the world's circulation in the shape of coin or paper based on gold alone.

What makes Bergrath Schmeisser's report of special interest is the expectation that had been encouraged by early returns of the liberal addition to the world's gold supply from Westralia, and the fact that Herr Schmeisser was more correct in his prognostications and estimate of possible output from the Transvaal than any other authority who is on record. Herr Schmeisser is very cautious in the views he expresses owing to the small amount of development work done, and as he spent five months in his investigation there is no doubt that it was conscientiously done. The general impression is favorable, but he encountered unusual difficulty on account of three different causes, viz.: No water courses cutting the formation, no abrupt hillsides or bluff, and the great depths of decomposition of the strata. The mineral district undoubtedly contains a large number of auriferous deposits, veins, beds or alluvial, but it is very difficult to form an opinion of the production of the goldfields from want of development. Herr Schmeisser seems to have apprehension of the veins that have given such rich returns at the surface pinching out, and states that this has already occurred in many instances, and, in fact, until another year or two's development has been carried on nothing certain can be stated. He says that the range of yield has been from \$6 to 16 ounces per ton, and

that it is impossible to ascertain an average, but that the cost of production can be set down at from \$7.50 to \$12.50 a ton. We scarcely think the Bergrath means to include milling in these figures, judging from those we have seen of companies operating in that district. In one case \$40 ore barely paid expenses.

And the only reason we have to pay so much for our national loans is because there are many "wild and woolly" financiers in this country who advocate paying our debts in depreciated money and other dishonest schemes, and they have created among capitalists at home and abroad a doubt as to the honest repayment of money lent us. This also is why the whole country has to pay more for money than it should, and might do, and why much foreign capital, that is available and would be of enormous advantage to us in the development of our magnificent mineral resources and the extension of manufacturing, is diverted to other fields for investment.

There are so many uses and demands for capital that the mere shadow of a doubt of its security is quite sufficient to turn it away from an enterprise or investment, and it goes into some other and perhaps less profitable one that appears safer. Good security and honest repayment of loans are more attractive to capital than high interest, and it is certainly to the interest of this country to attract to it all the capital that can be used advantageously in the utilization of its natural resources.

Cost of Gold Production.

The enormous absorption of gold outside of its active use in money which, as we pointed out in our last week's issue, amounting in the past year to more than the entire world's production at its maximum, makes the subject of cost of gold mining a very interesting one, as on that depends very largely the future supply of the metal. There are still beyond any question vast stores of gold and silver, both known and undiscovered in this continent, South and North, as well as in Asia, Africa and Australia, but the quantity available depends very largely upon the cost of production for, if it costs more to treat a ton of ore than the gold in it is worth, the gold might as well not be in existence.

The reduction in cost of mining and extraction of gold and silver which has taken place in recent years has enormously added to our latent stock of the precious metals, and the limit of economy has not yet been reached. Therefore it is of interest to know what the present cost of milling gold ores is at some of the largest and best equipped mills in the great gold producing countries.

In another column we give an abstract of the report of the Robinson Gold Mining Company, which is under the management of Capt. Thomas Mein, formerly of California. This report is a model, in the clearness with which every item of interest to stockholders is set forth, and information of technical value is given.

The Robinson Gold Mining Company is the largest producer in the Rand district, South Africa, and being managed with great efficiency has brought down the cost of producing gold in the Transvaal to probably the lowest figure possible under existing conditions. For the purpose of making a comparison we will set down the figures in detail. The tons crushed were 140,655, concentrates saved, 3,695 tons, and the cost per ton for crushing transport and milling, 25.44 cents; supplies, including fuel and quicksilver, 32.44 cents; water and wear and tear, maintenance, etc., 16.78 cents; concentrating, general expenses, assaying and smelting, 17.44 cents, making a total of 92.10 cents per ton. This is we believe as good a record as has even been made on so large a scale abroad.

The cost of cyanidation amounted to 58 cents per ton, of which naturally the largest proportion was labor amounting to nearly two-thirds of the total cost, and the next largest item was cyanide. During the last half of 1895 from some of the more doubtful ground in value, 12,873 tons were milled with an average assay value of 9 pennyweights 17 grains. The only unsatisfactory feature in the report is that with comparatively rich tailings to work on, the extraction of gold by cyanide is only about 64 per cent., but this may be improved, and South Africa may learn something from America in this direction, as better results are usually obtained here.

Judging from the results in the Robinson properties under such able management, which, so far as current working costs are concerned, show an expenditure of \$4.586 per ton, exclusive of development work which, in the past year, has gained on the amount milled, but these should always be included in the working costs, the outlook for the deep mining is very poor. The average yield of the ore in the first quarter of the year from the only mine operating in the "deeps" (the Geldenhuis Company) is under \$6 a ton and that on a total of 28,722 tons. This is but very little above the actual cost of mining and treatment at the Robinson.

To jump from South Africa to Alaska to ascertain at what cost gold can be produced, we have only to refer to the report of the Alaska Treadwell Company, which also shows a good example in affording to its stockholders all the information they can ask for. The number of tons mined and milled are given, full detail of development work, and the wages paid for each description of labor. The scale on which this enterprise is worked is even

larger than that of the Robinson, and if the climatic conditions in Alaska are taken as an offset to the disadvantages existing in the Transvaal, it is very fair to make a comparison of working costs. The total tonnage mined and milled in the last fiscal year of the Alaska Treadwell was 241,278 tons, and 4,233 tons concentrates were saved. Mining costs, \$0.5473; milling, \$0.3593; chlorination per ton of ore; \$0.1547 (\$8.76 per ton of concentrates), to which had to be added general expenses and construction costs, making a total of \$1.3683 per ton of ore. This is a record hard to beat, and if it were possible in the Transvaal, India, Siberia, Australia and other gold-producing countries to duplicate such work, the supply of gold might exceed the demand.

The largest gold producer in Australia of recent years has been the Mount Morgan mine, Queensland, and as much talent as can be obtained by careful selection of men at liberal salaries has been devoted to the successful working of this enterprise. The ore has been somewhat more refractory than that at the Robinson and the Alaska Treadwell. The amount mined and milled during the fiscal year nearly reached 100,000 tons. Including development work and addition to plant, the exact cost of working the last 50,000 tons amounted to a little more than \$12 a ton, but included in this was the re-treating of a very large tonnage of slimes left over from previous years.

The gold produced in the last half year was 66,367 ounces, steadily increasing during the last three months, so that with the plant in good shape the Mount Morgan Company should still figure as a large producer, but never at a low cost.

As a dividend payer this property is a record breaker, having, up to date, distributed \$20,250,000.

To turn to another important district, namely, that of Mysore in India, in which the production of gold has been steadily increasing. Taking the Mysore Company as representative, with the largest tonnage extracted and milled, we find that the quartz crushed amounted last year to 60,654 tons, while 32,597 tons of tailings were treated by amalgamation, and 18,065 tons were cyanided. These 60,654 tons averaged 19 pennyweight 10 grains, in yield: the tailings and the concentrates treated by cyanides gave a further average yield of 3 pennyweight, 18 grains, resulting in a net revenue of \$1,354,555, from which, however, has to be deducted about \$67,000 for royalty, so that the cost of mining and milling is over \$9.50 per ton. The Champion Reef Gold Mining Company, which is on nearly as large a scale as the Mysore and was formerly part of the same company, mined and milled 49,705 tons, treating in addition 13,385 tons of tailings, at a cost of \$610,300, or a little over \$12 per ton.

We have no means at our disposal for ascertaining the cost of gold production in Siberia, which country is quite a considerable factor in the world's supply of gold. But it is perfectly clear from the figures we have given that the United States is far ahead of and more advantageously conditioned than any other country in the world for cheap gold production.

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.

Report on the Strikes and Lock-outs of the United Kingdom for the year 1894. London, Eng. H. M. Printers. Pages, 345.

Statistical Register of New South Wales for 1894 and Previous Years. By T. A. Coghlan. Sydney, New South Wales; Government Printers. Pages, 871.

New Jersey Geological Survey; Annual Report for the year 1894. By John C. Smock, State Geologist. Trenton, N. J.; State Printers. Pages, 303; with maps.

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.

On the Casting of Steel.

Sir: The method devised by Mr. Posnikoff, and described in your issue of April 11, of preventing the spattering of steel against the sides of the moulds by putting a thin sheet-iron tube within the mould through which the steel was poured, was really anticipated by Mr. A. L. Holley's practice at the Bessemer Steel Works, at Troy, New-York, in 1871.

A like trouble occurred there, not, however, so much from the metals splashing up from the bottom of the mould against its sides, as from irregularity in the shape of the nozzle at the bottom of the casting ladle, which made the falling stream of steel irregular and ragged. It often happened that the drops of steel would in this way spatter against the sides of the mould, and adhering to them, roughen the face of the ingot. To prevent this, Mr. Holley suspended in the mould a cylinder of thin sheet-iron, through which the steel was poured, and which melted off as the level of the steel rose past it.

The practice was not continued, because it was found that the cracking of the ingots in rolling (which had been supposed to be due to this spattering), continued unabated after the spattering had thus been arrested.

HENRY M. HOWE.

Rhodesia.

Sir: Cecil Rhodes has no more real, though I confess qualified, admirer than myself, but why does he not see that the public is losing, and has almost lost, confidence in the gold-fields of his domain? The oft-repeated tales of numerous reefs and abounding gold do not tally one little bit with the record of export which it must be allowed is miserably disappointing. Granted that Rhodesia is not the Rand—that the deposits are lodes and not auriferous pebble beds—still the almost absence of gold export leads one to infer that reports have been much exaggerated. See how badly Rhodesia compares with Westralia! Both fields began to be known, or at least to be in favor, about the same time, and Westralia is confessedly not a facile field for mining, yet how infinitely superior is the yield to that of Matabeleland & Mashonaland!

The fact is well known in all well-informed engineering circles that it is the need of fuel which hampers the miner in the development of these northern gold fields of South Africa. There is no lack of water for milling, but very little for power.

The discovery of coal, so often exultantly heralded, is, it would seem, untrue. If untrue, and if there is, as it seems, no available source of power other than the Zambesi, why is it that the enterprise of Rhodesia should so stop short of a solution by electric transmission now known to be practicable for distances quite as great as those to be dealt with there? A new move and a bold one is needed, and that soon, or collapse stares this northern gold mining enterprise in the face.

PILGRIMS' REST, March 12, 1896.

PENTON.

Intelligent Finance.

Sir: I have noticed some remarks in your journal on the above subject. I do not think, however, that the reason why English Consols appear to be preferred to United States bonds is clearly explained.

The English "Consolidated Annuities Act" was passed in 1757, creating what are known to-day as "consols." They are perpetual annuities, and it has been demonstrated that the interest on a perpetual loan can be negotiated rather under than above what a borrower would give to a private lender, although such a borrower was bound to repay the money, while the nation is not. It is a curious fact that a loan never to be repaid has come to be considered a more eligible investment than a loan to be repaid.

In addition to these conditions which prevail in England, another and very important factor in sustaining the price of Consols is the "Trustees Acts" 1884 and 1893 which obliges trustees to invest Trust moneys in certain securities. So stringent are the rules regarding this matter that Trustees invariably invest such moneys in Consols. One clause in the Act of 1893 provides that stocks (or bonds) redeemable within 15 years from date of investment must not be purchased over redemption value, and if over 15% above such value, are prohibited.

The money received through the Post Office Savings Banks is invested in Consols. Whenever the English Government accumulates any money it comes into the market and buys Consols at the current market price.

With such conditions prevailing it is not surprising that the value of Consols should be so high. An English Trustee is not permitted to invest money in French Rentes or United States bonds.

There is no reason whatever why the United States bonds should not be managed in the same way as English Consols. If all the outstanding bonds were to be converted into a perpetual funded indebtedness the troubles of the United States Treasury would be much lessened. If the United States Government, whenever it had a surplus, bought in at the market rates, the prices would soon materially increase over those now prevailing. The question whether bonds should be payable in gold, coin or silver would not have to be considered. The English nation would have more difficulty in paying off its entire national debt to-day in gold than the United States would its bonds. The English nation, however, never intends to pay off its national debt, while the United States has obligated itself to redeem its bonds.

A. H. WETHEY.

BUTTE, Mont., April 14th, 1896.

Company-Mongering in Colorado.

In England, of all other countries, company-mongering has probably been brought to the greatest pitch of perfection. Since the day of the South Sea Bubble—the first great triumph of the promoter that I remember reading of—London has been studying and improving this business (more recently described as "the art of getting other peoples money") and they can double discount any other city and nation at this game, and beat them.

Now if a mineral water company is being brought out there, and prospectus contains a certificate from Sir John Bolus, F. R. C. S. or some other Aesculapian swell, to say that he has analyzed it, and found it to be a most healthful table water, and has used it in his practice with the greatest success for various affections of the internals, etc. If a new cereal food or patent bread company is brought out, the prospectus sets forth that some celebrated analyst has reported on it, and certifies that it contains everything necessary for nutriment and health, and that it will cure no end of complaints if eaten.

When a mining company is brought out the prospectus contains the report of one, sometimes as many as three, engineers of renown, with a large proportion of the alphabet attached to their great names, who describe the property, and testify as to its value, actual and prospective. In addition to this, distinguished men are if possible obtained as directors, not so much because "the British snob dearly loves a lord" but because it is known or believed that men bearing these names and titles, are very unlikely to sully them, or the memory of an honorable ancestry, by appearing at the head of a company organized in a questionable manner, and for fraudulent purposes.

But how is it done in Colorado? Mining companies are being brought out wholesale, and in the most delightfully devil-may-care manner. The prospectus (if any), contains in most cases what amounts to a bald assertion that they have valuable property, generally not signed by anybody, and if signed at all, it is by the butcher, the baker, the candle-stick maker, the mining stock broker and real estate fakir, or others equally ignorant of mining, and the financial pills concocted by these impudent charlatans, are being swallowed by the people, who believe that they will thus obtain relief from that widespread and dismal disease, poverty.

The rich or business men who take a flutter in stocks as they would a hand in a game of poker, are not the ones who are deceived. In a period of speculative investment and stock excitement, such as that upon which we are now entering, it is the janitor, the poor servant girl, the workman, and others of slender means, who are taken in, and who deserve pity when they lose.

Anyone can easily get lists of reputable mining engineers, good men and true, who have made mining a life study, whose scientific attainments are known, and whose integrity is well vouched for. Do you ever see their reports attached to any of the prospectuses now being scattered broadcast in the East? Well! hardly ever; and I won't insult the intelligence of the reading public by saying why. In ordinary cases of development companies, an engineer's report would cost say from \$250 to \$1,000 only, and yet the public are calmly asked to subscribe from thousands to hundreds of thousands of dollars, without even this evidence of value. No, it is not the cost that stands in the way, and if the public will just understand and remember that if the report of a thoroughly well known and well endorsed mining engineer is not attached to the prospectus, it is because the property and the scheme will not bear the light of honest inspection, the sooner will they have a fair run for their money, and cease to be the victims of the "Welsher." And I think, for the further protection of the far-off Eastern public, all respectable stock exchanges in this State, should refuse not only to list, but also to have any stock called on its floor, unless the property has been vouched for as above.

Doubtless some worthless stocks are placed in the East, which are neither listed nor called here, but in most cases the manipulators endeavor to obtain a quotation in this State by "rigging" the stock, and then unload in the East at the price thus named, on the assumption that the Eastern buyer will naturally say "Well they certainly must know best in Colorado what this stock is worth, as the mines are there."

Doubtless it will be said I am writing this to get business. Quite so, and every mining engineer who is practicing his profession in this State, and has made a life study of it, and has served as hard an apprenticeship as most of us have, is entitled to it.

If you are ill you call in a doctor; if you are buying a pair of carriage-horses you want the opinion of a veterinary surgeon as to their soundness; if you purchase real estate you require a lawyers certificate as to title. Why then, if you are buying mines or shares of stock representing the same, should you accept the dictum of a groceryman or a haberdasher?

CRIPPLE CREEK, Colo., April 11th, 1896.

W. WESTON, E. M.

ABSTRACTS OF OFFICIAL REPORTS.

The Robinson Gold Mining Company, South Africa.

At the close of 1894 the balance standing to the credit of profit and loss was.....	£331,580	6	6
To which is added the net profit for 1895.....	374,744	13	0
Making a total of.....	£706,324	19	6
Against which have been declared—			
Dividend No. 10 of 6s. per share.....	£165,000	0	0
Dividend No. 11 of 8s. per share.....	220,000	0	0
	385,000	0	0
Leaving a balance of.....	£331,324	19	6

To carry forward to the next account.

The total cost to date of the new 50 stamps, making 120 in all, and consequent additions to connecting installations, amounts to £87,748 8s. 6d., all of which has been charged to capital account. As the expenditure for the new plant is now substantially at an end, the former rule of charging everything to revenue account, be it for machinery and plant or mine development, will be resumed as from the beginning of 1896.

Allowance for the depreciation of permanent works and the older portions of machinery and plant has been made to the extent of about 5% all round. Nothing, however, has been written off the newly-constructed machinery, because it was not brought into use until close upon the end of the year.

The yield per ton in all departments shows, however, a falling off in varying degrees, commensurate with the amount of poorer rock manipulated, in addition to which, owing to the shortness of native labor, toward the close of the year, machine drills had to be used in stoping, whereby larger quantities of waste rock were of necessity mixed with the ore sent to the mill.

The reserves of milling ore in sight, exclusive of Main Reef, are estimated at 388,452 tons.

The native labor question is causing grave anxiety. Attempts made to augment the supply of labor by sending emissaries to distant districts have not been productive of any substantial gain, in fact, as the year drew to a close, the native staff steadily decreased in numbers, and much of the surface work had to be suspended in consequence.

During the past year there were mined and milled 140,655 tons of ore, coming from Main Reef, 51,940 tons; Main Reef Leader, 43,411, and South Reef, 45,304 tons.

PRODUCT.	Oz.	Dwt.	Per tons crushed.		Value.	Per ton.	
			Oz.	Dwt.			
From mill.....	120,112	16	0	17	190	431,666 5 0	3 1 4 55
From concentrates (by chlorination).....	14,938	0	0	2	2 98	61,722 19 11	0 8 9 32
From tailings (by cyanide process), 75,825 tons treated..	22,157	3	0	3	3 61	72,553 10 1	0 10 3 79
Totals.....	157,207	19	1	2	8 49	565,942 15 0	4 0 5 66

Compared with the figures for the previous year, there has been a falling off of 4 dwt. 14 gr. per ton in yield, and 16s. 11d. in value. Still, when it is borne in mind that 37% of the ore sent to the mill was from the Main Reef, and further that, owing to the shortness of native labor during the latter part of the year, we had to use machine drills in the stopes, whereby a larger percentage than usual of waste rock is broken with the reef, the results for 1895 are by no means unsatisfactory.

COST PER TON.

	1895.	1894.
	s. d.	s. d.
Mining and mine maintenance.....	12 8.43	14 3.76
Milling and mill maintenance.....	3 10.05	3 10.28
General expenses.....	2 6.87	3 6.72
	19 1.34	21 1 8.36

The grade of the ore treated, and of that in reserve, in the opinion of the management, is about \$20 ore and as the cost of mining and milling, etc., have now been reduced below \$5 a ton, the prospect for the company seems good. Mr. Thomas Mein, the general manager, reports as follows:

On the basis of Reef yielded by the claims already worked out, and making a liberal allowance for the Reefs flatterings; assuming also that the Reefs can be milled in the same proportions as they were during 1895, when the percentages were 36.92, 30.86 and 32.22 of Main Reef, Main Reef Leader and South Reef respectively, there would then be at least 3,700,000 tons to crush, which, with 120 stamps would occupy 19 years, and upon present basis of cost and yield, would give an aggregate profit of about £9,000,000.

It may be confidently expected, however, that this profit will be augmented by (a) Decrease in cost of working. (b) Increase in profit through slimes treatment and, the life of the mine extended by the manipulation of larger quantities of Main Reef rendered possible by reduction in cost of working, the actual results of which cannot be stated in figures to-day.

From the results of the working of the mine since the full 120 stamps have been running, I anticipate we can make a monthly profit of £38,000, even allowing say 30% of Main Reef to be crushed, and an additional profit can be expected from the treatment of slimes.

For the past four months we have been so short of native labor that we have been unable to work on the smaller portion of the vein where the ore is very rich, but the Transvaal Government has recently made a public announcement that it will give every assistance in the matter of procuring native labor and to assist the industry in every possible way, from which I am in hopes benefit may result. The average number of employees during the year was: European 247, Kaffirs 1,332 the average weekly wage of each being 14s. 6d. exclusive of food.

General Electric Company.

The report of the General Electric Company for the year ending January 31st furnishes the following balance sheet:

Assets:	1896.	1895.	Changes.
Patents and franchises.....	\$3,000,000	\$8,159,264	D. \$5,159,264
Manufacturing plants.....	3,468,002	3,330,000	D. 431,993
Other real estate.....	451,885	423,783	I. 29,802
Stocks and bonds.....	5,479,332	5,679,013	I. 499,319
Notes and accounts received.....	6,584,123	6,530,500	I. 33,624
Cash.....	879,684	404,236	I. 475,450
Work in progress.....	961,386	737,087	I. 204,299
Inventory and factories.....	4,219,884	3,859,669	I. 360,215
Sundry debits.....		27,989	D. 27,989
Profit and loss.....	13,917,071	14,794,717	D. 877,646
Total.....	\$43,963,069	\$43,956,258	I. \$6,811
Liabilities:			
Common stock.....	\$30,460,000	\$30,460,000	
Preferred stock.....	4,252,000	4,252,000	
Debentures outstanding.....	8,750,000	8,750,000	
Acc'd int. on debts.....	72,917	72,917	
Accounts payable.....	428,152	421,341	I. 6,811
Total.....	\$43,963,069	\$43,956,258	I. \$6,811

The operations of the company for the last two years compare as follows:

	1896.	1895.	Changes.
Sales.....	\$12,730,058	\$12,540,395	I. \$189,663
Royalties, etc.....	585,639	420,818	I. 164,791
Total earnings.....	\$13,315,697	\$12,961,213	I. \$354,484
Cost goods sold.....	\$9,860,216	\$9,557,328	I. \$302,888
Gen. pat. leg'l expen.....	1,899,644	1,894,536	I. 5,108
Total expenses.....	\$11,759,867	\$11,451,864	I. \$307,993
Net earnings.....	\$1,555,810	\$1,509,349	I. \$46,461
Other income.....	421,011	302,398	I. 118,613
Total income.....	\$1,976,851	\$1,811,747	I. \$165,104
Int. on debentures.....	437,560	464,583	D. 27,033
Balance.....	\$1,539,351	\$1,347,164	I. \$192,187
Charged off, etc.....	661,705	932,521	D. 270,816
Balance.....	\$877,646	\$414,643	I. \$463,003

The balance of \$877,646 given above represents a reduction in the deficit of previous years. It is stated that there is now \$1,469,848 still outstanding from the sum of \$2,000,000 charged to profit and loss a year ago for the purpose of providing for all shrinkages which could then be anticipated in the liquidation of old matters. It is the belief of the directors that this amount is sufficient to cover all the purposes for which the \$2,000,000 was originally set apart.

The business secured by the company in the fiscal year was less than 10% greater in value of sales than for the year previous. The actual increase in output of factories was more than 30% greater. While the selling prices as thus shown have been materially reduced, there has been a corresponding curtailment in manufacturing and other expenses and lowering of costs, largely due to improved designs and methods of manufacture. The President gives no additional details with regard to the contract with the Westinghouse Company than already known.

The revenue derived by the company from interest and dividends in the year were nearly sufficient to provide for interest on the outstanding debentures, the deficit being only \$16,459.

The report speaks hopefully of the electrical experiments made and the results achieved upon the Nantasket branch of the New York, New Haven & Hartford, the Lenox Avenue line of the Metropolitan Traction Company of New York, the Metropolitan Street Railway Company of Washington, D. C., the New York & Brooklyn Bridge, the Metropolitan West Side Elevated Railroad of Chicago and the plant at Fresno, Cal., but no mention is made of the Manhattan Railway of this city. There are numerous other fields of electrical development in which the company has made progress. It is estimated that the capacity of the plants has, by various improvements, been increased 25%.

The accounts of patents and franchises carried in previous reports as assets were \$8,159,264; in the year \$433,361 was expended for capitalizing future royalties, patent litigation expenses and acquiring new patents,

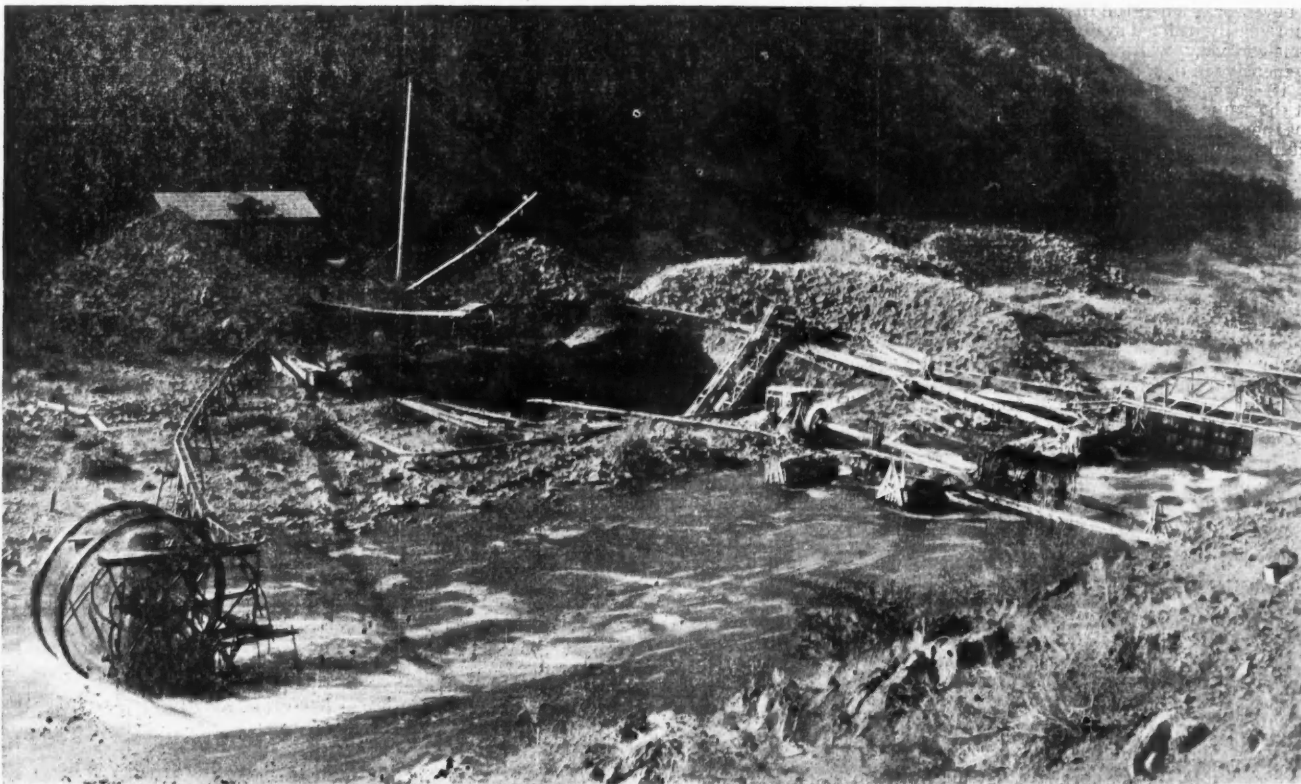
making a total patent account of \$8,592,625; there was written off to profit and loss \$592,625, leaving \$8,000,000 standing for the patents, franchises, good will, etc., of the company. The stocks and bonds owned by the company are of a par value of \$13,659,006, though carried in the balance sheet at a valuation of \$5,479,332.

The installation of the electric plant at Fresno, Cal., for transmitting electrical power 35 miles, is especially noteworthy, as are also the applications of multiphase apparatus (without commutators) in coal mining and under conditions where it is necessary to run machines in oil vapor or gases, where sparking would be highly dangerous. The work accomplished by us in the important field of the transmission of energy to great distances has been phenomenal. We have supplied or have on order 60,000 H. P. of apparatus for the conversion of the energy of water power into electricity, and its transmission to distant places to be converted into light, heat and mechanical power. Notable among these installations are those from Folsom to Sacramento, Cal. 4,000 H. P., 24 miles; at Fresno, Cal., 1,400 H. P., 35 miles; at Portland, Ore., 1,800 H. P., 14 miles, and at Pachuca, Mex., 2,350 H. P., 23 miles. These plants are all in successful commercial operation and each marked a distinct step forward in economy of transmission and in the introduction of new and useful types of machinery.

We are also providing for the constantly increasing use of electrical appliances in the operation of mill tramways, cranes, elevators, pumps, hoists, coal cutters, drills, picks, blowers, fans, air compressors, draw-

GRAVEL GOLD MINING IN OREGON.

The American Bar Mine is situated at American Bar, Klamath River, Oregon. The mines of the company comprise a river bed and channel of the Klamath River for a distance of three-quarters of a mile on which is a 4-ft. quartz ledge 3,000 ft. in length, which runs diagonally across the river bar. But little work has so far been done on the quartz ledge. A shaft about 20 ft. in depth has been sunk and the ledge has been stripped for a distance of 200 ft. A tunnel will be run in on the ledge for a distance of 200 ft. The river bar or placer ground is about 200 ft. in width and is from 30 to 40 ft. to bed rock. This bed rock is the old bed of the Klamath River, the present river being about 30 ft. above the old channel. The ground is all gravel and boulders, these having been deposited at different periods of time, as they are of different characters, and all contain more or less gold in paying quantities, in fact the bulk of the heavy gold is found in some of the upper benches of gravel, one piece weighing 5 oz. being found 10 ft. below the surface. It is claimed that the gold averages \$1.25 per cubic yard from surface to bedrock, it being principally of a coarse character mixed with quartz and easily saved. The method of working the ground is with derricks run by current wheels giving ample power for pumping and hoisting, and are cheaply constructed and furnish all power necessary free of cost. The ground is worked by open cuts, a powder drift is run in on bedrock 50 or 60 ft., and about 500 lbs. of giant or champion powder put in



AMERICAN BAR MINE.

bridges, printing presses, dredging machines, concentrating mills, powder mills, the operation of turrets and training of guns, and machines of all kinds, large and small.

A comparatively new and almost limitless field is being found for the use of electricity in the chemical arts. We are already supplying apparatus for the production of carborundum and calcium carbide, the reduction of gold and silver ores, the refinement of copper, the reduction of aluminum and the manufacture of bleaching powder, etc. The electric "smelting furnace" is rapidly being introduced, and will require large amounts of power.

It has not been necessary to borrow money, nor has the company's credit been used during the year either by issuing notes, endorsing customers' paper for discount or lending its name in any way to allied companies or others. The average cash balance during the year has been \$578,000, and all purchases during the year have been paid for in cash.

Electrical Three-Phase Current.—According to the statistics of central stations in Germany for the past year, it appears that the output of central stations in which the three-phase current is used, is greater than that of all the stations in which the single-phase alternating current is used.

Horse-Power of a Lightning Stroke.—At Klausthal, in Germany, according to *Machinery*, a lightning stroke struck the wooden post of a house and fused two nails four millimeters thick. Messrs. Siemens & Halske, of Berlin, afterward carried on a series of experiments to ascertain the force required to melt this quantity of iron. Assuming one second as the time standard, it required a current of 200 amperes and 20,000 volts, representing 7,000 H. P. Assuming that the lightning occupied one-tenth of a second to fuse the two nails, the horse-power required would be 70,000.

which loosens up several thousand yards. The gravel and boulders are hoisted by the derricks, the gravel being dumped into the sluices lined with several hundred feet of Hungarian and slat riffles. The first riffles are cleaned up every night and all of them once a week. The mining is carried on eight months of each year, and when in operation are worked day and night. This year the company will work 150 men and expect to mine about 100,000 yards. Two of the largest and finest nuggets ever found in Oregon were taken out of this property last summer. They were sent to San Francisco for exhibition purposes. Mr. James Main, of Portland, Ore., is the manager of the mine. The accompanying picture shows development of mine up to middle of last summer.

New Miner's Lamp.—A new portable electric lamp has appeared on the market which may find use in mining work, although designed primarily for carriage or bicycle use. The current is obtained from a small primary battery which is a part of the lamp itself, and recharging is accomplished cheaply and readily, so it is claimed. Two sizes of lamps are made by the Eclipse Electric Lamp Company, of Buffalo, N. Y., especially intended for general portable use, weighing 26 oz.

Italian Imports and Exports.—The mineral imports and exports of Italy for the year 1895 are reported by the *Rassegna Mineraria* as follows, the values being reduced to our currency at the rate of 5 lire to \$1:

	Imports.	Exports.	Excess Imp.
Metals and Minerals.....	\$27,797,320	\$5,232,315	\$22,564,975
Stone, cros, clay, etc.....	21,721,003	9,563,536	12,157,467
Total	\$49,518,323	\$14,795,851	\$34,722,442

The imports of gold and silver for the year (not included in the table) were \$1,458,680, and the exports \$4,260,420, showing an excess of exports amounting to \$2,801,740.

ELECTRICITY FOR MINE PUMPING.

Written for the Engineering and Mining Journal by Wm. Baxter, Jr.

Mine pumping, even under the most favorable conditions, is an expensive operation, and in many cases when the depth is great, and the flow of water excessive, it forms a very considerable portion of the total cost of extracting the ore. In many parts of Mexico and South America, where fuel is scarce, and the cost of transportation so great as to make steam power about as expensive as mules, mines yielding a fair grade of ore are rendered unprofitable on account of the cost of draining them, and in some cases they have been abandoned for this reason only. But there are few cases where the amount expended for pumping is so small as to be a matter of secondary consideration, therefore any improvements that will tend to reduce this item will be of undoubted value in almost every case.

Of all the methods used so far, the Cornish pump is one of the most economical, but it requires an elaborate and expensive plant, and cannot be installed in a short space of time, therefore it is seldom used at the commencement of operations. It is only after a mine has been in successful operation for some time, and has been opened up enough to mine a profitable yield for a long period, that such an elaborate installation is deemed advisable.

For new work, when the future is still a matter of uncertainty, cheaper and more easily utilized systems are desired. The ordinary steam pump will answer very well in such cases, but it is comparatively inefficient and expensive in operation on account of the great condensation in the pipes if they are uncovered, which should never be the case, and at the same time the cost of repairs are high. These, however, are not the only objectionable features, and in some cases not the most important. The increase of temperature in the mine due to the steam is very objectionable and when the ventilation is poor may become almost intolerable. This objection can be removed by using compressed air, and if this is heated so as to increase the expansive force, the efficiency will be much higher. There is another advantage to be derived from the use of compressed air, and that is that it affords a good means of ventilation. The lack of flexibility of both steam and compressed air is about equal, and so perhaps is the cost of maintenance. Both have been used in the past, and are still being used, and perhaps will not be discarded entirely for many years to come; but that they are far from perfect will be admitted by all who have had practical experience in this line. As the objectionable features of steam and compressed air due to the fact that the pump and the driving power are separated by a considerable distance, and have to be connected by a line of piping which is expensive to install and keep in proper order, and very troublesome, it naturally follows that if something better in the way of a transmission system can be used, the objections will be removed. Electricity undoubtedly furnishes such a system; with it the rigid line of piping can be replaced by a small and very flexible wire cable that can be located wherever it will be the most out of the way. It matters little whether it runs in straight lines or is curved in any direction. In putting it up it may be bent around as many curves as may be found necessary without any material increase in the cost of installation, and without any fear that this increase in number of bends will result in greater annoyance and expense in the future. But such is not the case with a line of piping; it must run as straight as possible in order to avoid loss of pressure by unnecessary bends. Means must be provided to prevent leakage at the joints or actual breaking by expansion and contraction. If all these points are not properly looked after, there will be constant trouble and expense in the future. With electric cables all that is required is that they be properly insulated, and be placed as far out of the way as possible.

If they should be struck at any time by falling timbers or rock, the chances of their being seriously injured would be small, for even if they were torn from their fastenings no harm worthy of mention would be done, unless they were actually torn asunder, and even then the damage could soon be repaired, and at slight expense. But under such conditions a line of piping would not fare as well. The damage done would probably be serious, and might require several days to repair.

From these considerations, it is evident that from a mechanical standpoint alone, it would be more desirable to use electricity, even if it could show no other advantages. It is, however, a well-demonstrated fact that energy can be transmitted by electricity at a higher efficiency than by any other means, and at a much lower cost for the transmission system. The loss in transmitting electric energy for a station anywhere near the mouth of the mine, to the pump below could be kept within 10% without making any unreasonable outlay in conducting cables, and, in fact, even if the loss were reduced to 5%, the cost of wire will be lower than that of a pipe system, such as would be required to do the same amount of work by either steam or compressed air.

If, then, the electric system can be installed at a lower cost, and can be kept in repair with less expense and trouble, and is more economical in its operation, it must be the most advisable one to use, unless the apparatus is so imperfect as to be impracticable. That it is not imperfect to the point of impracticability is demonstrated by the fact that a large number of pumping plants are in use, not only for mining purposes but in many other industries, where they are brought into competition with steam under the most favorable conditions for the latter. Shortly after electric motors first came into use they were applied to pumping purposes. In the first attempts of this kind an ordinary power pump (such as is used in factories driven by a belt from the line shaft) was used. This was driven from a shaft to which the motor was belted, the object of the shaft being to reduce the speed. In some cases, when the motor ran at a very high velocity, it was found necessary to use two shafts to obtain the required reduction in speed. After a time the pumpmakers saw that the motor had come into the field to stay, and then they concluded to so modify their apparatus as to obviate the use of intermediate shafts. With this object in view, they constructed pumps with a bed large enough to carry a train of gearing with a pulley on the first shaft of such diameter that it could be belted direct to the motor without running the pump at too high a velocity. The next step was to substitute a gear wheel for the pulley and place a pinion on the end of the motor shaft, and extend the bed of

the pump so as to fasten the motor upon it in such a position that the pinion would mesh into the gear wheel.

When this stage was reached, the combined machine became what might properly be called an electric pump. It may not have been as perfect in its mechanical features as might be desired, but it was a self-contained machine, capable of operating without any external aid, and as such was a complete pumping machine.

In point of efficiency, it is doubtful whether such a combination is superior to the first efforts, when belts were used, inasmuch as the energy absorbed by the friction of either arrangement in transmitting the power of the motor to the pump cannot be very far from the same percentage in both cases. But it was not for the purpose of increasing the efficiency that these improvements were made, the object was to develop a more mechanical and durable combination, and also to secure compactness and simplicity. In a machine of any kind the durability, as well as the reliability of action can be increased by reducing the number of moving parts and wearing surfaces. But it is evident, however, that the mere combination on one bed of a motor and a pump, both of the ordinary construction, will not accomplish much in the way of reducing these moving parts or wearing surfaces. A pump is by nature a slow running machine, and the slower it runs the better it will work. On the other hand, an electric motor as ordinarily constructed is a high speed machine, therefore even if the two are brought together on one bed plate, the motion of the latter cannot be communicated to the former without the intervention of a considerable amount of gearing in order to obtain the necessary difference in velocity. But although a pump is a slow running machine, its speed can be somewhat increased without impairing its efficiency, if the water passages and valves are enlarged and the bends made as few and as easy as possible. The motor can also be made to run at a lower speed, although materially increasing its cost, by enlarging the armature somewhat and increasing the number of poles. It is possible, therefore, to bring the velocities nearer together by a gain at both ends; that is, the pump can be modified so as to run a little faster without any appreciable loss in efficiency; and the motor can be made to run slower. If a machine is made in which the difference in the velocities is reduced as much as is possible within practicable limits, the intermediate gearing may be dispensed with. For example, a pump having, say 10 in. stroke, could run at 70 revolutions per minute by properly proportioning the water passages, valves, etc. A motor of sufficient capacity to operate it could be made to run at 350 or 400 revolutions. This is a difference of from five or six to one, and therefore a pinion on the motor shaft could mesh with a gear on the pump shaft, and all intermediate shafts and gears would be done away with.

The principal obstacle that stands in the way of obtaining such results in every case is that the pump manufacturers appear to believe that the proper course for them to pursue, is to make a pump that can be operated equally well by any make of motor, so as not to antagonize any one by making a pump specially adapted to a certain type of motor. On the other hand, the motor manufacturers make machines with a view to their being used with any kind of pump, so as to not incur the ill-will of any of the pump makers.

This condition of things will not last forever; after a while some pump manufacturer or some motor manufacturer will conclude to take the bull by the horns and make the whole machine, then both parts will be made so as to be adapted to and help each other; as a result a machine will be produced that will be as complete and compact in its way as the steam pump is. What kind of a steam pump would we have if the pump makers made the pump end, and the steam end was furnished by any one of twenty or thirty steam engine builders, each one making a design to suit himself? Yet such is the condition of affairs with regard to the electric pump to-day, and it is such because those engaged in the pump, as well as the electric motor industries appear to believe that trade ethics and policy require that they should keep out of each others field.

Efficiency of Electric Transmission of Power.—In the Zufikon-Bremgarten transmission plant in Switzerland, which transmits 1,300 H.P. distances from $4\frac{1}{2}$ to $13\frac{1}{2}$ miles the following efficiencies have been obtained, generators including exciters 94%, longest lines 85%, transformers 97%, making a total of 77%.

The Niagara Plant at New York.—It is intended to exhibit at the coming Electrical Exposition in this city in May a complete model of the Niagara River, the power house, the tower, and the long discharge tunnel. The model is owned by Hon. Peter A. Porter, of Niagara, and will have a place of honor in the main floor, where from the universal interest which the Niagara Falls electric transmission plant has attracted, it will be a center of attraction. To make the exhibit of still greater interest it is intended to operate the model by a small motor, taking current from the Niagara plant itself. To accomplish this, General Eckert, President of the Western Union Co., has agreed to allow the use of a metallic copper circuit for an hour or two every evening.

Electricity Direct from Coal.—Two processes have recently been described by which electricity can be produced direct from combustion of coal. One process is that of Dr. W. W. Jacques, of New England, and his process may be briefly stated as consisting in blowing air through a bath of fused caustic soda, having a carbon anode and iron cathode whereby he obtains a "very large" current, but the voltage "is low." So many details are missing in the published descriptions that it is hardly possible to attempt a discussion of the merits of the discovery.

Another worker in something the same line is Dr. Alfred Coehn, of Germany, who takes as a basis for his work the principle that a method for obtaining electrical energy direct from the oxidation of carbon may reasonably be sought, first, by determining the conditions under which carbon can be attacked in an electrolyte by the aid of an external circuit, and thereby adapting these conditions for the production of a current.

By experiment Dr. Coehn has reached the following conclusions:

1. It is possible to prepare a solution of carbon by electrolytic means.
2. Carbon can be separated from such a solution at the cathode.
3. A cell may be made having carbon for its soluble electrode.

HYDRAULIC RAMS.

Written for the Engineering and Mining Journal by J. Richards.

In some carefully conducted experiments recently made with a hydraulic ram at the laboratory of the Massachusetts Institute of Technology, in Boston, the results showed an efficiency of a little more than 50%, confirming the common estimate placed on these implements by engineers and others who have practically tested their capacity.

The experiments were made with a "Douglas hydraulic ram," which is typical of what may be called the merchant type as made by several manufacturing firms in this country.

They are extremely cheap, but, notwithstanding, operate well at low heads, perhaps as well as the more expensive and complete rams of the impulse type made in France, England and Germany. I say impulse type because they are quite distinct in construction and in their mode of operation from the more pretentious apparatus of Pearsall in England, or the "Sommeiler" rams employed for air-compressing at the construction of the Mount Cenis Tunnel.

They are, as a "manufacture," reduced to the lowest possible limit in proportions, made alike to a common standard extremely cheap, and, as remarked, are simple and useful up to certain heads or pressures beyond which they fail.

It is not contended that the rams of commerce should be heavier or stronger, because filling the required conditions in a great majority of cases, but there should be two classes made, one for heads up to a hundred feet, and another for heads up to a thousand feet.

These experiments were unfortunately not carried out to such conclusions as would settle the relative merits of the different systems, or methods, and so far as known there has been no knowledge of them in this country outside the works of Messrs. W. T. Garratt & Co., San Francisco, where the experiments were made.

Some account of the matter was given in a paper by the writer, read before the Institution of Mechanical Engineers, in London, 1888, but this was confined to the society's publications. The present purpose is to give an outline of these experiments, and to point out how difficult it is, or indeed impossible, for a manufacturing firm or company to make such experiments. The facilities are wanting and there is no incentive beyond trade reasons to carry on such work, neither is there any obligation in the matter, because any new feature or fact developed, unless patented, is at once appropriated by others, if it have merit or value.

The experiments it was found led into a wide field, a separate branch of hydraulic apparatus, of much importance, but with limitations of a kind not at first suspected, and to be explained at the end of this article. As before remarked, the work was instigated by that of Mr. Pearsall in England, who had erected several of his hydraulic engines, prepared diagrams of the pressures and determined the efficiency, which was higher than had ever been obtained with the abrupt or shock rams of the Montgolfier type.

His methods have been presented through the *Engineering and Mining Journal*, also in papers on the subject before engineering societies, and are perhaps known to most readers, but it may be explained that the main valves were opened and closed by cams operated by a pneumatic engine

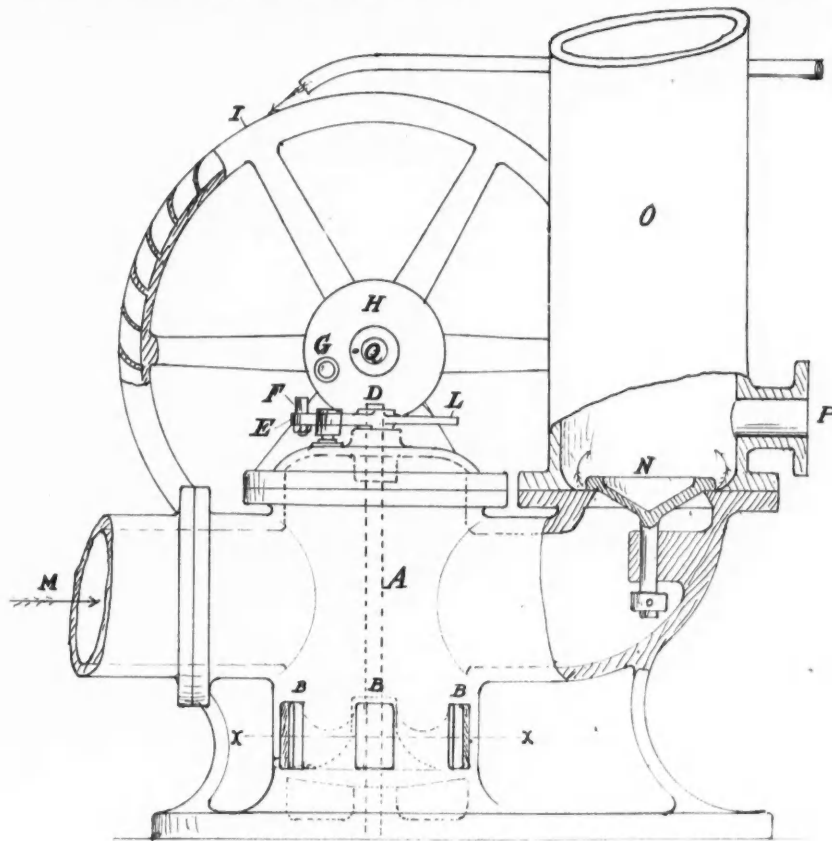


Fig 1

ROTARY REGISTER VALVE.

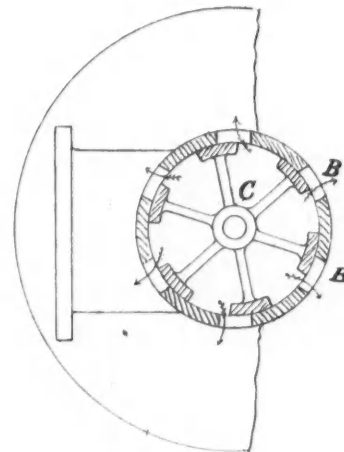


Fig 2

SEGMENTAL VANES.

Hydraulic rams, like some other kinds of hydraulic apparatus, have the quality of obscurity in their action, and refuse to conform to computed results; the phenomena of what is called "regurgitation" for example, the reactive or opening action, when a ram is working almost independent of the weight of the valve, or within a certain limit of weight.

In works on natural philosophy describing the Montgolfier rams, we are told that the weight of the valve is enough to cause it to fall or open against the static head and that it is closed by the friction or impact of the rushing water. This seems a plausible explanation, but any one with experience knows that no such conditions exist in working. This can be seen by examining any common hydraulic ram, when it will be found that the valve will not balance one-fourth of the heads at which the rams are adapted to operate, and no provision is made to increase or diminish the weight, but only to lengthen and shorten the range or lift of the valves.

The "regurgitation" or almost forcible opening of the valve is evidently the result of an elastic force, due to reaction, and it is to be regretted that this matter did not receive investigation at the Boston School of Technology, where there are facilities for tracing out the various forces set up in ram action.

After the Pearsall rams had appeared in England about 10 years ago, and some had been sent to this country, a series of experiments were carried out in San Francisco to determine the result (1) of positively opening and closing the valves by independent means, a small water-wheel being used for the purpose; (2) closing the valves against an elastic cushion of air; (3) closing the valves by impingement and reaction of the escaping water; (4) closing the valves by direct reaction.

driven by air entrapped at each stroke of the ram, a source of power for this purpose that seems complicated and unnecessary when there was water pressure available for this function. The invention as a whole is, however, one of great ingenuity, displaying a boldness in research and a reliance on computed results not often met with at this day, in hydraulic apparatus at least.

The engines have not been heard of much for some years past, and no doubt have met with limitations of a commercial nature.

Referring now to the experiments at San Francisco one of the machines made corresponded in the same respects to the Pearsall engines, but with the difference that a "rotary register" valve was employed and it was arranged to close automatically. This apparatus is explained by the diagram Fig. 1, not drawn to a scale, but to show the method of construction and action.

The main chamber A is cylindrical, provided with escape passages B around the base. Within the chamber A is a register valve C, with segmental vanes to cover and uncover the escape parts B, as seen in the section Fig. 2, taken on the x - x.

This valve is arranged to be turned about 30° by the spindle D and the cross-bar E, the latter being for the purpose of illustration placed out of its true position in the drawing. The pin F is engaged by another pin G in the disc H driven by the water wheel I.

At each revolution of the water wheel I, the pins F and G engage and quickly open the valve C, which is turned so as to permit a free flow through the passages B. When the pins G and F disengage, the valve C shuts almost instantly for some cause not quite plain. At first a coil spring was provided to shut the valve C, but this spring was not required.

A buffer pin J covered with India rubber formed a stop for the bar L when the valve closed. This constituted the valve mechanism of the machine.

Water entered at M and, on being checked by closing the valve C, went on and up through the check valve N into the air vessel O and out through the discharge way P.

This formed a very simple apparatus at a moderate cost and it is believed that if properly proportioned will give a good efficiency under low heads.

The pin G being adjustable radially from the center at Q, the amount of water discharged at B was easily regulated, also the speed of the water wheel, and this could be controlled by the amount of water applied. The ram made had an inlet or driving pipe 8 in. diameter and the cylinder A was 16 in. diameter.

Referring to Fig. 3, this diagram shows a modification of the cushioned or noiseless rams of which a large number have been made. The valve C is arranged to pass freely through its seat A, having a bottom spindle D to guide it.

When the valve C dropped to the position shown, the water rushed out around the valve and followed the curves beneath the piston F causing by impingement and reaction a strong upward or closing force on the valve which would rise suddenly until arrested by the piston F entering the dash pot H and cushioning on the entrapped air.

The vent hole at I, or a cock at that point, permitting the air to re-enter and the piston F to descend again opening the valve C. The check valve, air vessel and other details will be understood without explanation. It will be noticed, however, that in the present and other examples, the check valves are of large area. This was to secure a short closing range and also to diminish the resistance of contraction.

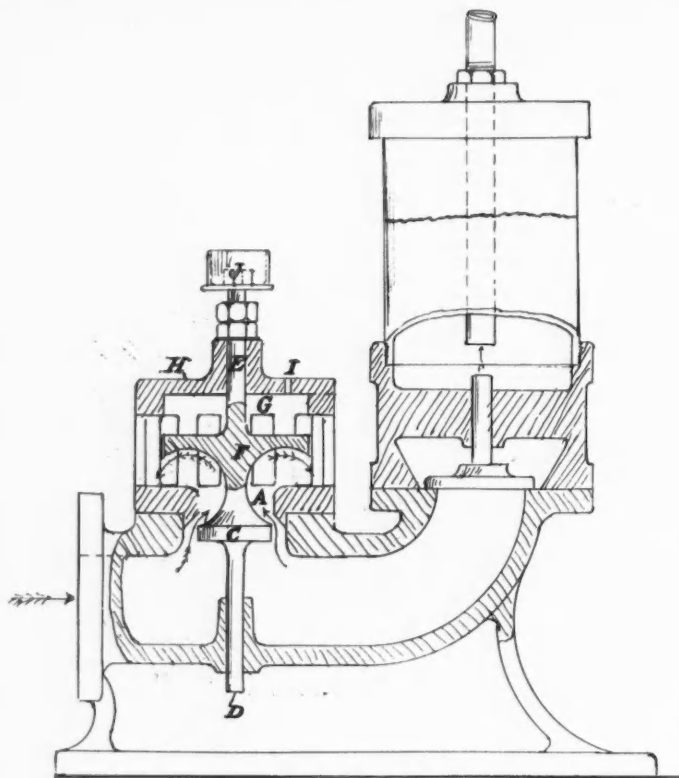


Fig. 3
CUSHIONED RAM.

A weight J was applied on top of the stem E, made hollow in the form of a cup and loaded to the required point so as to produce regular beats or intervals of proper length, and in this contrivance was discovered some strange facts respecting the effect of continuous blows on hard metal.

The closing of the valve was sudden enough to cause pieces of iron or steel in the cup to rebound and produce a kind of jingle that was not disagreeable, and was an audible measure of the beats, but not even tempered steel would last long.

The pieces wore away rapidly, assuming a spherical shape and had finally to be fastened to preserve them. The rebound seemed to be no more than enough to lift the pieces a quarter of an inch or so, but the wear went on and was an exemplification of the old adage of dropping water wearing a stone.

Fig. 4 is a section through a ram having a valve nearly balanced, the closing action being derived mainly from reaction under the shield A at the top.

The valve consisted of two pistons B and C, water escaping above and below. The top valve B passed freely through its seat, as did all the valves experimented with, and was a little larger than the one C which moved in a perforated shell D at the bottom. The difference in the area of the valves was made so as to balance the gravity of the moving elements under an average driving head of 10 ft. or so, a weight E, being added for an adjustment if the head was more or less.

The valve in this case was placed behind the discharge way and air vessel F, for reasons that cannot now be recalled.

The action of these rams was apparently perfect. The closing action was not abrupt and without noise, a washer of leather being placed at G. There arose, however, two impediments in use, one was obstruction of the bottom valve in the shell D from sand or debris in the water, and the other was the unaccountable pranks the valve would perform. It would

go on in an orderly manner for half an hour and then double its beats, rattle and stop. Sometimes after some of these erratic changes, it would again assume normal working and proceed in an orderly manner. The character of the ram was well defined one day by an observer who said "if that one don't succeed it will be a shame. It is the only sensible ram I have ever seen." It did not succeed, however. It had too many pranks in its operation to be trusted out in the country, and was "shelved" for the time.

I am of the opinion that the shell D should extend up as far as possible and be made of brass, smooth inside, and the lower piston C be made of leather, but I risk no more than an opinion in the matter, because that is as far as any careful person should go in respect to the action of these peculiar implements.

Fig. 5 shows another form of rams experimented with. The main frame A, air vessel B and inlet C are analogous to the other rams, but the valve D operated upon a different method. It was open at both ends so as to be balanced in respect to water pressure and moved freely in the sleeve E at the bottom and in the chamber F at the top.

The valve is shown in its open position, the ports G being of area collectively nearly as large as the bore of the valve at J.

A light spring, I, at the top compensated the valve when open, because the weight of the valve and stem were required to cause it to fall and open.

At the bottom, the valve was contracted at J to an extent that produced a forcible discharge and consequently reactive thrust upward, so that when a certain velocity of flow was reached the valve would shoot upward and the apertures G enter the chamber F suddenly arresting the driving flow, thus producing the required impulse and working thrust.

There were several mistakes in this ram which if corrected might have

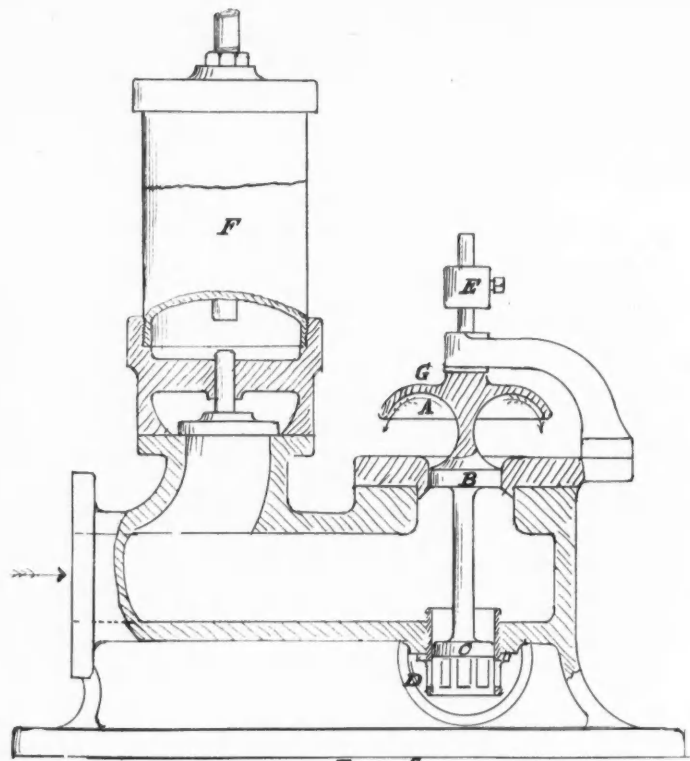


Fig. 4
BALANCED VALVE.

led to some interesting results, but the purpose here is to describe the experiments as made, the diagram following as nearly as possible the actual proportions and construction.

The upper section of the valve should be increased in diameter so the ports G can be made shorter and with more area, so as to intensify and not retard the discharge at J; it is possible also that an elastic buffer of some kind for the upward or closing stroke would increase the speed or frequency of the pulsations, which were too slow with the arrangement shown.

Fig. 6 is a true geometrical drawing of a cushioned ram as now made by Messrs. W. T. Garratt & Co., drawn to scale and representing a ram with an inlet pipe 8 inches diameter.

It will be noticed that this ram is a combination of features seen in Figs. 3 and 4, the check valve and air vessel being omitted.

Seeing these rams at work one feels the force of the remark, that it is a shame that apparatus so natural in its motions, without shock or wear, should lack some function required for high pressures or heads. There is no direct metallic contact and the conditions of operation are seemingly more perfect than in pumping, but there is some wanting elements for high heads, some lack that might be discovered and supplied by carefully conducted experiments.

The subject of hydraulic rams is one that might well engage the attention of those prepared to carry on such experiments, at some of the technological schools, for example, where there are facilities and also some obligation in the matter, and it is with such a view that this article has been prepared.

As remarked at the beginning, no private works are fitted for such experiments as are required to resolve the forces and phenomena of rams into intelligible form and at the same time determine various unsettled features of design and construction.

The limit of capacity mentioned at the outstart can be best explained by some circumstances that occurred in 1885.

The writer was called upon to consider and devise means of raising a portion of the Jordan River at Salt Lake, Utah, to a higher level than the old canals, by means of the waste water at the dam, about 20 miles from Salt Lake City, and three miles from the foot of Lake Utah.

The water available, with a fall of 35 ft., was sufficient for the work on the basis of an efficiency of 55% for the machinery, and the preliminary plans were made out for pressure or closed turbine wheels and compounded centrifugal pumps. This was about the time of Mr. Pearsall's experiments in England with large rams, and before leaving San Francisco an arrangement was made with Mr. Luther Wagner, C. E., of that city, to carry out the necessary computations involved in a battery of hydraulic rams for this work, amounting to about 200 H. P.

About the time of completing this work the following laconic message was received from Mr. Wagner: "Too much pipe work. Mean flow is absurd."

Here is the whole secret of large hydraulic rams, that, like all other apparatus for raising and impelling water, must conform to the rule that the cost of all such apparatus is inversely as the velocity of flow through the impelling agent, a proposition in hydraulics of more importance to a practical engineer than a whole treatise dealing with forces.

QUICKSILVER IN NEW SOUTH WALES.

A report has been forwarded to the Minister for Mines from Mr. Joseph E. Carne, F. G. S., Geological Surveyor, with regard to his inspection of the recent discovery of cinnabar on Yulgilbar station, Clarence River. He says the deposit occurs about five chains from the southwest corner of portion 15, parish Ewingar, county Drake, and about three-quarters of a mile west of the Clarence River. The nearest settlement is Lionsville, distant about seven miles in a southwest direction. The discovery was made by Laurence Fox about 12 months ago through picking up a loose surface specimen of the matrix containing cinnabar. Actual prospecting began in February last. A previous discovery was recorded in this district in 1891 at Horseshoe Bend, about 16 miles lower down the course of

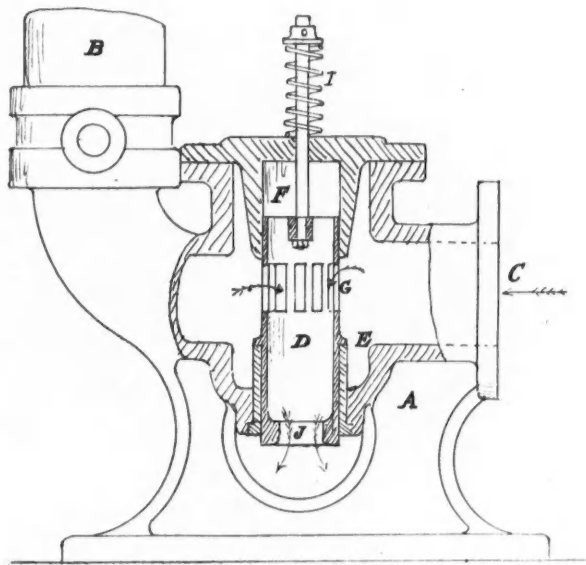


Fig 5

WATER BALANCED SPRING COMPENSATED VALVE.

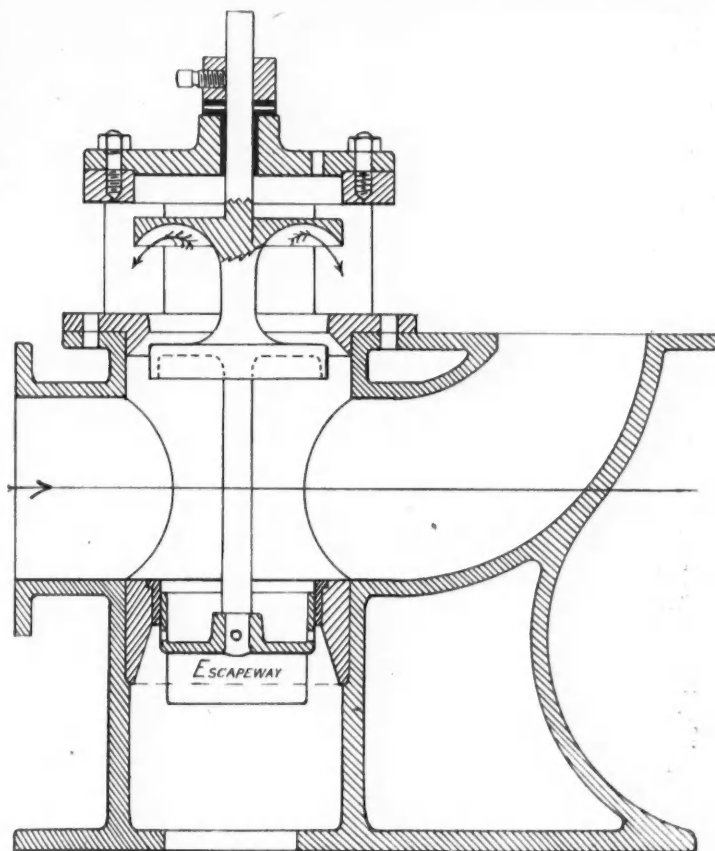


Fig 6

IMPROVED CUSHIONED RAM.

the river, and about three and a half miles southeast of Lionsville. This site has been surveyed as M. L. 5 of 40 acres, in the parish of Carnham. Mr. David reported on this deposit about March of the same year, and recommended aid from the prospecting vote for proving it. The occurrence is briefly described as "a dyke 12 ft. wide, of felspathic rock allied to serpentine, containing cinnabar distributed irregularly in spots and minute veins. This dyke has intersected the granite of the district at this locality, and is likely to be permanent to a considerable depth." The present report is limited to a brief description of the country rocks; nature and apparent mode of occurrence of the mercury ore; present and suggested future prospecting. To attempt an estimate of the richness of the deposit or of the quantity of ore likely to be available at the present initial stage of exploration would be unfair, even if not altogether impossible. Sufficient data, however, is adduced to justify the opinion that the prospects are decidedly encouraging, and far superior to those afforded by any previous discovery recorded in the colony. Mr. Carne says that he is of opinion from the mode of occurrence that the cinnabar is likely to continue to great depths, but whether in sufficiently concentrated form to pay for extraction, prospecting alone can prove. The conditions of occurrence differ from those of the very few paying mercury mines of the world; yet the prospect of developing a paying deposit of moderate extent is decidedly encouraging, and certainly superior to any yet obtained in the colony. As the existence of a payable mercury mine in Australia would be of first importance in such a gold-bearing country, he is of opinion that a share of the cost of proving comes well within the scope of the prospecting vote.

THE RAND COAL SUPPLY.

In the course of an article on the scarcity of the coal supply on the Rand, the local *Star* there says: For months past the quantity of coal conveyed by the railway has only been equal to the day-to-day requirements, and there has not been any possibility of forming reserves. Hence, now, with the exception of one or two mines, for which coal was bought up at a very high figure, no mine has sufficient supply, and few have more than enough for 48 hours. The reason why mines were unable to form reserves is generally attributed to the lack of cars. The output of coal can be quickly increased if the N. Z. A. S. M. will furnish rolling-stock to transport the coal to consumers, but in the absence of such facilities only the quantity which can be taken away is hauled out of the mine. Even in cases where a daily supply is contracted for there has not been for months anything beyond bare requirements delivered. Take the Jumpers as an instance. On more than one occasion the mine has been reduced literally to its last bag of coal before receiving further supplies. Not only at this mine, but at many others, orders for more coal have not been executed if there has been a few days' supply in stock. Recently, the Heriot had only a day and a half's supply for the mill, and in order to make it last as long as possible the compressor has been stopped. At the Crown Reef there has seldom been more than a few hours' supply in the bunkers. The Geld Deep was fortunate to receive a train load of coal the other day, and, with wagons bringing further supplies from Elandsfontein, have enough now to last a week. At the Geld Estate the mill could not be started because coal had

not been received in anything like reasonable quantities. The circumstances of these mines are fairly representative of the state of things on the East Rand, and we believe that on the West Rand matters are a trifle worse, and without considerable additions to the rolling stock in the near future, the supply will always be a source of anxiety. The demand for fuel is an increasing one, and it will continue increasing for years to come. The N. Z. A. S. M. officials cannot be ignorant of this fact, and it is their plain duty to take steps to cope with the increased traffic. The primitive method of unloading is one very great hindrance to effectively coping with a larger traffic, and the sooner it is abandoned in favor of modern methods the better. We must have such improvements that no coal famine such as we have had can possibly occur again.

Electric Cranes in France.—A large new electric crane has just been erected on the quay at Boulogne for the purpose of transferring luggage from the trains to the steamers.

Submarine Boat Pumping.—According to the *Times*, London, a new submarine boat has been built by M. Goubet, in which the pumps for admitting water to the reservoir are worked automatically by an electric motor, the motion of which is determined by a manometer, thus enabling the desired depth to be maintained. A like arrangement is employed to secure the longitudinal trim of the boat. The craft is propelled by means of a screw driven by a dynamo.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

RESPONSIBILITY FOR INJURIES IN COKE YARD.—Where a party was employed in a coke yard, and was directed to clean the sprocket wheel of a slack elevator by the foreman of the company, it being the duty of the foreman to control, employ and discharge such men, and to look after and keep the machinery in repair and running order, and such party was injured on account of the negligence of this foreman in failing to delay the starting of the machinery, and also in failing to detach the chain by which the elevator was operated, the Appellate Court of Indiana says that such employee cannot recover for the injury, unless he shows that the foreman's negligence was the omission of a duty owing by the company to the employee, the discharge of which duty was intrusted by the company to the foreman.—New Pittsburg Coal & Coke Company vs. Peterson (43 Northeastern Reporter, 270).

HYDRAULIC MINING.—An injunction, says the Supreme Court of California, will not be granted against the use by a mining company of a ditch, across the land of another, for carrying detritus from an hydraulic mine, on the ground of an improper and injurious exercise of the easement, where it appears that the water in the ditch caused a slight caving in of the land of the complainant, but did not cause or threaten any appreciable damage. Also, that in an action to abate, as a nuisance, such ditch, evidence of a custom of using such ditch in all hydraulic mining is admissible. And further that, under the laws of the United States, a patentee of mining land, over which an adjoining owner had for several years, by local custom, and from necessity, maintained such a ditch to a river, took subject to the easement, or right of the mining company to use the ditch for such purposes across the patented lanes of the other. Jacob vs. Day (44 Pacific Reporter, 243).

MINING CLAIM: FAILURE TO DO ASSESSMENT WORK, ETC.—The owner of a placer mineral claim does not forfeit his right to same, so as to render it subject to relocation, by a failure to perform the required annual assessment work during a time when adverse possession is held by another, when he commences an action for its recovery within the statutory time. Where the owner of such a claim, which was erroneously included in a sale under a decree of court, moved his effects from the claim, and absented himself for two years, allowing the purchasers to work it without objection, while he knew that their title was invalid, and intending to claim it only in case their development rendered it profitable to do so, his acts will constitute an abandonment.—Trevaskis vs. Peard (Supreme Court, California), 44 Pacific Reporter, 246.

COAL LANDS: AGREEMENT TO SELL, ADVERSE POSSESSION, ETC.—The effect of the record of articles of agreement, showing the purchase of the coal on certain land from the equitable owner, as notice to all the world, is not affected by the fact that the legal owner of the premises subsequently gives to the former vendor a deed vesting in him a complete title to the premises. The possession of the surface of the land is in no way adverse to the right of possession of coal beneath the surface by another under an agreement for the sale of such coal. And the purchaser of coal beneath the surface is not bound to take actual possession in order to preserve his title to it. A recorded contract for the sale of a tract of land, and also of coal beneath the surface of an adjoining tract, by the equitable owner of such properties, is not merged in a subsequent deed of the latter tract by the legal owner to the purchaser.—Lulay vs. Barnes (Supreme Court, Pennsylvania), 34 Atlantic Reporter, 52.

DUTY ON SPECIAL TUNGSTEN ALLOYS.—In this case a quantity of Guy's special metallic tungsten alloy appraised at over \$1,000 per ton was assessed by the Collector of the Port of New York at 35%, under paragraph 177 of the law, but was claimed by the importers to be free or else to be dutiable at a lower rate under other provisions of the tariff law. The Board found that the alloy is a manufacture of tungsten metal and affirmed the Collector's decision.—Benjamin Artha and Illingsworth Steel Company vs. Collector of the Port of New York, Board of United States General Appraisers.

Sciagraphs.—The name "sciagraph" seems to meet with general approval as an appellation for the pictures obtained by Roentgen rays. The number and variety of names suggested by scientists the world over would make the fortune of some of the rival dictionary publishers.

Electric Power in a Copper Mine.—A description of the application of electricity at the Osarusawa mine is given in the *Elec. Friend* (Japan). It is used for hoisting 1,680 ft., the voltage being 500; the pump elevates 190 ft.; wood is used as fuel, but water power will probably be substituted.

Long Distance Power Transmission.—A good idea may be gathered of the extent to which transmission of power by electricity is gaining ground in this country, from the statement that in the long distance plants installed by the General Electric Company during 1895, over 1,200 miles of copper wire for transmission purposes alone were used, amounting practically to 1,200,000 lbs. of copper.

Iron Production in Belgium.—The output of the Belgium blast furnaces in February was 63,510 metric tons of pig iron; a decrease of 4,290 tons as compared with February, 1895. For the two months ending February 29th the total production was 133,165 metric tons of pig iron which is 12,135 tons less than for the corresponding period last year, although there was one additional day this year.

Hydraulic Power in Switzerland.—Swiss engineers and manufacturers seem to be inclined to take full advantage of the water-powers which are so numerous in that country, owing to its geographical conformation. Many of these have not hitherto been used, owing to their inaccessible locations, but the employment of electric transmission has now made them commercially available. According to *L'Industrie*, the water-powers now in use furnish about 130,000 H. P., while it is thought that from 110,000 to

125,000 additional horse-power may be added. Besides a number of projects which are now under discussion, work is actually in progress on some large installations. These include electric plants actuated by water-power at Ruppoldingen, where 2,500 H. P. is to be obtained; at Aarau, where 1,000 H. P. is being added to an old establishment; at Rheinfelden, where no less than 15,500 H. P. will be utilized; and others at Lautenburg, Bursfelden and Yverdon.

Putting a New Process for Producing Chlorine Gas.—The manufacture of bleaching powder has, it is stated by *Industries*, been brought to a practical basis by Messrs. Scott & Vogt, of the Carntyne Chemical Works, Glasgow. The inventors bring gaseous hydrochloric acid in contact with gaseous nitric acid in a specially designed and constructed apparatus, through which a constant stream of heated sulphuric acid flows. The sulphuric acid absorbs all the water formed by the interaction of the two gases, and is concentrated to be used over again. The gaseous hydrochloric and nitric acids form, by their interaction, chlorine and a compound of chlorine and nitrous oxide, which are carried forward to a series of towers, in which the nitric oxide and some hydrochloric acid are removed from the gases, and from which the chlorine in a pure state passes on, either to be absorbed by lime in the usual way, forming bleaching powder of high strength, or, it may be, condensed in suitable apparatus into liquid chlorine, for which, on account of its purity, it is stated to be specially suitable. The nitrous gas recovered in the towers is reconverted into nitric acid, and returns to begin the cycle of operations again. An apparatus for the recovery of the nitric acid has also been erected, and is said to work perfectly. By this process it is claimed that practically the whole of the chlorine in salt can be converted into bleaching powder, a result hitherto never attained.

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 APRIL 11TH, 1896.

- 558,190. **STAMP-MILL.** William A. Logue, Sunset, Mont. Filed May 27, 1895. Combination of a revoluble cylinder having a head at one end provided with a circular screen and with lateral, outwardly-extending, circular flanges arranged on opposite sides of the screen, a stationary core arranged within one of the flange means within the cylinder for reducing the ore to a comminuted state, and a stationary deflecting device comprising a shank connected to the stationary core and a blade arranged between the flanges and extending at right angles to the direction of movement of the cylinder.
- 558,213. **APPARATUS FOR SEPARATING AND CONCENTRATING.** Alfred Shedlock, Jersey City, N. J. Filed May 22, 1895. Combination of a vessel having a vertical passage or channel and chambers communicating therewith; a gate or valve mechanism located at a suitable distance below the top of the channel for effecting the collection of the different horizontal strata, or parts of the material into the different chambers, and an intermittently-acting feeding device at the upper part of the vertical channel for dropping the material therein intermittently in determined quantities.
- 558,264. **MINING MACHINE TRUCK.** Henry B. Dierdorff, Columbus, O., assignor to Joseph A. Jeffrey. Filed August 30th, 1895. Combination of a truck, a mining machine separable from the truck gearing mounted on the truck, and means for detachably connecting the said gearing to the gearing of the motor or engine of the mining machine, and sprocket chains for connecting the gearing on the truck with the truck wheels.
- 558,370. **PROCESS OF DESULPHURIZING BLAST FURNACE SLAG IN ITS MOLTEN STATE.** Alexander D. Ebers, Hoboken, N. J. Filed April 25th, 1895. The process consists in treating the slag in the ladles or receivers into which it is flushed, or while it runs into them, with reagents that cause the principal sulphurous impurities of the slag to segregate, said reagents consisting of, first: easily fusible substances of light specific gravity that can unite with the principal sulphurous impurities of the slag to form a scum, such as sodium sulphate or its equivalent; and second, of easily fusible hyaloid salts (salts of silicon or boron), such as sodium silicate or its equivalent, which by reason of uniting readily with the silicates of the slag cause the latter to undergo such thorough molecular rearrangements as to promote the formation of the scum.
- 558,384. **METHOD OF MAKING STEEL INGOTS OR OTHER CASTINGS.** William Hainsworth, West Seattle, Wash. Assignor to the Hainsworth Minimum Company, Seattle, Wash. Filed September 25th, 1894. The method consists in pouring the molten steel into a receiver or mold, having an interior capacity at least twice that of the ingot, and whose interior has been previously highly heated, cutting off all communication with the outside air and allowing the receiver to remain on its side for the occluded gases to escape, placing the receiver vertically with that end down which is opposite the one in which the ingot or casting is finally formed, and allowing it to remain in this position until just before the metal sets and then reversing the receiver and permitting the ingot to set therein.
- 558,460. **AMALGAMATOR.** William Robinson, Denver, Colo. Assignor of one-half to John E. Greenawalt, same place. Filed December 11th, 1891. Combination with a suitable casing, of an amalgamated plate supported therein, a screen or perforated plate supported above the amalgamated plate, and a rotatable dasher located between the amalgamated plate and the screen.

Great Britain.

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

WEEK ENDING MARCH 21ST, 1896.

- 4,004 of 1895. J. Maclear, London. Addition of Cyanuric acid or its compounds to cyanide solutions used in extracting gold.
- 4,543 of 1895. G. F. Wynne, Wrexham. Form of rock breaker consisting of a horizontal roller mounted eccentrically against a cylindrical crushing surface.
- 1,575 of 1896. Siemens & Halske, Berlin. Electrolytically depositing zinc by dissolving the zinc oxide or carbonate in neutral aluminum sulphate and electrolyzing, and recovering the basic sulphate thus formed.

WEEK ENDING MARCH 28TH.

- 4,388 of 1895. G. F. Wynne, Wrexham. Improvements in holders for rock drills.
- 4,660 of 1895. A. Hioras, Harby. Method of depositing a protective surface of iron on copper articles by electrolysis.
- 8,526 of 1895. P. Muschamp, Barnsley and S. Burridge, Sheffield. Coal washing plant consisting of an inclined rocking trough and a spiral conveyor which moves the coal upward against a downward current of water.

PERSONAL.

MR. OTTO ABELING has left Moscow, Idaho, for Libby, Mont.

DR. F. W. IHNE, consulting and examining mining engineer of Chicago, Ill., has been visiting in New York City this week.

MR. CHARLES RAHT, mining engineer and metallurgist, will remove his New York office to 56 and 58 Pine street, on May 1st.

F. N. GOVE, mining engineer, sailed for Nicaragua, Central America, on April 22d, to examine and report on gold mines for New York and European capitalists.

MR. A. W. FANGERMAN has resigned his position as superintendent of the Hale & Norcross Mining Company, on account of differences with the Comstock Miners' Union.

MR. WILLIAM VAN SLOOTEN, mining engineer and metallurgist of New York, will shortly leave for Ecuador, S. A., to represent the exploring syndicate with which he is connected.

MR. ROBERT E. BOORAEM, mining engineer, will sail for Europe at the end of this month, and will stay abroad for some time. He can be addressed in care of Brown, Shipley & Co., London, Eng.

MR. A. A. BOOTH, who has had charge of the construction work of the Seattle Placer Mining Company at Yreka, Cal., has resumed his old position as superintendent of the Port Townsend & Seattle Railroad.

MR. J. K. MACKENZIE, of the firm of Dickman & Mackenzie, Chicago, has just completed the examination of some iron properties near Negaunee, Mich., and in the Cascade Range, in the interest of Chicago parties.

MR. GEORGE E. HOGG, until recently superintendent of the Sutro Tunnel Company, has been appointed examining engineer to the Gold Mining Exchange in San Francisco. He recently visited Westpoint, Grass Valley and Nevada City, Cal., in the interest of the exchange.

MR. E. C. ENGELHARDT, chemist and metallurgist of Denver, Colo., has accepted an engagement with the Bullion Mining and Milling Company, of Duncan, Colo., where he can be addressed for the next six weeks. Mr. Engelhardt expects to make tests with the ores of that district at the company's mill, in order to determine the best means of extraction.

OBITUARY.

CAPTAIN J. C. SHEPARD, died at Butte, Mont., April 15th. He was one of the pioneers who went to the gold-fields of California in 1849.

CHARLES T. RAYNOLDS, a retired paint manufacturer, of New York, died in Bloomingdale Asylum, White Plains, April 20th. He leaves a large fortune.

CASPER EMMET died in Allegheny, Pa., on April 20th, aged 35 years. He was a partner in the coal firm of Hasley & Emmett, and was widely known and highly esteemed.

JONATHAN FLICKINGER died at Adamstown, Pa., on April 16, aged 71 years. He was engaged in gold mining in California for many years, and acquired a fortune. Subsequently he returned to Adamstown, his native place, and led a retired life for many years.

J. E. JONES died at San Francisco on April 10th, aged 56 years. He was born in Iowa and was a school teacher in his early manhood, but afterward followed mining in Colorado, Wyoming and Nevada. In 1863 he held the office of United States Deputy Internal Revenue Collector. In 1886 he was elected Surveyor General of Nevada. He was re-elected in 1890, serving until he took the office as governor in 1895.

JEAN BAPTISTE LEON SAY, the celebrated French statesman, died in Paris, April 21st, at the age of 70 years. His grandfather, Jean Baptiste Say, and his father, Horace Emile Say, were prominent in French politics and literature, and both were political economists. He followed the traditions of the family by devoting himself to the same science. He studied at the College Bourbon (now called the College Condorcet), and soon after completing his course there in 1848 made a visit to England with Bastiat to attend the peace congress. He formed the acquaintance of Cobden at that time. In the Revolution of 1848 young Say was enrolled in the National Guard, and took active part. Under the Empire he devoted himself principally to political economy and to the railroad, the Northern of France, of which he was a director for more than 40 years. In 1871 he was made Prefect of the Seine, and devoted himself to reorganizing the municipal departments of the Paris government on a uniform plan. He also prepared for a municipal loan, which was floated with success, and carried through a number of other important schemes. He resigned the prefecture in 1872 to accept the portfolio of Minister of Finance, and secured in this office in 1873 the

Rothschilds' guarantee of the war indemnity to be paid to Germany by France. He was again Finance Minister in 1874 and 1877, and secured the successful floating of a loan of 113,000,000 francs at 3% by popular subscription, notwithstanding the active opposition of the banks. In 1878 he presided over the International Monetary Conference held in Paris at the request of the United States. He was subsequently Ambassador to England and later President of the Senate. He was a member of the Academy of Moral and Political Science; in 1886 he was elected a member of the French Academy. M. Say wrote many books on financial and economic topics. Among them are "Theory of Foreign Exchange," translated from the English, with an introduction; "History of the Caisse d'Escompte," 1848; "The City of Paris and the Credit Foncier"; "Observations on the Financial System of the Prefect of the Seine," 1865; "Critical Examination of the Financial System of the City of Paris" 1866; "Les Obligations Populaires," 1866; a translation of Goseben's "Theory of Foreign Exchange," second edition, 1875; "Report on the Payment of the War Indemnity"; the "Finances of France," 1883; "State Socialism," 1884; "Democratic Solution of the Tariff Question," 1886; "Turgot," 1887. He directed the publications "The Dictionary of Finance," 1883-1890, and "The New Dictionary of Political Economy." He also collaborated in the "Annual of Political Economy," and in the "Economists' Journal." He also was the author of many short articles, essays, addresses and contributions to various publications of all sorts.

SOCIETIES AND TECHNICAL SCHOOLS.

BOSTON SOCIETY OF CIVIL ENGINEERS.—The Secretary gives notice that the Society's headquarters will be removed to 715 Tremont Temple, Boston, Mass.

AMERICAN SOCIETY OF ELECTRICAL ENGINEERS.—A meeting was held April 22d, at the Society's headquarters in New York. Mr. B. Macfarlan Moore read a paper on the recent developments in vacuum tubes lighting. Many well-known electricians were present.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—A meeting was held at the Society's rooms in Montreal, April 23d, when the following papers were discussed: Mr. Carroll's "The Effects of Engineering Works on Water Currents," and Mr. Perley's "The Dry Dock at Kingston, Ontario."

UNITED MINE WORKERS OF AMERICA.—The national convention of this association was held at Columbus, O. last week, with nearly every coal-field in the United States represented. National Secretary Patrick McBryde, in his annual report, gave a most interesting mining discourse.

KINGSTON (ONTARIO) SCHOOL OF MINING.—Prospectors' mining classes are held at different mining centers by Mr. William Hamilton Merritt, lecturer on Mining Engineering at this school. Similar classes were held last summer and autumn in the Rainy Lake Mining District, at Rat Portage in the Lake of the Woods, at Port Arthur, at Sault Ste. Marie and at Sudbury. These classes are modeled on the New Zealand pattern, and there were 161 persons enrolled as having attended these classes, indicating that they were appreciated. We have heretofore referred to this plan, which presents many advantages.

SOUTH DAKOTA SCHOOL OF MINES.—The trustees recently held their annual meeting at Rapid City, S. Dak., for the election of a faculty for the next year. Dr. V. T. McGillicuddy, was re-elected president of the faculty; Prof. Frank C. Smith, to the chair of geology, mining and metallurgy; Prof. R. F. Flinterman, chemistry, and Prof. H. L. McLeary, mathematics and languages. All the chairs were filled except that of assaying, which has been filled by Prof. W. F. Tindell, and it is quite likely that he will consent to accept it again. The Board expects to complete arrangements for a two months' study of the topography and mineralogy of the Black Hills this summer, to be conducted by Prof. McGillicuddy and Prof. Smith.

ENGINEERS' CLUB OF ST. LOUIS.—The 435th meeting was held on April 15th, with 29 members and five visitors present. President Ockerson in the chair, and Albert Borden was balloted for and elected a member. Mr. Carl Gayler read a paper on "Highway Bridges," reviewing briefly the movements in the direction of reform which had heretofore taken place, particularly the agitation of 1890, and gave his views as to why those movements had accomplished so little. He explained a typical case of highway bridge design, and described an accident to the Broadway bridge over the River Des Peres, in South St. Louis, where a contracted waterway had resulted in scouring out a deeper channel and undermining one of the abutments. He thought it proper in designing highway bridges to use lower unit strains than is customary for railroad bridges, rather than higher, as is the general practice. In general, railway bridge practice could, in his opinion, be followed to advantage in highway work. He also discussed lateral top bracing, painting and inspection. A discussion then followed in which Messrs. Eays, J. B. Johnson, Pitzman, Crosby, French, Russell and Baier participated.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—The spring meeting will be held in St. Louis, May 19-22, and the following programme has been issued

for the occasion by Secretary Hutton. The opening session will take place on Tuesday evening, May 19th, in the Grand Parlors of the Southern Hotel, when an address of welcome and response will be made, and an informal reception held. The second session will be on Wednesday morning, at which general business will be transacted and professional papers discussed, among them being "Strength of Cast Iron" by William J. Keep, and "Determining Moisture in Coal" by R. S. Hale. An excursion will be made in the afternoon, and in the evening professional papers read, including "A New Form of Steam Calorimeter" by R. C. Carpenter.

On Thursday morning the fourth session will take place, at which professional papers will be read and topical discussions held. Mr. R. H. Thurston will read a paper on "Superheated Steam." In the afternoon an excursion will be made to the new water-works, Chain of Rocks, and other points of interest along the river front. A reception will be tendered to the society by the citizens of St. Louis in the evening. The final session will be held on Friday morning, and among the professional papers to be read are "A Self Cooling Condenser," by L. R. Alberger; "Hollow Steel Forgings," by H. F. J. Porter, and "A Classification and Catalogue System for an Engineering Library," by F. R. Hutton. A topical discussion will follow, after which the concluding business will be transacted and the meeting adjourned. In addition to the excursions which will be made by the society as a whole in large parties, the Local Committee of Arrangements has secured invitations from a number of firms, at whose works small parties of those specially interested will be welcomed.

INDUSTRIAL NOTES.

The Cole Furnace, at Sheffield, Ala., has gone into blast. It has been idle for several years.

The Warwick Iron Company, Pottstown, Pa., is preparing to remodel its furnace when the present blast is completed.

The Ohio Steel Company has posted notices that it will resume operations at the old rate of wages, employing about 800 men.

An order for 1,000 coal cars has been given to the Michigan Peninsular Car Company by the Lehigh Valley Railroad Company.

The Nichols Chemical Company has removed its executive offices to the Mutual Life Building, 32 Liberty street, New York.

The Canton Rolling Mill Company, of Canton, O., has built a 50-ft. addition to the main building, and two new annealing furnaces.

The Grasselli Chemical Company will remove its New York office to the Sampson Building, 63 and 65 Wall street, on May 1st.

The Elmira Iron and Steel Company expects to begin making basic steel in its new open hearth furnaces at Elmira, N. Y., about May 1st.

The Cambria Iron Company, it is reported, will expend nearly \$1,000,000 next year in the improvement of its plant in Johnstown, Pa., and vicinity.

The Baldwin Locomotive Works, of Philadelphia, have just closed another contract with the Russian Government for 60 large freight engines, to be completed by July 1st.

The White Iron Works Company of Kansas City, Mo., has been organized with a capital of \$25,000, by Ed. Y. Witte, Ida C. Witte, George A. Benze, Frank O. Benze and D. B. Lincoln.

The Elk Rapids Iron Company, Elk Rapids, Mich., is making preparations for resuming the manufacture of charcoal pig iron. The furnace has been shut down for nearly a year.

Emma Furnace, owned by the Union Rolling Mill Company, of Cleveland, O., will blow out about July 1st to be relined and to build an additional fire-brick stove of Foote pattern.

The Campbell & Zell Company, Baltimore, Md., has contracted to furnish to York (Pa.) Water Company a battery of 400-H. P. Zell water tube boilers for the company's pumping station.

The No. 2 stack of the Paxton Furnaces, at Harrisburg, Pa., will be raised 20 ft. Other improvements will also be made and the hot blast ovens will be changed. The stack is now 60 x 14 ft.

The Strange Forge Twist Drill Company, New Bedford, Mass., has decided to erect a new plant, the main structure to be 40 x 130 ft. The forging room will be 42 x 60 ft. and the boiler house 31 x 53 ft.

The Bessemer Limestone Company, Youngstown, O., is putting up a large establishment at its quarries at West Middlesex, Pa., for crushing purposes. The building will be 46 x 84 ft. A 160-H. P. engine will be used.

The George W. Stanley Company, of Belleville, Ill., reports that it commenced manufacturing wire nails for the first time on February 1st, 1896. It has in all 25 wire nail machines. The company will also continue the manufacture of cut nails.

The Okonite Company, Limited, manufacturers of insulated wires and cables for mining and other purposes, will remove from 13 Park Row, New York, on May 1st, to more commodious offices in the Postal Telegraph Building, 253 Broadway.

The New Jersey Steel Tube Company, Franklin, N. J., has been incorporated by Francis J. Seery and Edward L. Seery, of Waterbury, Conn.; James Close, Franklin, N. J., and Harry E. Richards, Bloomfield, N. J., to manufacture steel, brass, copper and other metal tubing.

William B. Snyder has purchased the interests of the Oliver Iron and Steel Company, and the Edith Furnace Company, in the Hainesworth Steel Company. The remaining interests are owned by George T. and H. W. Oliver. The business will be carried on under the old name.

The Carnegie Steel Company, Limited, of Pittsburgh, Pa., has decided to build 16 new open-hearth steel furnaces at its Homestead mill. Work will be commenced as soon as the contract, for which bids are now being received, has been awarded. Eight million hard red brick will be used.

William B. Scaife & Sons, Pittsburgh, have commenced the structural work for the new plant of the Connellsville, Pa., Sheet and Tin Plate Company. They have also the contract to do the structural work on the new plant of the Blackham Manufacturing Company, at Zelienople, Pa.

The work of rebuilding Etna Furnace, at Ironton, O., into a modern furnace is in progress. Two of the iron jackets for the Whitwell stoves are half up and the third is begun. As soon as the iron work on two of the stoves can be finished, the brick men will go on there, and the iron men will go to work on the remaining stove and the furnace stack.

The Niagara Falls Power Company, in addition to furnishing electrical power to the Pittsburgh Reduction Company, the Carborundum Company and the Buffalo & Niagara Falls Electric Railway, has turned on a current for the local street railway, and another for the Buffalo & Niagara Falls Electric Light and Power Company, which latter company lights the city.

George H. Morrill & Co., of Boston, Mass., manufacturers of printers' inks, are erecting a building over some new stills in addition to their already extensive plant. This building will be constructed of steel, including the interior platforms, having steel siding, roof trusses and covering. The Berlin Iron Bridge Company, of East Berlin, Conn., have the contract for furnishing the complete building.

The Pictou Charcoal Iron Company, of Nova Scotia, has started at its Bridgeville works two double puddling furnaces, a steam hammer and a train of rolls. The company has nearly 1,000 tons of pig iron on hand, and it is expected that the bar iron made from this charcoal pig will take the place of imported Swedish blooms. Several sample carloads of the new product have been sold to the rolling mills in Montreal and St. John.

The New Castle (Pa.) Tube Company is erecting eight annealing furnaces and has just completed four drying ovens. The rolling mill addition will have one train of rolls for billets and one ingot mill, while the additions to drawing room and annealing house are 130 and 108 ft. respectively, thus making the main building 734 ft. in length. The company is now running double turn and has placed contracts in Sweden for enough billets to run the plant for one year.

The Ludlow-Saylor Wire Company, St. Louis, Mo., is running its manufacturing department full turn, and recently closed a number of large orders for elevator enclosures, office partitions, railings, etc. In about three months the company will be located in its new building, which will more than double the present capacity for the manufacture of wire cloth. Arrangements are now being made for a full line of machinery of the latest design to be placed in the new factory.

The Pittsburgh Reduction Company intends to extend its plant on the upper Niagara River immediately and increase the capacity. In regard to the power received from the Niagara Falls Power Company by the Pittsburgh Reduction Company, Captain Hunt of the latter company is reported to have said, "It is most satisfactory, as is also our yield of metal, under Mr. Hall's direction. This latter is constantly increasing. The electrical power at Niagara is much superior to anything we have been able to generate under steam at Pittsburgh, where coal can be secured very cheap."

The Carroll-Porter Boiler and Tank Company, of Pittsburgh, Pa., has been awarded a contract for the construction of a steel riveted force main eight miles in length, at New Bedford, Mass. The price is stated to be \$323,023. An addition to the company's plant is now under way, the building to be of steel and 40 x 90 ft. in size. New machinery is also being installed, consisting of a 12 x 12 x 14 in. air compressor, built by the Hall Steam Pump Company; two new riveting machines made by Bement, Miles & Co., of Philadelphia, and seven new pneumatic hoists. The entire machinery is to be operated by compressed air.

Some remarkably good work was recently done at the No. 1 open-hearth steel furnace of the Phoenix Iron Company, of Phoenixville, Pa., says the *Bulletin of the American Iron and Steel Association*. The time covered was six working days of 24 hours each. The mixture was one-third pig iron and two-thirds scrap, and, owing to the presence of high silicon in the pig iron, from 1,000 to 1,500 lbs. of iron ore were used in each heat. All the heats were run into dead soft steel, containing from 0.10 to 0.12% of carbon. The 21st heat was in the furnace only 4 hours and 50 minutes, the time being taken from the minute the first metal was charged until the tapping hole was opened. The weight of the ingots made on this remarkable run was 463 gross tons. The actual loss from metal charged to ingots produced was 6.6%, but the weight of the pit scrap and skulls reduced this to less than 5%. All the heats were charged by hand labor exclusively. The furnace was originally built for 15 tons capacity, but the charges were subsequently increased without enlarging the furnace in any way.

The Pelton Water Wheel Company recently completed a shipment of seven wheels comprising a 2,000 H. P. plant to operate an electric power plant near Pachuca, Mexico. The water is carried to the power station through 1,700 ft. of 30-in. pipe, which affords a vertical head of 810 ft., the lower portion of which is made of steel $\frac{3}{4}$ -in. thick. The pipe line discharges into a receiver 40 in. in diameter by 75 ft. long, by which the wheels are connected by lateral branches. This is made of flange steel plates $\frac{3}{4}$ -in. thick, tested to 700 lbs. water pressure, and weighs upward of 50,000 lbs. This station is to supply power to the mines of the Real Del Monte Company, one of the most extensive mining organizations in the world, employing upward of 8,000 men. The power is to be used for operating mining machinery such as stamp mills, crushers, hoists, ventilators, and also for lighting mills, mines, etc. The transmission involved is some 23 miles, the mines being located within this radius. The hydraulic part of this plant has been furnished by the Pelton Water Wheel Company, of San Francisco, and the electrical part by the foreign department of the General Electric Company, the entire equipment involving an outlay of some half million dollars. Considering the magnitude of the work, the extreme water pressure, the variety and extent of machinery operated, as well as the difficulties attending the transportation and erection of such massive machinery in a mountainous and almost inaccessible region, this may be regarded as altogether the most remarkable electric power installation so far made in any part of the world.

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.

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GENERAL MINING NEWS.

ALABAMA.

COAL AND COKE PRODUCTION.—The output of coal in Alabama in 1895 was the largest on record, having been 5,705,713 tons, as compared with 5,274,000 tons in 1892, which was the largest previous output. The report of the State Mine Inspector, James D. Hillhouse, shows that during 1895 there were 80 mines in operation, the total number of hands employed having been 9,766. The production of coke for the year was 1,600,798 tons, turned out of 4,515 coke ovens. The production of recent years in Alabama has been as follows:

	Coal.	Coke.
1890.....	4,090,409
1891.....	4,759,781
1892.....	5,274,000
1893.....	5,170,045	1,218,791
1894.....	4,381,395	924,202
1895.....	5,705,713	1,600,798

This shows an increase as compared with 1894 of 1,324,318 tons of coal and of 676,596 tons of coke. A preliminary statement was published in the *Engineering and Mining Journal* for March 21st, but the present one contains some corrections and additions.

ARIZONA.

(From Our Special Correspondent.)

A mining exchange has been started in Prescott not to deal in stock, but to collect and distribute information in reference to mining. The following is a complete list of the officers: President, Alexander O. Brodie; vice-president, Samuel Hill; treasurer, E. W. Wells; secretary, R. H. Hetherington; assistant secretary, S. M. Cullom, Jr. The board of directors is composed of Alexander O. Brodie, Samuel Hill, E. W. Wells, R. H. Hetherington, John S. Jones, A. Falco and R. H. Burmister. The committees are as follows: Committee on registration, Brodie, Hill and Hetherington; committee on correspondence, Hill, M. Goldwater and J. F. Blandy; Committee on Finance, Wells,

Mulvenon and Brecht, Committee on Ways and Means, Burmister, Fisher and Armitage, Committee on Entertainment, Hetherington, Fredericks and N. Levy, Committee on Transportation, Falco, Coffenan and Blauvelt, Committee on Publication, Jones, Comstock and W. W. Ross. The Exchange has rented the Bashford brick building, on the east side of the plaza, as permanent headquarters.

ARKANSAS.

SEBASTIAN COUNTY.

SALISAW MARBLE COMPANY.—This company has been organized to quarry and work marble. The office is at Fort Smith, and the quarries are near that place. The capital stock is \$250,000, and the incorporators are W. H. H. Clayton, James Brizzolara, G. F. Sparks, G. D. Morgan and Stephen Wheeler.

CALIFORNIA.

AMADOR COUNTY.

(From Our Special Correspondent.)

CENTRAL EUREKA.—This mine, located a half mile south of Sutter Creek and adjoining the Eureka and South Eureka mines, has resumed operations. The new machinery is being placed in position; new buildings have been erected, and 100 ft. of the old 800-ft. shaft has been cleared by the use of a windlass. The work is being pushed rapidly.

CALAVERAS COUNTY.

(From Our Special Correspondent.)

CALIFORNIA EXPLORATION CO.—This company, which was organized by New York, San Francisco and European parties, with a capital of \$2,000,000, proposes to employ electricity and cheap power to develop properties on the mother lode between Mokelumne and Stanislaus rivers, on the same plan under which most of the South African mines were first developed, and then floated on the European markets. They have a ribbon of claims, extending from the Gwin mine to Altaville, embracing 38 claims, none of which have been worked below the 200-ft. level, owing to the want of cheap power. They propose to sink 1,000 ft. on four of the best properties. Electric power, amounting to 4,700 H. P., will be obtained from the Mokelumne River, Sperranza ditch and Amador ditch. The following five directors have been elected: Prince Poneatowski, Harold Wheeler, Jas. W. Sperry, W. N. Cowles and Charles E. Green, leaving two places to be filled by the European investors.

SPECIMEN GROUP.—These mines, one mile from Fourth Crossing, have been bonded for two years for \$22,000, by Prince Poneatowski. Work will commence in a few weeks.

EL DORADO COUNTY.

(From Our Special Correspondent.)

LONE STAR.—This mine is located east of Smith's Flat. The main drift along the channel is now in over 1,200 ft. The crosscut, run 22 ft. across the channel, has developed gravel averaging from 2 to 3 ft.

FRESNO COUNTY.

(From Our Special Correspondent.)

COPPER KING.—Work on this mine is being pushed vigorously, and the tunnel is about 180 ft. in ore which assays 15% copper, \$5 gold and a small percentage of silver. The ledge is 90 ft. across, and some 800 tons of ore are on the dump.

MADERA COUNTY.

(From Our Special Correspondent.)

GAMBETTA.—This mine, in Great Gulch, now employs 25 men. The drift on the 400-ft. level has been extended east in new ground, which has been found to be extremely rich, with some 400 ft. of backs to stope on. The ledge is over 2 ft. wide.

SAVANNAH.—This mine consists of four claims. The vein is from 5 to 7 ft. in width and the ore milling from \$6 to \$10 per ton. One chute of ore shows to be over 2,000 ft. in length.

NEVADA COUNTY.

CHAMPION MINING COMPANY.—Twenty stamps of the new mill are in full operation. Including the 30 stamps of the old mill, there are now 50 stamps crushing ore from the mine. At the annual meeting of the stockholders, which was recently held, the following directors and officers were elected: Gus Kartschoke, president; Harry Mohr, vice-president; Frederick Zeidler, superintendent; Dr. A. Wilhelm, J. S. Schuster, Joseph Assion, Jac Mook, J. S. Ott, directors; J. F. Holling, secretary; Bank of California, treasurer.

WISCONSIN.—The miners in this mine have cut into the workings of the Illinois and have been temporarily compelled to cease work by the great flow of water.

(From Our Special Correspondent.)

SEBASTOPOL.—This mine, located near the famous Empire mine on Ophir Hill, one mile southeast of Grass Valley, has been purchased by Walter Turnbull for San Francisco parties. This mine had been worked to a depth of 250 ft., but was closed down on account of a fire which destroyed the works. A contract has been let to sink a new shaft near the south line, and new machinery will be erected.

PLACER COUNTY.

(From Our Special Correspondent.)

HIDDEN TREASURE.—This mine, at Sunny South, in the Michigan Bluff district, comprises 700 acres, and is the most extensive drift mine in California, and over 500 carloads of gravel are washed through

the sluices every day. The company has 200 men on the pay roll. An upraise is being made in the Dam tunnel to reach the white gravel.

PLUMAS COUNTY.

(From Our Special Correspondent.)

LA PORTE CONSOLIDATED GOLD MINING COMPANY.—This company is running two monitors in its hydraulic mines, 45 miles from Oroville, on a 50-ft. face of high-grade gravel. These mines produced over \$1,200,000 before they closed down by injunctions issued under the anti-debris law of the State some 10 or 12 years ago, and have been lying idle until this spring under a license from the California Debris Commission. The gravel in the face of the bank now prospects from 20 to 40c. per pan.

SISKIYOU COUNTY.

(From Our Special Correspondent.)

COLUMBIA.—This mine, six miles east of Scott's Bar, has been released from the attachment filed several months ago, and work will be resumed in a few days. The five-stamp mill is operated by water power.

LINA.—This mine, on Patterson Creek, in Quartz Valley, has been sold to J. H. Book and others of Los Angeles.

TUOLUMNE COUNTY.

(From Our Special Correspondent.)

ALABAMA.—This mine, 1½ miles west of Jamestown, on the Mother Lode, has been sold to an English company.

COLORADO.

BOULDER COUNTY.

(From Our Special Correspondent.)

AMERICAN.—A large increase in the size of the ore body has necessitated an addition to the working force, which now consists of 25 miners. The pay-roll amounted to \$1,600 this week.

BELCHER.—A large quantity of ore was taken from this property during March, and netted \$2,000. Six to eight tons of ore are now being shipped monthly.

BUCKEYE.—Messrs. Kinsey Bros. have uncovered a 3-ft. vein of auriferous lead and iron, which is crossed by 12 intersecting veins of various dimensions.

CASHER.—Captain Thomas Sipple has purchased a two-third interest in this property and is making arrangements for extensive operations during the summer.

COMSTOCK.—Messrs. Perry & Gray are taking out some very rich ore, but no shipments are made, as the product is being stored to await a better market.

DIAMOND.—Some ore has recently been found on this property, and the prospects are very bright. A force of men is engaged in sinking a shaft.

EFFIE No. 2.—A small quantity of ore from the recent strike has been shipped as a test. The assays from the samples were very satisfactory.

GRAND CENTRAL.—The new shaft, 4 x 9 ft. in size, is being sunk rapidly, and the expectations are that the big chute crossing the claim will be found within the next 100 ft.

GLADIATOR.—Some rich ore was recently opened up and shipments are regular.

GOLDEN RULE PLACER.—The ditch is to be extended to the placer ground in Stewart Gulch, and a large force of men is now at work in that direction.

GYPSY.—A 6-in. streak of rich ore has been opened up, and a shipment will be made in a few days. The property is owned by Rheason & Ball.

MORNING STAR.—In sinking a winze at a depth of 16 ft. a vein of ore has been uncovered.

NEWMARKET.—Messrs. Campbell & Kline, the lessees, are pushing operations on this property, and have sent 10 tons of very rich ore, taken out in two days' sinking, to the Hilton Reduction Works this week. The shaft has attained a depth of 250 ft.

NORWALK.—The vein is 40 ft. in width, but the streak of high-grade ore is yet too small to pay expenses. J. M. Lewis is operating the mine for a company of which he is the head.

PORCUPINE.—Messrs. Gillespie & Dewesse have encountered a 12-in. streak of ore near the surface, which is running from \$16 to \$20 per ton.

PROTECTION.—A new plant of machinery has been ordered, and the company will thoroughly prospect and develop its ground this summer.

PUZZLER.—Mr. Frank Davis has received a lease on this mill, and is handling the Rose and other ores to good advantage.

ROSE.—Operations have been resumed and prospects are very bright. A large quantity of mill ore in sight averages \$10.

ROSE & CHIEF.—A mill run this week gave such satisfactory returns that the superintendent has purchased a new 10-stamp mill and will have it in operation at the earliest possible date.

SANTA CARLA.—A body of rich ore has been opened up, and shipments will begin as soon as a wagon-road can be completed to the mine.

SARAH.—Mr. B. F. Spencer, who recently secured possession of this property, has made a good strike and has a large vein of ore in sight, which assays \$80 per ton.

STANDARD.—About 800 lbs. of ore were shipped this week to the mill here as an experiment, and if

the result is as satisfactory in proportion as the assays, shipments will begin at once.

VAULT.—The drifts are in good ore, and are being driven for the purpose of cutting the main vein which is thought to be a short distance ahead.

WHITE PINE.—A party of eastern capitalists have been looking over this property with a view of purchasing and examining its records. The manager is putting in a plant of new machinery, and, if the sale of the property is not effected, he will continue active development work during the summer.

YELLOW GIRL.—Nineteen sacks of high-grade ore containing free gold were shipped this week.

CHAFFEE COUNTY.

FREE GOLD GROUP.—This group consists of several lodes, all of which have been worked to a considerable depth. With depth the character of the ore has changed, becoming refractory, the plates no longer returning even a small per cent. of the assay value of the ore.

IRON CAP.—This property, owned by Buena Vista and Cripple Creek parties, is reported as now showing a good body of ore carrying 32% iron and \$12 gold.

LEADVILLE CONSOLIDATED GROUP.—This group of eight claims, owned by Frank McLister and Leadville parties, has been recently located in the Swiftwater district and considerable work done the past winter. Some good assays are reported to have been had from some of the claims. This company will shortly commence operations on a large scale, and take out ore for shipment.

CLEAR CREEK COUNTY.

(From Our Special Correspondent.)

ALBRO.—W. H. James, of the Omaha and Grant smelter, and Dennis Sullivan, a prominent capitalist of Denver, have taken an interest in this property. They have put up a new shaft house with improved machinery at the old shaft, and expect to fully develop the property.

ALKIRE.—The Denver people working this group of claims near Dumont cut a blind lead in driving a crosscut tunnel, and after they drifted for 150 ft. on the lead opened out 15 in. of good smelting ore.

BELMONT.—In driving an adit level, a large body of ore has opened out in this property, and a car-load shipment made to the smelters netted \$50 a ton.

BISMARCK.—Within 50 ft. of the shaft at this mine, lessees found a blowout of quartz at the surface, all of which is reported to be suitable for smelting, and worth from \$20 to \$30 a ton, according to where quarried. In the lower level, west from the shaft other lessees have just opened out a body of smelting ore 22 in. wide, showing lead and gray copper. A test returned \$70 a ton.

BLUE BELL.—Philip Mixsell has installed an air compressor at the crosscut tunnel and intends pushing work night and day to reach the group of claims before the spring rains set in. Good mineral is found in paying quantities in four of the claims.

CHICAGO BELL.—The Chicago owners of this group of five claims have been in Idaho Springs arranging for the installation of a plant of machinery and the beginning of development work. Assays and test runs show high values.

GUM TREE.—Parties working this mine have commenced upraises from the lower level, and it is reported that they have uncovered solid streaks of mineral.

NEWTON.—In this mine four levels are being driven through mineral; the streak in the second shows gold values running over \$200 to the ton. In the third the streak is mill dirt and under treatment at the Allan mill. The formation is mostly porphyry and all mineral coming through it is said to be rich. The values are estimated to run from \$25 to \$250 to the ton.

QUITO.—At this mine the various lessees are taking out ore. The smelting ore is said to be rich, shipments having reached \$800 in gold to the ton.

SEVEN-THIRTY.—This mine, together with the Pelican-Dives, located near Silver Plume, has been transferred to a New York syndicate. The superintendent furnishes the following: This company has 70 claims under control, worked principally upon the leasing system. The underground workings on these properties cover about 17 miles. There are 275 men at work, producing about 400 tons a month, on an average grade of 250 oz. silver. The main shaft of the Seven-Thirty is 975 ft. below the Hercules tunnel. The collar of the shaft of the Hercules tunnel is 150 ft. below the surface. The Burleigh tunnel will cut the Seven-Thirty vein 200 ft. below the lower workings. The tunnel is now in 2,200 ft. This will enable them to handle all their product through the tunnel and deliver it on the dump close to the railroad track. It will also drain the mine and go away with hoisting expenses. The deep workings on the Pelican-Dives are 1,600 ft. from the surface, and there is half a mile between this and the Seven-Thirty, which territory is planned to be worked. The Pay Rock mill and compressor form a part of the system, being under bond and lease to the company. This plant provides ventilation and furnishes power to run the pumps and air-drills.

DOUGLAS COUNTY.

The recent stormy weather retarded development work under way at the new gold mining camp of

Barkersville, 10 miles west of Sedalia, on Garbor Creek. Over 100 claims have been staked this spring and assessment work on all completed. A large number of claims have been surveyed. With the extension of the South Park road through to Pemberton arrangements will be made whereby a branch will be built from Nighthawk, a distance of about eight miles, on an easy grade. This will enable shippers to handle their lower grades of ore at a profit.

EL PASO COUNTY.

RUSSELL.—A 16-H. P. steam hoist and 400 ft. of cable having arrived, work on this mine will commence with renewed energy, says the *Denver Republican*. The mine is located about two miles from the Denver & Rio Grande depot, on the land known as Palmer Lake Park and is on a true fissure vein with granite walls. The 6-ft. vein explored is of amethyst quartz in which free gold can be seen with the naked eye.

EL PASO COUNTY—CRIPPLE CREEK DISTRICT.

(From Our Special Correspondent.)

ALBANY.—The tunnel on this property has pierced Bull Hill from the west slope for 770 ft. It is a double track tunnel, and the formation is granite and breccia very much shattered. Several veins and dikes have been intersected and an assay taken from the granite the past week assayed \$5.40 per ton. This tunnel intersects most of the well-known veins on Bull Hill, and is surveyed for 3,000 ft. in length, and was located in August, 1892, making it one of the oldest tunnels in the camp.

CALEDONIA.—This mine is being worked under lease and bond. The lessees have equipped the mine in good shape, and instead of working in the old vertical shaft, have now sunk an incline 300 ft. from the surface. The vein at that point is rich, but the bulk of the ore, unless very carefully sorted will be low grade.

E. PORTER GOLD KING.—This property, on Gold Hill, is being actively worked, and the shaft has been sunk 135 ft. There are two compartment shaft square sets, 10 x 12, a very large shaft house, and a sorting and ore house with large ore bins. Everything on the surface is fixed in excellent condition, and it is the general impression that the ore shoot will be encountered in 10 or 15 ft. more sinking.

KATHERINE.—The owners of this claim, on Raven Hill, are crosscutting from the bottom of the shaft west, to intersect two other veins known to exist on the property. These veins were found by a crosscut from the 100-ft. level, and at that depth carried little value, but at the 415-ft. level it is estimated they will be found very valuable.

LAFAYETTE.—This property is situated between the Ruby and the Lucky Guss on Bull Hill, and a shaft has been sunk 315 ft. The vein is very pockety, but the average of the ore keeps about 3 oz. The mine is worked under lease and bond.

LUCKY GUSS.—The Cripple Creek Exportation Company, Limited, of London, are preparing to put the shaft in working order. The property has always been worked on lease, so the shaft buildings, etc., are not in the best of condition, and it will take some time yet before the mine is put in shape.

MINNIE LEW.—This property, located on Iron Clad Hill, is being worked by the Puritan Mining Company, a Denver corporation. The shaft has been sunk 125 ft., and is being sunk slowly by two men. The company drove a crosscut 50 ft. north from the 80-ft. level.

ORPHAN BELL GROUP.—This group of claims on Bull Hill is being worked by several sets of lessees, two of whom have recently erected steam hoists, and are prepared to do deep mining. A set of lessees have just started to drive from the bottom of the incline shaft, 170 ft. The shaft was sunk in 1892. Shipments are being regularly made from the Munger lease, the ore sampling from 2 to 4 oz.

SMELTERS' COMBINE.—In March, 1895, this combination expired by limitation. At that time several of the mines entered into a 12 months' contract, which has now expired. The smelters are very desirous of securing siliceous ores, and again the smelting capacity of Colorado is about double the production. They are now in the field making a bid and cutting prices right and left for contracts for gold ore. This time it is openly stated that the railroads are in the combine with the smelters. The present freight rate to Denver, Pueblo or Leadville is \$5 per ton. The treatment charges have been from \$12 to \$18, according to grade of ores. I heard of one contract for \$12 a ton for less than 2 oz., and \$19 an ounce; over 2 oz. \$20 per ounce. The local mills, including the two Florence mills, have their agents in the field soliciting ores, and better prices will be the result for low-grade ores.

SPECIMEN.—This property on Bull Hill is being worked by 12 men who are at the 120-ft. level taking out large quantities of low-grade ore which has hitherto been sent to the Brodie Cyanide Mill, but will now go to the smelter. The north end of the claim alone is being worked at present.

STORM.—On Sunday, April 12th, Cripple Creek was afflicted with a snow storm, accompanied by a severe wind, which did quite a little damage to property, but no lives were lost. A temporary shaft-house on the Chance was blown down. The Joe Dandy shafthouse material was scattered all over Raven Hill. The Rigi, on Battle Mountain, in course of erection, was wrecked. Three shafthouses on the Orphan Bell were demolished: one shafthouse

was carried 70 ft. and lifted on the top of another shafthouse. Two of the largest buildings in Altman were blown down.

TRACHYTE.—The shaft has been sunk 175 ft., and a drift is being extended east on the vein in order to catch the ore chute found in the level above. An assay taken from a mud seam on the north wall of the east and west vein this week gave \$1,008 per ton, while a piece of the vein gave \$106 per ton. This property is not yet a shipper, but it looks as if it would be a short time.

GILPIN COUNTY.

MISSOURI.—There was shipped from this mine, in Russell district, during the month of March, eight tons of first-class ore which netted \$72 per ton, total \$576; 15 cords of mill ore, running 3½ oz. in gold per cord, total \$892.50; 30 tons of concentrates, at \$15.80 per ton, total \$474; grand total, \$1,942.50. The east and west 300-ft. levels have been driven in a distance of about 35 ft. and show 12 in. of smelting ore, which has a market value of \$90 per ton, and there is also about 2 ft. of mill ore, which gave a result as per last month's returns. Several specimens of tellurium have been found in the bottom level which gives an assay value of \$70,000 and \$80,000 per ton.

NIAGARA.—At this mine, in Russell gulch, much activity is being shown and a force of 13 men is employed. This property is owned by J. McKay, of Pittsburg, Pa., and E. Craig is manager of the property. Development work is carried on with two shafts, known as the Main and West shafts. In the Main shaft, which has been unwatered to the bottom, a depth of 190 ft., a general clearing is going on preparatory to commencing active development work. As soon as this work is done drifts will be run east and west on the vein at a depth of 170 ft. A new shaft house has been erected over the Main shaft, and a plant of machinery consisting of a 25-H. P. hoister and a 25-H. P. boiler, which will be of sufficient power to reach a depth of 400 or 500 ft., will be put in. In the West shaft the work of sinking is being rapidly pushed, the present depth now being 110 ft. and the intention is to sink and connect with the levels to be driven at a depth of 170 ft. in the Main shaft. The difference between the West shaft and Main shaft in altitude is about 80 ft., hence the West shaft will have to be sunk a total depth of 250 ft. before necessary connections can be made. Besides sinking operations in the shaft drifts are being extended at a depth of 100 ft., where they have a continuous body of ore. The pay streak is about 14 in. wide, with 5 in. of high-grade ore and 9 in. of concentrating ore, and from regular tests made from across the vein the following values are said to have been obtained: Smelting ore, \$198 per ton; concentrating ore, \$11 per ton. A new shaft house has also been put up over this shaft, and also machinery for use in sinking, but as soon as necessary connections are made with the 170-ft. level of the Main shaft, the use of this shaft will be discontinued and all hoisting will be done through the Main shaft, the West shaft to be used in case of accidents and as a ventilator for better air. There are from 70 to 80 tons of concentrating ore and about 10 tons of high-grade smelting ore on the dump at present.

(From Our Special Correspondent.)

BROOKLYN MILL.—This mill, on North Clear Creek, built to concentrate the ore from the Brooklyn mine, is now completed and has commenced running. The capacity is, however, small, and the cost of working cannot fail to be high.

CORYDON.—The new 100-H. P. boiler and snow pump have been placed in position, and work commenced.

CROWN POINT & VIRGINIA.—This company operates two lodes, the Crown Point & Virginia and the Williams, which are about 200 ft. apart.

RIO GRANDE.—This mine belongs to a party of miners, and has recently been patented. Crosscuts have been driven out from the Crown Point at depths of about 350 and 450 ft. respectively, intersecting what was claimed to be the Williams lode, and on the vein so cut large stopes have been opened, yielding a great proportion of the total output. The men working on the Rio Grande, however, claimed that this was their vein, as no other vein had been met with in the crosscut, and, moreover, directly it was struck it let down the water from their shaft. They have, therefore, sunk their shaft as fast as means permitted, and last week holed into the Crown Point stopes, proving that the latter company has been trespassing on their ground. The Crown Point management has, according to report, withdrawn their men, but, unless compensation is agreed upon between the parties concerned, a lawsuit seems inevitable.

TERROR.—The management of this mine has been changed, and the office removed from Denver to Russell, Colo., near the mine. The mine has recently passed into English hands. It is an old patented claim, with a wide and strong vein. The ore is somewhat low grade, but easily treated by concentration, and development is said to be sufficiently advanced to allow of a large and regular output.

WAUTAUGA.—A new shaft-house, with boiler and friction hoist, are being placed on this claim in Russell District. The shaft is 300-ft. deep, but is full of water, and as the mine has been abandoned many years, the workings have probably gone together.

GUNNISON COUNTY.

MINERAL HILL.—A 20-stamp mill, on these gold mines, southeast of Gunnison, started up on the

17th inst, in full blast. A large amount of ore is ready to mill. The mine has over 1,000 ft. of development work, showing enormous amounts of ore says the *Denver Republican*. It is probable that the capacity of the mill will be increased to 40 stamps. The property is owned and operated by O. P. Posey of Telluride.

LAKE COUNTY.

(From Our Special Correspondent.)

BIG FOUR.—Owing to bad roads shipments have been cut off, but will be resumed this week, and 25 tons of high-grade gold ore will be handled.

BLACK PRINCE.—Eastern and Denver parties are operating this property. A new plant of machinery has just been placed in position and 20 tons a day of good ore are being shipped. The mine is opening up well.

CATALPA CRESCENT.—Several sets of lessees are working this property and are shipping 75 tons of iron and ore a day.

CLEVELAND MINING COMPANY.—The new shaft has already reached a depth of 100 ft. and is showing signs of mineral. When connections are made with the old workings it will give the company an opportunity for important development work.

EURYDICE.—New lessees have taken hold of this property, and a new shaft is to be sunk to the contact. The Eurydice is favorably located for catching one of the big ore chutes that cross this section of California gulch.

GORDON.—Manager Brown is now in New York endeavoring to make a sale of this gold producer of the Twin Lakes section. I understand that he asks \$150,000 for the property. The Gordon has produced large quantities of good smelting ore and the reserve of low grade milling ore is said to be large.

HOLLAND MINING COMPANY.—This company has just started operations. The company will work the Blackbird group and sink the shaft which is now 60 ft. deep, to another depth of 300 ft. Here it is hoped to catch the extension of the Fryer hill ore chutes, but if necessary the shaft will be put down 300 ft. further. The ground in this section lies north and east of Fryer hill and has been taken up on all sides. Mr. T. S. Schlessinger is manager of the company.

LEADVILLE ORE OUTPUT.—Despite bad roads the output of the camp is over 11,000 tons a week. A number of new producers will also be added to the list this month which will aid in swelling the output.

LOUISVILLE.—Work is being pushed on the 600-ft. level by lessees.

MAHALA MINING COMPANY.—Sinking on the shaft is to be resumed, and it will be sunk 50 ft. further making a depth of nearly 200 ft. The new ore chute is turning out well.

MARIAN.—This ground and a portion of the Allegheny Company's property is under lease to the Small Hopes people. Much development work is being carried on. The Marian shaft is down over 1,000 ft. and a large body of ore has been opened up, shipments running as high as 4,000 tons a month.

MT. ALBERT GOLD MINING, TUNNEL AND POWER COMPANY.—Articles of incorporation just filed show capital stock to be \$1,000,000. Incorporators: B. S. Phillips, W. Porter Nelson and W. H. Clark.

NEW ELKHORN MINING COMPANY.—This company has started a new shaft east of the old Fitzhugh property. A fine plant of machinery is in position, and extensive work is to be carried on throughout the property.

R. E. LEE LEASING AND MINING CO.—This is a new incorporation, which will start at once an important proposition. It has secured the famous Robert E. Lee property. The new lessees intend to develop the second contact, which has never been explored. This work will inaugurate a new mining era on Fryer Hill.

REX MINING COMPANY.—A judgment of \$36,000 has been obtained against this company by J. J. Brown. This is quite an important point relative to the starting up of this property, of which Brown has been trying to get entire control for some months.

SELMA MINING COMPANY.—The shaft started in February has reached a depth of 215 ft., and is now to the porphyry. The Selma Company has 80 acres of the Minnehaha placer and is prepared to prosecute work vigorously.

SEVEN-THIRTY.—Pennsylvania people own this property, and have just let a contract to sink a new shaft 300 ft. deep. This claim is well located on the northern slope of Printer-Boy Hill.

SMITH-MOFFAT GROUP.—An increase of 700 tons from the Wolfstone is noted in the March output. The output for the month is as follows: Wolfstone, 2,400 tons sulphides; Maid of Erin, 1,988 tons carbonates and iron; Starr lease, 1,257 tons oxidized ore; Bon Air, 535 tons oxidized ore; Gray Eagle, 2,300 tons iron and 300 tons carbonate.

TAYLOR HILL.—I understand that recent developments in this section have made a very good showing and that the diamond drill has cut some good gold ore. The matter is being kept very quiet, but a great deal of activity is looked for next month.

VIRGINUS.—The surface plant of this property is completed and the shaft is going down rapidly.

LA PLATA COUNTY.

(From our Special Correspondent.)

DURANGO GIRL.—This property is looking finer

than ever. The paystreak is wider, while the values are the same. About five tons of first-class ore is ready for shipment.

NEEDLE MOUNTAIN DISTRICT.—A big company, headed by Judge Graham, has been formed to operate a group of nine claims in this district.

NEVADA.—The lessees have been doing good work during the winter months, and have several carloads ready to ship as soon as the condition of the roads will permit.

SMALL HOPES.—This mine has nearly five carloads of high grade stuff awaiting shipment, one load of which has been recovered by sinking. The shaft on this property is down 105 ft., and shows the vein on the increase in size and value.

ST. PAUL GROUP.—One of the best properties in the Needle Mountain district, comprising four claims, is under bond to an English syndicate, and a Boston company has acquired some good properties on Needle Creek that will be worked as soon as the snow is gone.

YANKEE GIRL.—The owner of this property on running a level from a crosscut recently struck what appears to be a large chute of very high grade ore.

PARK COUNTY.

NO END COMPANY.—This company has run a tunnel across its claim, a distance of about 300 ft., and was compelled to stop on reaching the Little Fannie property, the latter declining to permit the tunnel to pass through the ground. A company has been formed, called the Gold Key Mining Company, which has secured a lease on the Little Fannie and adjoining property, and this company has obtained a lease on the No End tunnel, which will be used to develop the entire Buckskin slope of Mt. Bross.

PITKIN COUNTY.

ALABAMA.—The sale of this mine, on West Aspen Mountain, was recorded on the 15th. The purchaser is Samuel T. Howe, of Shawnee, Kan. No work of consequence has ever been done on the property.

TAM O'SHANTER GROUP.—In the District Court, at Aspen on the 18th inst., the motion of the defendants in the case of Thomas L. Wiswell against H. A. W. Tabor and others, for a change of venue to Arapahoe County, came up. The application was resisted by the plaintiff and denied by Judge Rucker. The action involves this group of mines, at Ashcroft, valued at \$250,000 and on which Tabor and his associates gave a trust deed for \$10,000 recently.

SAN JUAN COUNTY.

(From Our Special Correspondent.)

SILVER KING GROUP.—These group of mines is said to have been sold to Mr. D. H. Moffat, of Denver.

SUNNYSIDE.—One of the oldest claims in the district, located about eight miles above Silverton, in Eureka Gulch, is reported sold to a New York syndicate for a consideration of \$450,000, \$100,000 of which has been paid. According to reports Mr. T. A. Richard is to be placed in charge of the property, which will be operated on a large scale. It contains a large body of free milling ore and has produced several hundred thousand dollars while worked on a small scale.

CONNECTICUT.

MIDDLESEX COUNTY.

BRainerd Shaler & Hall Quarry Company.—This company has been formed by the consolidation of the Brainerd and the Shaler & Hall Quarry Companies, two of the oldest and largest operators in the brownstone district of the State. The capital is \$600,000. The incorporators are John H. Hall, Judson B. Brainerd, Robert G. Pike, Gilbert Stancliff, John H. Sage, E. Irving Bell and Frederic DePeyster.

GEORGIA.

CHEROKEE COUNTY.

VERD ANTIQUE MARBLE COMPANY.—This company has been organized to work granite quarries near Holly Springs. The incorporators are Henry Cooper, A. C. McLachlan and George Talbot, and the capital stock is \$250,000.

ROCKDALE COUNTY.

ROCKDALE MARBLE AND GRANITE COMPANY.—This company has been organized to work quarries near Rockdale. The office is at Conyers.

IDAHO.

The members of the Mineral Land commission have resumed work, and expect this season to survey most of the Pan-handle of Idaho, extending from 20 miles south of the Northern Pacific road to the boundary line on the north.

LEMHI COUNTY.

GOLD DUST MINING COMPANY.—This company, which owns valuable gold properties near Leesburg, have received plans and specifications for the new mill to be erected on its property this summer, and as soon as the contracts are let for the machinery and the construction of the building, work on its erection will begin. This mill, says the *Salt Lake Herald*, is to comprise 20 stamps, each stamp weighing 850 lbs., the mortars to be provided with amalgamation plates, which will catch the rusty gold. The motive power of the plant will comprise a Tangyre 50-H. P. engine and a 60-H. P. boiler, together with a 5-H. P. engine for the frue vanners. The mill will be heated by steam. The main build-

ing of the plant will be 47 x 66 ft. on the ground floor and 60 ft. in height, while the engine room will be 28 x 32 ft. There will be five elevations and everything will be conducted on the automatic plan, the ore going into the top and working its way down by gravity until the tailing pit is reached. The mine is looking well, enough ore being in sight at the present time to run the mill for a year. A full force is now employed in opening new ore bodies.

MICHIGAN. IRON COUNTY.

MANSFIELD.—The plan to redeem the flooded workings of this mine by changing the course of the Michigan River, which flows over the property, is said to have lapsed for the present by the inability of the company organized for the purpose of carrying out the work to come to satisfactory arrangements with the mine owners. A contract for digging the new channel was given by the concern, organized under the laws of Illinois as the D-sola Iron Company, to M. J. Peppard & Co., of Minneapolis, Minn. The Mansfield is the only mine in the Crystal Falls iron ore district with ore of the Bessemer grade. It was flooded in 1893, when the over-running stream broke into its workings and drowned 27 men.

MINNESOTA.

(From Our Special Correspondent.)

In addition to the mines that began shipping to dock last week, the Oliver, Franklin, Sellers, Lake Superior, Adams, Fayal, one or two others have commenced shipments. Several vessels are booked for the docks at Duluth and Two Harbors the first of next week, and shipping will be general then. The first four boats of the new Rockefeller fleet, the Bessemer Steamship Company, are now taking down a cargo of ore from Escanaba, but will be in their trade to Duluth next week. Contrary to its previous custom the Minnesota Iron Company has started out its vessels as soon as navigation was opened into Lake Superior, and will have the entire fleet in commission this week. There is no change in rates or the condition of charters which continue slow.

MINNESOTA IRON COMPANY.—This company has increased wages 10c. a day at its hard ore mines at Soudan, making the fourth raise within less than a year. The case of the State, *ex rel* the Northern Mineral Mine Workers' Union, against Edwin Ball, captain of the Soudan mines for discharging an employee because of his affiliation with the union contrary to State law, has been dismissed because of irregularities, but is to be brought up again and pressed. The case is of unusual interest in all the northern mining districts.

IRON—MESABI RANGE.

(From Our Special Correspondent.)

CANTON IRON COMPANY.—This mine has been closed down. The machinery is being put in shape for a long period of quiet. There are 160,000 tons of ore in stock, and shipments began this week.

FAYAL IRON COMPANY.—This mine is loading and shipping about a trainload a day at present. It has over 165,000 tons in stock and is hoisting at the rate of 1,000 tons a day.

FRANKLIN MINING COMPANY.—This group is hoisting about 1,200 tons daily, though its main shaft is closed, and 150,000 tons are in stock. The new shaft, Franklin No. 2, is down 180 ft. and will be sunk 70 ft. further, to the bottom of the ore body.

LAKE SUPERIOR CONSOLIDATED MINES.—At the Hull mine the two shafts are down 190 and 225 ft. respectively, and drifting is starting in No. 1. The force of 55 men employed is being increased. The new shaft in the Rust is down 100 ft., only about 25 men being at work. Both mines will be shippers this season. The Burt shaft is already loading cars.

OLIVER MINING COMPANY.—This company set two shovels at work in the ore a week ago, and will put two more, both new Vulcans, in ore in a few days. Six drills are at work in the Sauntry exploration by the Oliver Company and another will start soon. The prospect is that at the close of the option there will be a very thorough knowledge of the ore body in that great property.

SELLERS ORE COMPANY.—This company has about 70,000 tons in stock, and has begun shipping. Several new buildings are under way, and 100 men are employed.

IRON—VERMILION RANGE.

(From Our Special Correspondent.)

MINNESOTA IRON COMPANY.—At the Butte shaft at Soudan, a vein of high-grade ore 90 ft. wide and over 200 ft. deep has been shown from the bottom of the fourth level. In the Montana shaft of the same mine 30 or 40 specimens of native copper have been found in the vein of Bessemer ore.

MISSOURI.

JASPER COUNTY.

(From Our Special Correspondent.)

JOPLIN ORE MARKET.—The sales of ore were nearly the same as last week, and the price paid for zinc ore was \$23, with an average of a little less than \$21 per ton. The price paid for silicate of zinc was \$12 per ton. Lead sold at \$16 per 1,000 lbs. with the usual 50c. added for hauling. The sales were equal to the output of ore. The following was the turn-in from the different camps in the district: Joplin zinc, 1,454,300 lbs.; lead, 231,100 lbs., value \$19,055;

Webb City zinc, 357,020 lbs.; lead, 32,280 lbs., value \$4,451; Carterville zinc, 1,341,790 lbs.; lead, 327,470 lbs., value, \$19,968. Oronogo zinc, 41,320 lbs.; lead, 14,740 lbs., value \$609; Mt. Vernon zinc, 124,560 lbs., value \$1,370; Galena, Kan., zinc, 2,210,000 lbs.; lead, 401,000 lbs., value \$26,306; Zincite, 16,850 lbs., value \$176; Aurora zinc, 225,000 lbs.; silicate, 200,000 lbs.; lead, 81,200 lbs.; value \$3,392.

BIRTHDAY MINING COMPANY.—Last week this company started its new plant on the Bolen lease. The plant is equipped with a 40-H. P. boiler, a 30-H. P. engine, a 12-in. crusher, two sets of rolls, a Fouat six-cell steam jig and a Freeman steam hoist. The company is drifting at 130 ft. on a large face of zinc ore in open ground and will make its first turn-in this week.

LAWRENCE COUNTY.

(From Our Special Correspondent.)

BAKER.—What promises to be the finest body of zinc ore yet found in any of the Wentworth mines was recently opened up in this mine and has been improving ever since. A new drift was run south at the 100-ft. level and the work is now rapidly progressing with the use of a steam drill. A face of zinc ore 10 x 15 ft. has been opened in hard ground. The owners of the mine have bought new machinery and will put up a large concentrating plant. While the plant is being built developing work will be carried on, so that there will be plenty of broken dirt ready to hoist as soon as the plant starts up.

CYCLONE MINING COMPANY.—This company, on the Weygant land, is sinking a shaft.

STONE COUNTY.

T. T. PERRY MINING AND SMELTING COMPANY.—This company was recently formed with a capital stock of \$300,000. Directors: T. T. Perry, J. E. Raymond, T. W. Atkins, and W. M. McDonald, of Girard, Mo., and A. L. Richey, of Galesburg, Ill.

MONTANA.

The Mineral Land Commissioners have resumed work in the Bitter Root Valley. From there they will proceed to complete the classification of lands in the Kalispell district.

COLFAX COUNTY.

O. K. MINING COMPANY.—This company, recently incorporated under the laws of Colorado, has filed a certificate designating the O. K. gold mine, near Hemate, as its place of business.

GRANITE COUNTY.

FLINT CREEK MINING COMPANY.—This company has taken a lease and bond on the Vallejo, an adjoining claim to the Grubstake, one of the company's properties. An assessment of 1/2c. a share will be levied to raise funds to run a 600-ft. tunnel through the Vallejo to the Grubstake, which work has already been begun by contract.

GOLDEN SCEPTER.—The work on the 100 stamp mill is progressing rapidly. The ore body in the mine has been opened by a series of tunnels for a distance of about 3,000 ft.

MEAGHER COUNTY.

BROADWATER.—An explosion happened in this mine on April 18, by which seven men lost their lives and six others were hurt seriously. The dead are Frank Doran, W. J. Morrison, Hugh McKenzie, Dan O'Leary, D. H. Rose, John Cairnes and James I. Gallagher.

ZOZEL DISTRICT.

BLACK ROCK.—Phil Harrington and J. C. Shaubert have leased and bonded this property, which parallels the Emery on the south.

CARBONATE EXTENSION.—Five men are working on a new shaft west of the old workings. It is said they have encountered surface ore such as was found on the Emery.

EMERY.—The forty men on this property are making an output of about a carload of ore a day. It is reported that Patrick Gibbons has sold his interest in the lease to his partners.

NEVADA.

STOREY COUNTY.—COMSTOCK LODGE.

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

CHOLLAR.—In the south stope on the 450-ft. level they are preparing to raise on the streak of ore reported last week, and are assorting the old fillings which are of fair grade. On the sixth and seventh floors of the stope above No. 2 crosscut on this level they are opening out in new ground east of the old stope on streaks of ore and are assorting the old fillings. They are also preparing to raise from the seventh floor on some small streaks of pay ore. They have shipped to the Nevada mill for reduction during the past week 56 tons of ore, the average battery sample of which, with that previously extracted, was \$22.46 per ton.

OCCIDENTAL CONSOLIDATED.—The west crosscut from the bottom of the Edwards shaft, 110 ft. down, has been extended 33 ft.; total depth, 45 ft. This crosscut has cut into a vein of gold-bearing ore for a distance of 23 ft., and has not yet reached the foot-wall. Average assays show a value of \$7 per ton in gold. Six hundred and fifty level, southeast drift, from the northwest crosscut, has been extended 25 ft., total, 171 ft. The face of the drift is in ore assaying about \$25 per ton in gold. Seven hundred and fifty level, west crosscut from the north drift, has been extended 25 ft.; total length, 328 ft. Formation is shelly porphyry.

OPHIR.—On the 1,000 level, west crosscut, 350 ft. south of the shaft station, is in 108 ft. The face is in porphyry carrying seams of clay and lines of quartz. The west crosscut on the same level, 480 ft. north of the shaft station, is in 211 ft., with the same material in the face. In the old Central tunnel workings of the Ophir, northwest from the old Mexican shaft and 56 ft. above the tunnel level, they are raising in quartz, assaying \$4 to \$6 per ton. They are also working upward at another point, where they saved during the week five tons of ore assaying \$51.19 per ton.

POTOSI.—Repairs continue to be made on the 450 and 650 levels. On the tunnel level, at a point 331 ft. in from the switch in the southeast drift, they are running a southeast drift through the old stope to prospect the ground above and west of it.

WHITE PINE COUNTY.

NEW STATE.—A late discovery made and located 1 1/2 miles south of Osceola is that of a small lode carrying 2 ft. of ore, which will run, it is thought, 60% lead, 70 oz. silver and \$6 in gold. This is the first lead-silver proposition found here.

OHIO.

COLUMBIANA COUNTY.

A company was recently incorporated in Salem for the purpose of drilling oil wells in territory which they have secured north of that city. The company is capitalized at \$10,000, divided into 400 shares. The incorporators are G. M. Fink, Charles Bonsall, W. E. Linn, A. E. Bissett, J. S. Clemmer, Charles Gore, J. W. Slayton and J. G. Seig.

OREGON.

BAKER COUNTY.

CHLORIDE & MAXWELL GOLD MINING COMPANY.—It is reported that work on these properties will be resumed in the near future. The ore from the Chloride, of which a considerable quantity is already gotten out, will be shipped for smelting. The Maxwell mine is a mile and a half distant from the Chloride on the Elkhorn Mountain. At the latter property it is the intention to put up a 10-stamp mill, as the ore from the Maxwell is free, and it is hoped to have the mill in operation during the month of June.

PENNSYLVANIA.

EDDY CREEK COLLIERY.—By a fall of rock in the workings of this colliery, at Olyphant, April 18th, four men were killed and one seriously injured. The remains are buried under tons of rock, and it was several hours before they could be recovered. They were engaged in driving a tunnel, and were working within 200 ft. of the bottom of the shaft. They had occasion to fire a blast to loosen up some rock, and a short time afterward the fall occurred. Between 8 and 10 tons fell altogether, and the four men were crushed beneath it.

LUZERNE COUNTY.

LEHIGH GRANITE COMPANY.—This company has been organized to work granite quarries near White Haven. The company has secured a tract of 300 acres, and will begin work at once. The capital stock is \$200,000, and the officers are: President G. W. Halsey; vice-president, E. H. Lawall; secretary and treasurer, Arthur P. Kunkle.

MONTGOMERY COUNTY.

MCCOY LIME COMPANY.—This company has been organized to operate large quarries in Upper Merion, with a capital stock of \$100,000.

SOUTH DAKOTA

PENNINGTON COUNTY.

EGYPTIAN.—The owners of this mine have closed a contract with the Ingram custom mill for an extended run on their ore. The development crosscut in this mine has opened up a large vein of ore running \$6.50, free milling, and \$6 per ton in concentrator. The cost of mining and milling is about \$2.25 per ton.

UTAH.

JUAB COUNTY.

CENTENNIAL EUREKA.—A new discovery has been made in this mine, consisting of an ore body in the old Centennial chute, about 500 ft. below the surface, that shows a high average value, says the Salt Lake Herald. The new discovery above mentioned is located about 30 ft. below the spot where, some time ago, the company took out some very rich silver ore, and for some months now the company has been operating on large ore bodies in this bonanza property. In sinking during the winter the 1,100 level was cut, exposing large bodies of high-grade ore containing considerable copper.

PIUTE COUNTY.

DESERET.—This company is about to let a contract for a 400-ft. tunnel to tap the vein at a lower level. The company has 20 ft. of ore running from \$16 to \$25 a ton, with some high-grade ore found in pockets here and there.

HOMESTAKE AND WEBSTER.—These mines, owned by Chambers, Colbath & Hearst, will resume work in a short time. In former times the ores were marketed at a fair margin. The property is now developed through a tunnel that has penetrated it for a distance of 1,700 ft. and a large ore body could be handled economically with a mill upon the ground.

SALT LAKE COUNTY.

DALTON & LARK.—The air-drift, which is being

run from the workings of the Dalton & Lark to those of the Antelope at Bingham, was completed last week, and the owners of the latter may now go into the main ore body, from which they were driven shortly after it was uncovered. Meanwhile, the owners have been extracting ore at a point above that at which the main body lies.

LAMOILLE COUNTY.

ACME GRANITE COMPANY.—This newly organized company has bought the Brechin quarry at Morrisville. The office is at Barre, and J. Brechin is manager.

LATE NEWS.

BARON MAURICE DE HIRSCH, the great financier and philanthropist, died April 20th on his estate at Presburg, Hungary, from a stroke of apoplexy. Baron de Hirsch was specially distinguished in the industrial world by the railroad contracts he carried out in Bulgaria, Roumania and Turkey, and his investments also reached mining enterprise.

Shovelmakers' Trust.—The representatives from the fourteen shovel factories in the United States held a meeting in Boston a few days ago and formed a combination. The factories are in Philadelphia, Pittsburg, Beaver Falls, St. Louis, Terre Haute, and Anderson. Organization will be completed at another meeting in Boston. The trust has already advanced the price 20 per cent., and, since April 9, not an order has been booked at the old quotations.

It is proposed to limit the output to 400,000 dozen a year, which is about the limit of the country's demand. None of the plants in the trust will be permitted to increase its output, and should one sell more than it manufactures the privilege of placing the order must be purchased from the trust.

The trouble over the election of directors of the Bulwer Consolidated Mining Company, of Mono County, California, has been settled by agreement, and there will be no litigation. The old managers, who contested the right of the opposition, or Westheimer, party to vote on certain stock, have withdrawn, and the new directors have taken charge. Under the agreement Herman Zadig and H. L. Shippee remain directors to represent the former controlling interest. The new board consists of N. Westheimer, S. L. Ackerman, H. Zadig, H. L. Shippee, A. Krausse, A. Herman and John W. Pew. N. Westheimer is president, S. L. Ackerman vice-president, John W. Pew secretary, R. C. Turner temporary superintendent. The Farmers' Loan and Trust Company, of New York, is the eastern transfer agent of the company. The office of the company will be removed from the Nevada block to 310 Pine street, San Francisco.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, April 24.

Statement of shipments of anthracite coal (approximate) in tons of 2,240 lbs., for the week ending April 18th, 1896, compared with the corresponding period last year.

	1896.		1895.
	Week.	Year.	Year.
Pennsylvania Railroad.....	75,368	1,055,357	1,155,085

PRODUCTION OF BITUMINOUS COAL, in tons of 2,000 lbs. for week ending April 18th, and for years from January 1st, 1896 and 1895:

	1896.		1895.
	Week.	Year.	Year.
Shipped East and North:			
Allegheny, Pa.....	50,817	746,470	540,731
Barclay, Pa.....	1,131	15,703
Beech Creek, Pa.....	150,719	1,046,567	978,491
Broad Top, Pa.....	6,602	147,393	167,800
Clearfield, Pa.....	91,382	1,524,794	2,424,419
Cumberland, Md.....	66,596	902,791	934,227
Kanawha, W. Va.....	181,156	1,229,156	1,154,118
Phila. & Erie.....	706	16,142	31,702
Pocahontas Flat Top.....	91,176	81,129,856	1,130,151
Totals.....	439,345	6,758,872	7,361,629

† Week ending March 28th.
 ‡ " " April 14th.
 § " " April 11th.

	1896.		1895.
	Week.	Year.	Year.
Shipped West:			
Monongahela, Pa.....	14,574	293,653	239,564
Pittsburg, Pa.....	38,550	606,906	681,910
Westmoreland, Pa.....	39,813	628,967	752,870
Totals.....	92,937	1,529,526	1,677,374
Grand totals.....	532,282	8,288,398	9,039,003

Production of coke on line of Pennsylvania Railroad for the week ending April 18th, 1896, and year from January 1st, 1896, in tons of 2,000 lbs.: Week, 80,492 tons; year, 1,416,939; to corresponding date in 1895, 1,781,139 tons.

Anthracite.

Taking the trade as a whole we are enabled to report a steadier feeling. The market is gradually reviving, but it is impossible to say how long it will take to place it once more on a prosperous footing. The warm weather has set in, so we cannot expect much change just now.

The sales agents are looking to the coming month for an advance in prices, and it is thought that one will be made, but there is nothing definite decided yet by the companies, though there is a disposition among the individual representatives in favor of an advance. It is said that should prices be increased trade in general will be benefited thereby, thus showing that the sales agents have adopted the new theory set forth by the steel pool. Coal in stock, it is said, is not increasing, and output is reported to be within the prescribed

limit of 3,000,000 tons per month. Some coal is being shipped West, but prices remain unchanged. They are as follows: \$3.60 for stove, \$3.35 for egg and chestnut, and \$3.10 for broken; all net on board New York Harbor. There are no reports of cutting the circular prices, but retailers are holding back orders. This action on their part is usual at this season of the year, especially as consumers scrape their bins to lengthen their supply until the weather becomes warmer.

The anti-trust law does not seem to have affected the officers of the anthracite companies as yet, although it is obvious that this bill has shelved any meetings for recommendations which may have been on the slate for the future. One enterprising sales agent has informally remarked that if an investigation were made by the anti-trust agitators it is likely to be one of mutual advantage to the coal fraternity, as it is claimed that they have not entered into any agreement either legally or otherwise. President Thomas P. Fowler, of the New York, Ontario & Western, outlines a policy by saying that his company will obey the law. It hauls coal for Pennsylvania miners, and if they choose to hold back their coal for higher prices, the road cannot compel them to forward it. That is the situation of the Erie also, which receives coal from the Hill-side Coal and Iron Company, which it owns, a Pennsylvania corporation, which cannot be reached by the bill. The Philadelphia & Reading Railroad, the Central Railroad of New Jersey, the Lehigh Valley Railroad, and the Pennsylvania are incorporated and operate under the laws of other States and do not come under the law.

With all the various opinions current with regard to the new law, it is now impossible to say what the ultimate outcome will be, but the general belief is that it will have no outcome—no effect practically.

The 50th anniversary of the Lehigh Valley Railroad Company was celebrated this week. The occasion was observed very quietly, and consisted merely in a hand shake and congratulations among the officers of the company.

Bituminous.

There is little change to report in the soft coal market this week, although a few contracts are quietly dropping in at higher figures. Bids on the Boston & Maine Railroad contract were to have been opened this week, but at this writing we are unable to report any award. Most producers feel convinced that all the figures will be on the Association basis, and are of the opinion that the cost of putting the coal on the market will not permit of any lower prices. It is the impression of some of the consumers that with the proposed limited tonnage to be fixed later there will be a shortage of the better classes of coal and an increased demand for the poorer qualities. There is a general feeling that the Association is holding its own, and that reports of cutting can be traced to non-producers, who sell merely on commission, and who, it is thought, would have difficulty in supplying the coal when called for. The orders from points round Cape Cod appear to be the most prevalent in shippers' hands, and that consuming territory is taking the largest quantity of coal now. Business on the Sound is going by fits and starts, but it does not seem to have the solid character which is maintained by other Eastern business. New York Harbor trade is moving forward quietly and in fair quantity.

All rail trade is fairly active, though the changes in prices and freights do not help business. There is not much tonnage on the road or standing at the shipping ports, and some of the producers are increasing their shipments from the mines. There is a small inquiry for coal for export to South America, but in most cases it is not important.

Transportation from mines to tide is good, and coal is running through the usual time allowed by the various producers to the different ports. The car supply is good; requisitions being pretty generally filled, except in some few cases where more coal is held than is allowed the specific shipper by the railroad companies.

Prompt shipments are generally accorded to vessels at all the shipping ports, no charters being made for tonnages above that waiting shipment. In the coastwise vessel market the supply of vessels continues to be better than the demand, making the freights weak and falling, with a variety of vessels, large and small, to choose from by the shippers.

We quote rates of freight from Philadelphia as follows: To Boston and Salem, 70c; Providence, New Bedford and the Sound ports, 60c@65c; Portland and Portsmouth, 70c@75c; Wareham, 80c; Lynn, 90c; Newburyport, 85c; Dover, \$1.20 and discharge; Bath, 75c; Gardiner, 80c@85c and towage; Bangor, \$1; Newport News, 5c above these rates; Norfolk and Baltimore, 5@10c above.

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 15c differential in favor of Clearfield and Beech Creek coals.

Buffalo, N. Y.

April 23.

(From Our Special Correspondent.)

The anthracite coal business is unchanged. The only trade reported is for immediate requirements of local consumers and near-by towns and villages. Forwarders will not send coal by lake westward until the beginning of next week.

Bituminous coal trade is very quiet, as manufacturers are only taking for present needs, as they do not anticipate any higher prices.

The first vessel arrival at Buffalo this year was at 8:30 o'clock p. m., April 19th, and the first departure on April 20th. There is considerable ice yet in sight for 20 miles.

The Sault Ste. Marie Canal was opened April 18th. Thus far the only shipment of coal was 1,100 tons of blacksmith's coal to Milwaukee. The nominal freight rates are: Buffalo to Chicago, Milwaukee and Green Bay, 40c.; to Racine, 45c.; to Toledo and Detroit, 25c., and to Duluth and Lake Superior ports, 15c.

The Erie and Champlain canals will be open for navigation Friday morning, May 1st; the other canals of the State in a few days.

Chicago.

April 22.

(From Our Special Correspondent.)

Slightly colder weather has increased the anthracite coal trade at this point somewhat, but not to an extent wherein the improvement could be called advantageous to anyone to any extent. There will be a great deal of hard coal carried over when the season ends, and it is presumed that the figure will foot up more than 200,000 tons. This amount of coal held over is very unusual, and it may have a tendency to prevent the coming circular rates being placed at as high a figure as intended. Navigation has opened on the lakes, as during the week the steamer J. C. Lockwood arrived from Cleveland with a cargo of soft coal.

Bituminous Coal has not been in much demand, and about all the coal that is moving now is on former contracts. The change in rates has somewhat disturbed things, the new rates going into effect May 1st, but it is believed that ere then the rates recently made will be somewhat changed, and more equitable ones in the eyes of dealers made. Coke is in small demand, and there is nothing of a better nature in sight.

Pittsburg.

April 23.

Coal.—Trade during the week was not very active so far as relates to the river shipments, being light caused by the scarcity of coal; in fact coal has been shipped nearly as fast as it was mined. The feature of the week was the tow of the Raymond Horner, viz., 20 coal boats with 25,000 bushels each and 3 barges containing 39,000 bushels; total 539,000 bushels, beating all known records. The railroad mines are now busily loading for lake shipments, large quantities of coal are daily leaving the Pittsburg district for lake ports. The uniformity project appears to have been shelved for the present at least.

The deal which had been on for months for the purchase of 1,500 acres of coking coal in Southern Fayette County was concluded at Uniontown, Pa., on Monday by the payment of the purchase money, amounting to \$250,000, to the farmers. The purchase was made by Herbert Dupuy, of Pittsburg, who secured options some time ago.

This is the last big field of coking coal in the region; it is stated that Mr. Dupuy represents Ohio furnacemen, who will erect coke plants and make coke for their own use.

Connellsville Coke.—The trade did not receive the amount of new life that was expected on account of the pool movement, but the trade remains in an encouraging condition. Production was good and shows an increase of 131 tons. Demand for coke from the East and West was not up to the week previous, while the shipments fell off 390 tons, but the orders from these points are arriving more freely and a decidedly better trade is looked for. The operators in general are feeling encouraged and are looking ahead to a better trade. The situation in iron circles is encouraging and gives reason for a better feeling. The summary of the region for the week shows 11,565 ovens in blast, with 6,332 idle. There were no changes in the active or idle list during the week; the only changes for this week will be the firing up of 37 ovens at Uniondale plant of Reid Bros. The better outlook in trade conditions warrants the prediction that the idle list has about reached low ebb and the next charges will be adding to the active list. The production of the region was estimated at 111,002 tons, a slight increase. The Frick and McCline plants and connected interests are all scheduled for a five day run; 4,557 ovens made six days, 7,012 ovens five days and 70 ovens four days, an average of 5.39 days, as against 5.29 days the week previous.

The shipments from the region amounted to 6,753 cars as follows: To points west of Pittsburg, 3,560 cars; to points east, 1,054 cars; to Pittsburg and way points, 2,133 cars.

Prices of coke are firmly held; furnace, \$2; foundry and crushed, \$2.30 f. o. b. Cars at ovens.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, April 24, 1896.

Fig Iron Production and Furnaces in Blast.

Fuel used.	Week ending		From Jan., '95.	From Jan., '96.
	April 26, 1895.	April 24, 1896.		
	F'ces.	Tons.	F'ces.	Tons.
Anthracite.....	31	20,097	44	20,250
Coke.....	119	132,360	139	170,370
Charcoal.....	18	3,859	13	5,200
Totals.....	171	156,316	196	195,820
			2,750,168	3,401,497

The rush of business, which was to come at once after prices had been "definitely settled"—upward—by the coke pool, the ore pool and finally by the steel combination, has not yet made its appearance, and a quiet market has continued through the week. It seems strange, but there are still many people left who are so benighted and behind the age as to believe that the old-fashioned law of supply and demand will ultimately regulate prices, and these laggards do not relish the modern trust and combination plan of doing business. To stimulate a dull market by raising prices is certainly a stroke of genius; but somehow or other it is not working as well just now as it ought to. The only suggestion we have to offer is a further increase. If \$20 steel billets will not start up business, perhaps \$25 or even \$30 billets might bring out the buyers. The latter class—and in turn their customers the general public—may, however, have something to say by-and-by. For the present they are expressing themselves by quietly keeping out of the market.

The facts are that sales of finished material do not increase, collections are slower than they ought to be, and most people seem indisposed to go into new enterprises. A large section of the iron trade has settled down into the belief that there will be no boom this year, and no revival worth mentioning until after election—perhaps not then. Business men are beginning to realize more and more that there will and can be no permanent or healthy improvement until the currency question is settled in the right way and taken entirely out of politics.

Cleveland advises report some large sales of iron ore, but the buying seems to have been limited to one purchaser, and the contracts for season ore are very backward. The fact is that many furnacemen are still at sea as to their requirements, and do not feel disposed to take more ore than they are obliged to at the rates fixed by the companies. The uncertain state of affairs has had the effect of postponing the threatened strike of the Lake miners, and they have this week decided not to make any movement for higher wages or shorter hours at present.

The managers of the new steel pool are in session in Pittsburg to-day. It is reported that George S. Griscom has been appointed commissioner of the port. Also that no change in prices is to be made.

The meeting held last week seems to have been successful in putting the Merchant Bar Iron Association in shape again, though the managers are somewhat reticent about the plans adopted for bringing the outside mills into the association. At any rate the dissensions which threatened a general break up have been settled for the present, and the irregularity in prices stopped, though no increase has been made.

NOTES OF THE WEEK.

The reorganized Pennsylvania Steel Company shareholders' meeting will be held May 4th. It is understood that Mr. E. C. Felton, for several years past the general manager of the company, will be elected president, as Major Luther S. Bent, who so long conducted the company's affairs, declines to be a candidate, and Effingham B. Morris does not desire to be re-elected. The new Board recommended by the Reorganization Committee to the shareholders is E. C. Felton, L. S. Bent, E. B. Morris, Alfred Earnshaw, George Wood, C. Stuart Paterson, E. R. Dick, F. W. Hunnewell and John Casals. Mr. Hunnewell represents the Boston interest.

The Eastern Joint Traffic Association has adopted the following rules governing westbound shipments from Trunk Line points under the special iron tariff, which took effect April 13th:

"On shipments of articles covered by the special iron tariff destined to points west of the Mississippi River, located in the territory to which the proportional basis to East Mississippi River points applies, the proportions from the seaboard to East Mississippi River points are to be based on 11% of the full rates under said tariff, New York to Chicago, namely 25c. per 100 lbs.

"The full rates under the special iron tariff on the basis of New York to Chicago shall be charged to Chicago and other junction points on all shipments destined to points west thereof not covered by the above rule, and to which no through rates have been established. The full rates to Chicago and other junctions will also be charged on Pacific Coast traffic. The rate to Mackinaw City on business destined beyond shall be the same as to Chicago—namely, 25c. per 100 lbs."

New York.

April 24.

Business in the local market has been a little better, especially in pig iron and structural material. The temporary check given by the formation of the steel pool and the expectation of higher prices, is slowly passing away. These higher prices have not materialized yet, and people are beginning to think that they may not seriously affect trade for some time yet. There is, however, no rush to buy and demand is not active enough to force anyone into the market. The weak point is the difficulty in making collections, and even large concerns are making unusual delays in settlements.

There is considerable discussion as to the probabilities of the Southern blast furnaces maintaining prices. The more general opinion is that they will not, and some profess to know that cuts have already been made. If so, it has been very quietly done. Unless there is some change, however, it is quite likely that concessions will be made before long. The movement to advance prices, which has been resisted by several of the Alabama ironmakers,

had its origin in the manipulations of the Tennessee Coal, Iron and Railway Company. A nominal advance in quotations for iron would be a material aid in working up the stock of the company in Wall Street, while real sales might be made on a lower basis. The other companies understand this, and are not ready to come into the game.

NOTES OF THE WEEK.

The Architectural Iron Manufacturers of New York had their annual dinner at the Hotel Savoy on Monday evening of this week. Mr. John Cooper, president of the association, presided and a number of members and guests were present. The visitors included several representatives of the rolling mills. Secretary W. J. Foyer gave a review of the work of the association, and speeches were made by Messrs. George A. Just, J. M. Cornell, W. H. Wallace, Percival Roberts, Jr., A. R. Whitney, Watts Cooke, and W. O. Fayerweather.

Pig Iron.—A fair amount of business has been done, and a good deal of iron is going forward to New England and Hudson River points. Prices are unchanged and sellers generally claim that they are maintaining rates, but there is some difference of opinion on this point, and it is quite probable that some orders have been placed 25c. or so lower than our figures, especially in No. 2 soft and gray forge.

We quote for Northern brands as follows: No. 1 foundry, \$12.75@13.25; No. 2, foundry, \$12@12.50; gray forge, \$11.25@11.75. For Southern iron prices are: No. 1 foundry, \$11.75@12.25; No. 2 foundry, \$11.25@11.75; No. 1 soft, \$11.25@11.75; No. 2 soft, \$11@11.50; forge, \$10@10.50. All prices are for tide-water delivery.

Cast-Iron Pipe.—The market has revived again and several small contracts have been offered, with one of 1,800 or 2,000 tons for a New Jersey town. Should the Whitney gas bill pass the Massachusetts legislature, some good contracts may be expected.

Spiegeleisen and Ferro-Manganese.—There have been several transactions in imported ferro-manganese and signs of a little more activity. We quote \$19.50@20.50 for spiegeleisen and \$47@47.50 for ferro.

Steel Billets and Rods.—The quotation fixed by the pool is \$21.75 per ton, New York, but no sales are reported here. Rods are nominally \$27@27.50, with no sales.

Merchant Iron and Steel.—The market continues quiet, dealings being chiefly small. There is some talk of higher prices for iron bars, but they have not yet made their appearance. The only change noted in prices is a small advance in soft steel bars. We quote for common bars, 1 1/2@1 1/25c.; refined bars, 1 1/2@1 1/50c.; soft steel bars, 1 3/8@1 1/45c. Other quotations are as follows: Open hearth machinery steel, 1 5/8@1 60c.; steel hoops, 1 5/8@1 60c.; steel axles, 1 6/8@1 80c.; links and pins, 1 6/8@1 75c.; tire steel, 1 8/8@2c.; spring steel, 2 1/8@2 25c. Rivets are 2 2/8@2 3/8c. for steel, and 3 3/8@3 1/2c. for iron.

Plates.—Business has been quieter, and we hear of no large orders. There is a little more pressure for work, but we cannot find that there is any cutting on prices. Universal mill plates are 1 4/8@1 55c. For steel plates we quote: Tank, 1 4/8@1 55c.; boiler shell, 1 5/8@1 65c.; good flange, 1 8/8@1 95c.; firebox, 2 1/8@2 50c. Charcoal iron plates are 2 2/8@2 3/8c. for shell, 2 7/8@2 80c. for flange, and 3 2/8@3 3/8c. for firebox.

Structural Iron and Steel.—The amount of business has been good. Besides a number of small orders the contract for the new Bank of Commerce building has been let, the work going to a Pittsburg mill. Deliveries on contracts are active. In prices there is no change. We quote for angles, 1 4/8@1 55c.; channels, 1 6/8@1 75c.; tees, 1 6/8@1 75c.; beams (up to 15-in.), 1 6/8@1 75c. for large lots and 1 9/8@2 10c. for small orders.

Steel Rails and Rail Fastenings.—Rails are unchanged at \$28 per ton at mill, or \$28.75 at tide-water for standard sections. Girdler and street rails are \$28@32 per ton at mill, according to section. There has been more activity this week and several sales of standard rails are reported. Contracts have been closed for several lots of street rails also, the total amount being about 16,500 tons.

Rail fastenings are quiet and unchanged. Quotations are: For fish and angle-plates, 1 25@1 35c.; spikes, 1 6/8@1 80c.; bolts, 1 9/8@2 05c. for square nuts, and 2 05@2 15c. for hexagon nuts.

Scrap Iron.—Foundry scrap is firm at \$9.50@11 per ton, according to size and quality of lots. We hear of one sale of railroad cast scrap at \$11.50, delivery at a Sound port.

The lot of old iron rails referred to last week as offered here without takers was finally sold to go to Pennsylvania. New York is not a good market for old rails, but in this case the seller hoped that the lot might be taken here, saving freight charges.

Buffalo, N. Y.

April 22.

(Special Report of Rogers, Brown & Co.)

There is a fair amount of business in progress at prices which have been current for the past month or so. Southern iron, through its lower price, is cutting heavily into the trade of Northern furnaces in this section. These latter have not yet begun to feel the influence of increased cost of raw materials and so continue, under the stress of Southern and Eastern competition, to sell at prices which it is

supposed will be impossible later in the season. 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; Ohio strong softener No. 2, \$13; Jackson County silvery No. 1, \$15.50; Southern soft No. 1, \$12.40, Southern soft No. 2, \$11.90; Hanging Rock charcoal, \$18; Lake Superior charcoal, \$14.

Chicago.

April 22.

The iron market for this city has been rather inactive during the past week, sales in most every line having fallen off from those of several weeks past. The situation is now a waiting one, and shows that the small boom of several weeks past was entirely due to the contemplated formation of the several pools.

Pig Iron.—The market for pig iron has not been active, the spurt of several weeks past having evidently exhausted almost all the buying propensities of consumers. A large quantity of pig iron has been sold here during the past month, and a great deal of it was probably on speculation. The aggregate sales of Northern iron for this week will be about 6,000 tons, and the Southern furnaces have sold as much more. The advance in the price of Southern iron as reported is hardly holding; there is every evidence that the old rates are being quoted. We quote: Lake Superior charcoal, \$13.50@14; local coke foundry No. 1, \$12.50@13; local coke foundry No. 2, \$12@12.50; local coke foundry No. 3, \$11@12; Southern coke, No. 1, \$12.10@12.35; Southern coke, No. 2, \$11.60@11.85; Southern coke, No. 3, \$11.10@11.60; Southern, No. 1, soft \$11.60@11.85; Southern, No. 2, soft, \$11.35@11.60; Jackson County Silveries, \$14.50@16; Ohio strong softeners, \$15@15.50; Alabama car-wheel, \$16.85@17.35.

Structural Material.—Inquiry has been fairly active during the week, but there is not much business being transacted. The Wisconsin Central Railroad is in the market for 1,200 tons bridge material. The Northern Pacific and the Illinois Central are asking bids on 2,000 tons bridge material. The Union Depot at Columbus, O., will require 1,500 tons, now being bid on. Prices are as follows: Beams and channels, 1.65@1.70c.; angles, 1.45@1.50c.; plates, 1.50@1.55c.; tees, 1.65@1.70c. Small lots from stock are quoted 1/8c. to 1/4c. higher.

Bar Iron.—There is some renewed activity prevailing, due to the buying of a few of the railroads in the car line. Generally business is only fair and inquiry is not heavy. Prices are firmer on account of the action of the Bar Iron Association meeting, and are, for common iron, 1.30@1.35, and refined, 1.35@1.40.

Steel Rails.—There has been but little business transacted in rails. Only a few thousand tons were sold. The inquiry is but light and prospects are uncertain. Rails are quoted \$29 Chicago.

Billets and Rods.—A few thousand tons of billets and rods were disposed of during the week. It is hoped that the next few weeks will again bring a good run of business. Billets are quoted \$21.25 and rods \$29.50.

Old Rails and Wheels.—But a few small sales of old rails were reported for the week. Old iron rails are quoted \$14@14.50 and old wheels \$13.50.

Scrap.—There has been but little demand for scrap, sales being confined to very small quantities. Quotations are: No. 1 Mill, \$7.50@8; No. 1 railroad shop, \$12; fish plates, \$13.50; iron axles, \$15; cast borings, \$4.50; wrought turnings, \$7; mixed steel, \$7.50.

Cleveland, O.

April 23.

(From Our Special Correspondent.)

Iron Ore.—The most important event of the week in ore trade was the sale of from 1,000,000 to 1,200,000 tons of Bessemer ore to the Illinois Steel Company. This is the first large sale of the season, and comprises 50% or more of the probable needs of this consumer for the year. The Carnegie interests have not yet made extensive purchases and the lesser consumers, who usually give precedence in point of time in buying to the big purchasers, have not yet had time to fall into line. Other sales are expected soon, as the season is already considerably later than usual. Most of the ore is generally contracted for when navigation opens. There is no marked inquiry for non-Bessemer ores, and practically none of this variety has been sold during the week. The Bessemer sales were at the prices established several weeks ago on the basis of \$4 for standard non-Bessemer. Very little chartering of tonnage has been done. During the week wild rates have been made from all the shipping points on the upper lakes. Most of the business has been done from Escanaba, the wild rate from that port being 55c. From Marquette it is 85c. and from the head of the lakes \$1. Negotiations were in progress early in the week to charter boats from Duluth at \$1.10, but they have been called off by the shippers, and the situation is now about as uncertain as ever.

The wild charters that have been made during the week were mainly to bring down the ore that was sold last year, the delivery of which was delayed by agreement for this season. Vessels have been loading for several days at Escanaba and the first boats are now at Marquette for loads.

Pig Iron.—Bessemer pig is weaker. There is very little demand from any source and the few sales that are reported are at a slight decline from last week's prices. Present quotations are \$13.25@13.50 Cleveland.

Consumers of iron products are not going into the market beyond their immediate needs and the same policy seems to pervade all classes.

Foundry and forge irons are likewise quiet, with a tendency toward a lower level. Northern strong is quoted at \$12.75@13 Cleveland for No. 1 and \$12.25@12.50 for No. 2. Lake Superior charcoal is quoted at \$13.50.

Philadelphia. April 24.

(From Our Special Correspondent.)

Pig Iron.—Consumers have two reasons for not buying much iron at this time. One is that new business comes in rather slowly; another is that the accumulation of iron may weaken prices. The second reason is a poor one, because current consumptive requirements are below the normal level. New work is in sight all along the line, but buyers will continue their conservative policy. Small lots of No. 1 are going at \$13, No. 2 at \$12.50. Mill men purchase good brands of forge when they can, or rather contract for it at \$11.50, delivered. The future of the crude iron market is in the course demand takes for finished products.

Steel Billets.—Quoted by first hands to-day at \$22. There has been no business of importance and no effort is made to sell.

Merchant Bars.—Mills are running about as usual, in a slack way, some accumulating a little iron in view of a better demand in May. Manufacturers all say there must be a freer distribution ere long. Small shop demand is steady. Car building requirements have been presented in a moderate way this week. There is some news afloat regarding some larger car contracts soon to be given out. Prices range 1'10@1'40. The aim of manufacturers is to keep close to demand.

Nails.—The nail trade is fairly active though ruffled a little over card rates. Consumption is on the increase. Jobbers are very well supplied.

Skelp.—No change in the situation. Large contracts have been hanging fire for a week.

Sheet.—All mills are selling sheet iron in a satisfactory way in small lots. Prices are in favor of buyers. Card rates show signs of breaking. This is due to the desire of manufacturers to capture a few of the large contracts that are to be given out soon.

Merchant Steel.—The mill representatives say there is less stir and less distribution just at present.

Pipes and Tubes.—But little has been done in the way of securing summer work.

Plates.—All agree that the week's new business is up to the average of recent weeks, but below the volume that earlier estimates anticipated. There has also been some cutting, due, it is said, to sharp Western competition. Plates are \$1.40@1.50 for ordinary. Specifications are completed on over a thousand tons new work and they will be submitted in two or three days.

Structural Material.—New orders are small. Angles are more active just now than other shapes. Local building work is helping out. In a general way the trade is quiet and quotations unchanged. Brokers are pleased, however, with summer prospects.

Steel Rails.—Show no change.

Old Rails.—No business reported.

Scrap.—There was some business in borings and No. 2.

Pittsburg. April 23.

(From Our Special Correspondent.)

Raw Iron and Steel.—Business since our last has shown a moderate improvement so far as relates to certain products. There has been an increase in hopefulness as to the future in many directions, but the general disposition is to confine operations within conservative limits. There has been a fair business in finished iron and steel products and values have ruled firm on most descriptions, while plates show a slight advance. Bessemer pig-iron prices have been shaded slightly, and as large buyers of billets are temporarily stocked up the recent advance in pool prices has thus far been merely a nominal official price, which has turned business to middlemen who have been able to cut under it. As a general thing, however, there is a more cheerful feeling with regard to the prospects of the iron industry, although it has not yet been expressed in any substantial increase in demand.

These facts show that the trade so far has improved but slowly. The announcement of ore prices for the year caused no advance, nor was any improvement noted when the formation of the new steel combination was reported. There is no dispute as to the amount of material required, but consumers are unable to give orders while the money market rules so close; the trade, therefore, has dragged along, there being a moderate volume of business for which the mills compete sharply. Until interest rates fall and commercial credits are in better favor, there seems little prospect of a permanent improvement.

The value of river navigation to commerce may be estimated by the fact that within a week three tow boats left here for the West and South with cargoes of iron and steel whose united values amounted to \$740,000. The Pittsburg & Erie Canal is certain to revolutionize the iron and steel trade.

Reports from the Ohio Valley represent a steady demand, with moderate sales.

Latest.—The undertone of the market shows moderate strength, last week's figures being maintained. Billet sales have been \$19 60@20.10; Bessemer pig, \$13.40@13.60; gray forge, \$11.50@11.75, the latter being held firmly. Finished material was more inquired for and prices have an upward look with a slight advance on limited accounts. Indications point to an advance in wire nails. On the whole, however, the outlook is not what we have a right to expect for the fourth month in 1896.

COKE SMELTED, LAKE AND NATIVE ORE.	Tons.	Cash.
5,000 Bessemer, May, June, Pitts.	13.40	
3,000 Bessemer, May, June, Pitts.	13.60	
2,000 Bessemer, April, May, Pitts.	13.50	
2,000 Bessemer, April, May, Pitts.	13.25	
1,500 Bessemer, May, June, Pitts.	13.60	
1,000 Bessemer, April, May, Pitts.	13.40	
1,000 Gray Forge, May, June, Pitts.	11.25	
1,000 Southern Gray Forge, May, Pitts.	10.50	
500 Gray Forge, prompt, Pitts.	11.25	
500 Gray Forge, April, Valley.	10.65	
500 Mill Iron, all ore, Pitts.	11.63	
300 Southern Mill, prompt, Pitts.	10.60	
200 No. 1 Foundry, prompt, Pitts.	13.50	
200 No. 2 Foundry, prompt, Pitts.	12.25	
200 No. 1 Foundry, all ore, Pitts.	14.00	
CHARCOAL.		
100 Cold Blast, Pitts.	23.00	
100 No. 2 Foundry, Pitts.	16.50	
50 No. 2 Foundry, Pitts.	16.50	
50 Cold Blast, Pitts.	23.25	
25 Cold Blast, Pitts.	23.50	
BLOOMS, BILLETS AND SLABS AT MILL.		
2,200 Billets, May, June, at mill.	\$19.75	
2,000 Billets, April delivered, at mill.	20.10	
1,000 Billets, April, May, and June, at mill.	20.00	
1,000 Billets, April and May, at mill.	19.60	
1,000 Billets, April and May, at mill.	19.50	
500 Billets, spot, at mill.	19.80	
SKELP IRON.		
900 Sheared, Pitts.	\$14.5 4 m.	
SKELP STEEL.		
1,000 Sheared, Pitts.	\$1.37 1/2 4 m.	
950 Wide grooved, Pitts.	1.17 1/2 4 m.	
800 Narrow grooved, Pitts.	1.17 1/2 4 m.	
MUCK BAR.		
Cash.		
1,000 Neutral, Apr., May, Pitts.	\$21.50	
1,000 Neutral, delivered, Pitts.	22.10	
STEEL WIRE RODS.		
2,000 5-gauge, at mill, Pitts.	\$28.00	
SHEET BARS.		
1,100 At mill, delivered, Pitts.	\$22 75	
200 At mill, delivered, Pitts.	22.50	
BLOOMS, BILLETS AND BAR ENDS.		
1,000 Blooms and billet ends, Pitts.	\$14.50	
FERRO-MANGANESE.		
50 80 per cent., Pitts.	\$50.00	
OLD RAILS.		
2,000 Steel rails, Youngstown.	\$14.30	
1,000 Steel rails, f. o. b. Cleveland, O.	17.25	
700 Iron rails, f. o. b. Cleveland, O.	17.25	
SCRAP MATERIAL.		
500 No. 1 railroad wrought, net, Pittsburg.	\$13 50	
300 No. 1 railroad wrought, net, Pittsburg.	13.00	
200 No. 1 wrought scrap, gross, Pittsburg.	11.00	
100 Wrought iron trimmings, net, Pittsburg.	8.00	

METAL MARKET.

New York, Friday Evening, April 24, 1896.

Gold and Silver.

Prices of Silver per Ounce Troy.

April.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.	April.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.
18	4 88 1/4	31	67 3/4	.524	22	4 88 1/4	31	67 3/4	.524
20	4 88 1/4	31	67 3/4	.524	23	4 88 1/4	31	67 3/4	.524
21	4 88 1/4	31	67 3/4	.524	24	4 88 1/4	31	67 3/4	.524

Silver has been in good request at 31d., but buyers have been unwilling to advance beyond that figure, and have been fairly well supplied; the orders have been in excess of offerings.

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, March, 1896, and years from January 1st, 1896 and 1895:

	Specie and bullion.		In ores.		Total excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
GOLD					
Mar.	\$384,080	\$677,733	\$17,940	\$78,883	\$351,596
1896	13,134,306	22,604,762	74,893	357,903	9,753,466
1895	30,621,116	14,109,920	284,557	258,356	16,537,397
SILV.					
Mar.	5,014,726	1,353,526	67,568	1,257,875	2,470,893
1896	15,280,344	3,823,490	539,444	4,053,081	7,943,617
1895	16,618,375	1,606,156	2,876,302	6,135,918

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 April 24th, 1896, and for years from January 1st, 1896, 1895, 1894, 1893 and 1892:

	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
We'k	\$540,240	\$11,514	\$569,427	\$19,147	\$1,078,706
1896	13,889,633	16,770,430	12,485,094	699,816	8,991,481
1895	31,262,609	13,137,342	10,125,083	159,200	25,791,150
1894	15,794,978	4,925,922	13,487,919	576,630	23,451,375
1893	51,142,422	5,589,811	10,292,890	931,582	54,913,919
1892	20,159,403	5,917,619	8,379,773	460,887	2,160,670

Of the gold exported for the week \$333,140 went to France, \$200,000 to Germany, and the balance to the West Indies; of the silver \$3,227 went to South America; and the remainder to London. The specie imported came chiefly from 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. Pence.	New York Cents.	Lon. Pence.	New York Cents.	Lon. 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

The London price is per standard ounce '925 fine; the New York price is per fine ounce, or for pure silver.

FINANCIAL NOTES OF THE WEEK.

The financial events of the week chiefly center in the disclosure, not to say scandal, in the Baltimore & Ohio Company's affairs. The deficiency in the actual assets has been suspected for a considerable time, but the absolute rottenness of the situation has only now come to light. The revelations are astounding to bankers and investors, who, without the slightest distrust, looked upon this property, when Mr. Garrett was president, as one of the soundest in the country, and certainly were justified in the opinion, on account of the 8 and 10% dividends then paid on the common stock.

The gold situation in the Treasury has changed but little since our last report, only \$400,000 having been withdrawn for export. Other withdrawals have taken place on domestic account, but have been balanced by deposits. This withdrawal was on special account and was withdrawn, quite apart from any exchange influence, there being no profit in exporting gold from this country at present to London, Paris or Germany, but Russia apparently is carrying out her fixed policy of increasing her stock of gold, and this shipment, like that of last week, is on Russian account. We have already called attention to the fact that Russia has absorbed and locked up \$115,000,000 in gold between the 1st of April, 1895, and the corresponding date this year. Owing to the rate that money can be loaned at in this market bankers have no apprehension of further withdrawals unless it should be on such orders as above referred to. With money in London at less than one-half of one per cent. on call loans, or short paper, and with three and four months' bank bills readily taken at 1/2% of one per cent., and six months' bills only commanding 3/4 of one per cent., it is not likely that money will be withdrawn by the London bankers from this market as they can find much more profitable employment for their spare cash here.

A very good impression has been created by such a full and complete report made by the General Electric Company, and the comment upon it is that it would be most beneficial for the market in general and every one trading in it, if all companies, whether called "trust" or "corporation," would render such full and explicit accounts. This report we have very carefully analyzed and have given a full abstract of it, bringing out its most important features in another column.

A matter of interest to some of our readers will be the price paid by the Superintendent of the Mint in Philadelphia for nickel and copper blanks.

The statement shows that the bronze one cent blanks delivered aggregated 1,563,575 lbs. at \$0.19.94 per pound, costing \$303,073. The five-cent nickel blanks aggregated 678,177 lbs., of which 676,677 lbs. at \$0.31.94 per pound cost \$221,550, the remaining 1,500 lbs. at \$0.40 per pound, \$600.

The Treasury gold is about \$125,000,000. Only \$2,000,000 of gold remain to be turned into the Treasury from the last bond sale of \$100,000,000.

On February 10th of this year the gold reserve had declined to \$44,000,000, its lowest point. The highest point reached after that date was \$128,000,000, as the gold from the last bond sale was paid. Since February 10th there have been withdrawals from the Treasury in the redemption of United States notes and Treasury notes, \$39,000,000 in gold, and since July 1st, 1895, the withdrawals have been \$125,000,000, or nearly \$15,000,000 more than was derived from the last bond sale. The total withdrawals for the present month have been \$4,725,000.

An expert estimate of the ledger value of the assets of the General Electric Company has been made by an official of one of the numerous electrical manufacturing companies as follows: Assets, \$30,045,936; less bonds and accounts payable, \$9,251,069; balance, \$20,794,867; less patents, \$8,000,000; balance, \$12,794,867; accrued dividends on preferred stock, \$800,000; net balance, \$11,994,867, representing a value to the stock of 34.55.

The statement of the United States Treasury on Thursday, April 23d, shows balances in excess of outstanding certificates as below, comparison being made with the corresponding day of last week:

	April 16.	April 23.	Changes.
Gold.....	\$127,142,352	\$126,324,205	D. \$818,147
Silver.....	22,213,872	22,346,726	I. 132,854
Legal tenders.....	80,974,863	78,710,887	D. 2,263,976
Treasury notes, etc.,	31,302,726	31,144,347	D. 158,379
Totals.....	\$261,633,813	\$258,526,168	D. \$3,107,645
Govt. bank dep.....	25,748,388	25,242,961	D. 505,427

Total United States Treasury notes issued under act of July 14th, 1890, in general circulation and in the Treasury, \$133,687,280. Against these are held in the Treasury 12,799,590 coined standard silver dollars, and silver bullion purchased at a cost of \$120,887,680, making a total of \$133,687,270.

The statement of the New York banks—including the \$6 banks represented in the Clearing House—for the week ending April 18th, gives the following totals, comparisons being made with the corresponding weeks in 1895 and 1894:

	1894.	1895.	1896.
Loans and discounts.....	\$159,669,400	\$180,721,400	\$166,219,800
Deposits.....	569,539,100	510,188,300	484,037,000
Circulation.....	10,673,366	13,217,000	14,351,900
Specie.....	98,920,700	66,637,800	58,629,400
Legal tenders.....	125,472,100	80,573,500	80,524,200

	1894.	1895.	1896.
Total reserve.....	\$224,394,800	\$147,211,300	\$139,153,600
Legal requirement.....	142,381,775	127,797,075	121,014,250
Surplus reserve.....	\$82,013,025	\$19,414,225	\$18,139,350

Changes for the week this year were increases of \$607,400 in loans; \$905,600 in deposits; \$10,600 in circulation; \$640,100 in legal tenders, and \$28,100 in surplus reserve; decreases were \$205,600 in specie.

The latest statement of the Bank of Russia, of date March 16th-23th shows that the total gold holdings of the bank amounted to 500,000,000 rubles, and the silver to \$58,073,600 rubles; a total of 558,073,600 rubles. The government recently transferred a large amount in gold to the bank. The note circulation was 1,028,700,000 rubles. The gold ruble is 75c.; the paper ruble 48c. at present.

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			\$58,629,400
1895.....			66,637,800
Bank of England.....	\$239,343,335		239,343,335
1895.....	187,461,410		187,461,410
Bank of France.....	\$90,747,800	\$248,295,000	629,042,800
1895.....	413,203,088	246,527,447	659,730,535
Imp. Bank of Germany.....			223,210,000
1895.....			268,580,000
Austro-Hungarian Bank	131,330,000	63,990,000	195,320,000
1895.....	93,030,000	68,050,000	161,080,000
Netherlands Bank.....	13,122,000	34,822,000	47,944,000
1895.....	21,399,000	35,250,000	56,649,000
Belgian National Bank.....			20,234,000
1895.....			25,013,000
Bank of Spain.....	40,078,000	59,338,000	92,416,000
1895.....	40,021,000	62,027,000	102,048,000
Bank of Italy.....	51,284,000	10,505,000	71,789,000
1895.....	59,875,000	11,200,000	71,075,000
Imp. Bank of Russia.....	390,625,000	45,370,000	435,995,000
1895.....	274,075,000	53,530,000	327,605,000

The return for the Associated Banks of New York is of date April 18th; all the others are of date April 23d, except the Bank of Italy, which is dated March 20th, and the Bank of Russia, whose return is dated March 16th-23th. 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 April 9th are reported by Messrs. Pixley & Abell's circular as below:

	1895.	1896.	Changes.
India.....	\$1,233,630	\$1,367,798	I. \$134,168
China.....	947,393	3-6,150	D. 561,243
The Straits.....	217,105	146,882	D. 70,223
Totals.....	\$2,398,128	\$1,900,830	D. \$497,298

Arrivals for the week this year were \$278,000 in bar silver from New York, \$11,000 from the West Indies, and \$41,000 from Chile, a total of \$330,000. Shipments for the week were \$20,000 in bar silver to Bombay, \$20,000 to Japan, and \$23,000 in Mexican dollars to China.

The demand for Indian Exchange has been lighter and only 48 lakhs of Council bills were taken in London out of the 60 lakhs offered. The price was lower also, the average being 14.20d. per rupee. The other Eastern exchanges were fairly steady.

The foreign merchandise trade of Great Britain for the three months ending March 31st is given in the Board of Trade returns as below:

	1895.	1896.
Imports.....	£100,837,860	£112,235,342
Exports.....	65,862,042	76,320,308

Excess, imports..... £34,975,818 £35,975,034
This shows an increase of £11,457,482, or 11.3%, in imports; an increase of £10,458,266, or 15.9% in exports, and an increase of £999,216, or 2.8% in the excess of imports over exports. The movement of gold and silver for the three months was as follows:

	Gold		Silver	
	1895.	1896.	1895.	1896.
Imports.....	£8,269,644	£7,978,728	£2,280,050	£3,662,000
Exports.....	6,290,128	6,541,906	2,685,581	3,093,328

Excess... I. £1,979,516 I. £1,437,722 E. £405,531 I. £568,762
The net imports of gold show a decrease this year of £541,794, or 27.4%, for the three months. The silver movement shows a considerable increase.

Domestic and Foreign Coins.

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

	Bid	Asked
Mexican dollars.....	\$0.54	\$0.55
Peruvian soles and Chilean pesos.....	.48	.49
Victoria sovereigns.....	4.88	4.92
Twenty francs.....	3.88	3.92
Twenty marks.....	4.75	4.80
Spanish 25 pesetas.....	4.78	4.85

Other Metals.

Copper.—The better tendency reported last week continues, but the firmness of owners has again prevented a larger business. Consumption is said to be quite good, and all the large manufacturers appear to be well supplied with orders. The lake companies still remain out of the market, and there is rather a scarcity of spot copper. The exceptionally warm weather which we have had will, however, admit of navigation being opened somewhat earlier than anticipated, and it is expected that next week some steamers will leave for the South, and lake copper will be available in the markets by about May 10th to 15th. We have to quote nominally 11c. for Lake copper, with second hand lots obtainable at somewhat less. Electrolytic copper has been rather irregular, several lots being pressed for sale, and we have to quote, for cakes, wirebars or ingots, 10%, and for cathodes 10 @ 10 1/2c. Casting copper also continues dull at 10 @ 10 1/2c. Exports remain satisfactory, and there is continually a good demand from abroad.

In Europe there has been some fluctuation in speculative brands. The market opened excited at £45 10s. @ £45 12s. 6d. for spot, which proved to be the highest price of the week. After that, under heavy selling, prices declined until £44 17. 6d. was reached, but the feeling again changed for the better, and the market closes strong at £45 @ 45 5s. for spot and £45 5s. @ £45 10s. for three months prompt. It will be noticed that the difference between buyers' and sellers' prices is rather large. For refined sorts full prices are obtainable, and we quote: English tough, £49 @ £49 5s.; best selected, £50 @ £50 10s.; strong sheets, £56; India sheets, £53; yellow metal, 4 1/2d.

Chilean Copper Market.—Messrs. Jackson Bros. write us as follows, under date of March 14th: Smelters on this coast have been pushing sales recently, fearing a further fall in quotations. Transactions for the fortnight amounted to over 21,000 quintals. We anticipate a decrease in sales in the near future unless an improvement in prices is reported from Europe, the more so as it is probable that freight will be raised by the steamship companies. We quote for bar copper \$55.43 (Chilean) per metric quintal, f. o. b.; for regulus, 50%, \$23.57 per metric quintal, f. o. b.; for copper ore, 10%, \$3.05 per metric quintal, f. o. b.

Tin.—There is continually a good demand on the part of consumers, and a fair business has been doing, with prices pretty well maintained. We have to quote spot and May at 13.30, and June to August 13.25.

The London market does not show much change, but prices are slightly lower than last week, and close at £59 7s. 6d. @ £59 12s. 6d. for spot and £60 @ £60 2s. 6d. for three months prompt. It appears that the East has been selling somewhat more freely.

Lead.—At last the low prices which have existed for some time have attracted some attention, and there has been a large and satisfactory business doing at somewhat higher rates. Some lead for prompt delivery has been sold at 3.05, but for May and June shipment this price has been refused, and 3.07 1/2 has been asked. The West also reports large transactions at rising prices, and the St. Louis market is above the parity of ours. The spring weather has evidently influenced out-of-door work, and pipe manufacturers are exceedingly busy.

London, after a few days of flatness, has again shown some activity, and prices close very firm at £10 17s. 6d. @ £10 18s. 9d. for Spanish, and English 5s. higher.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is firm and fairly active at 2.80 for common and 2.82 1/2 for argentiferous. Sellers are indifferent and offer the metal sparingly, believing higher prices will be obtainable later on.

Spelter has been forced for sale, and prices are rather lower. It appears that the production, although rather curtailed, has been larger than the demand. In the meantime the market has become decidedly easier, and we have again to lower prices to 4 @ 4.05c.

Joplin advices are that the zinc combination—the Cherokee-Lanyon Spelter Company—this week closes down 12 more furnaces in addition to those already idle. The shut-down includes two furnaces at Rich Hill, Mo., and 10 at Pittsburg, Kan. The combination is now working only 48 out of the 96 furnaces which it controls. This action has been taken in view of the low prices of spelter, which have been prevailing for some time past.

The European market remains very strong, and good ordinaries in London are quoted £15 17s. 6d. and specials 2s. 6d. more.

Antimony continues rather dull with very little life, and we quote Cookson's 7 1/2, Hallett's 6 1/2, and United States Star, 7c.

Nickel.—Demand is not heavy, but the prices are unchanged. We quote 35 1/2 @ 35c. per lb. for small orders, and 34 @ 35c. for ton lots. The London price is 13 1/2 @ 15d. per lb.

Platinum.—Prices are steady and unchanged and we quote \$13 @ \$14.50 per oz. New York London quotations are 49 @ 51s. 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, 48c. 49c. and 50c. per gram. Wire and foil are 45c., 46c. and 47c. per gram. The current retail price for crucibles is 60c. per gram.

Quicksilver.—Prices are \$37.50 per flask, New York. The London quotations have been reduced 2s. 6d., to £6 15s. per flask; from second hands £3 15s. also is named.

Imports and Exports of Metals.

New York.*	Week, Apr. 16.		Year, 1896.	
	Expts.	Impts.	Expts.	Impts.
Aluminum..... lbs.				
Antimony ore..... short tons				1,569
" regulus..... casks		20		694
Brass, old..... short tons	4		13	59
Copper, fine..... long tons	11866	117	23,861	1,059
" matte..... "	1215		5,331	11
" ore..... "				2,193
" sulphate..... "				15
Iron ore..... pigs, bars, rods..... "		156		1,807
Iron pyrites..... "				2,275
" sulphate..... "				1,700
Ferro-mangan' se..... "		151		893
Ferro-silicon..... "				75
Manganese ore..... "				1,690
Spiegeleisen..... "		1,323		12,816
Lead ore..... "				
" pigs and bars..... "	11,275	1879	12,469	13,175
Nickel..... "		5		203
Steel, billets, rods..... "		517		9,635
Tin..... "		1240		188
Tin and black plates, boxes..... "		24,669		30
Zinc (spelter) long tons..... "	35		223	87

* Metal Exchange Reports. † Week ending April 23.

Baltimore.**	Week, Apr. 16.		Year, 1896.	
	Exp.	Imp.	Exp.	Imp.
Bismuth metal, bales, cases.....		10		26
Chrome ore..... long tons				4,010
Copper, fine..... "	1960		8,651	
" matte..... "			500	
" sulphate..... "	110		1,307	
Iron ore..... "		12,856		157,658
" pigs, bars, ingots, blooms..... "		129		1,373
Iron oxide..... bags				300
" pyrites..... long tons				5,069
Ferro-mangan' a..... "				1,169
Ferro-silicon..... "				58
Limestone..... short "	1200		200	
Manganese ore..... long "		2,000		2,743
Spiegeleisen..... "				353
Steel..... "				19
Steel wire, bundles..... "				2,202
Tin, long tons..... "				17
Tin and black plates, boxes..... "		335		68,365
Zinc (spelter) long tons..... "				117

** From our special correspondent. † Week ending April 23.

Philadelphia.††	Imports.	
	Week, Apr. 17.	Year, 1896.
Antimony, casks.....		67
Copper ore, long tons.....		4,300
Iron.....	3,150	65,350
" pig..... "		320
" and steel scrap, long tons.....		618
Manganese ore, long tons.....		2,224
Spiegeleisen..... "		59
Tin..... "	40	225
Tin and black plates, boxes.....	3,854	18,229

†† 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, 99% pure rolling ingots, per lb.	50@55c.
No. 1, ingots for re-melting, per lb.	48@53c.
No. 2, 91% pure,	3@42c.
Ingots from scrap, per lb.	35@40c.
Aluminum nickel casting metal, per lb.	4@45c.
Bismuth, per lb.	\$1.30@1.75
Phosphorus, per lb.	50@55c.
Platinum, per oz.	\$13@14.50
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.

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.	1896.	1895.	1894.	1893.	1892.
Copper:					
January	9'87	10'00	10'13	12'13	11'09
February	10'61	10'00	9'63	12'00	10'00
March	11'03	9'75	9'81	11'88	10'38
Tin:					
January	13'62	13'25	20'16	19'99	20'50
February	13'44	13'35	19'61	20'30	20'00
March	13'30	13'20	19'09	20'71	20'25
Lead:					
January	3'08	3'10	3'19	3'87	4'20
February	3'19	3'12	3'31	4'22	4'12
March	3'14	3'12	3'37	3'96	4'21
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

CHEMICALS AND MINERALS.

New York, Friday Evening, April 24.

Heavy Chemicals.—This market continues to show but little change. Caustic soda remains quiet, the only business done being on existing contracts. Alkali may be said to show a better demand, but inquiries are mainly for future delivery. Bleaching powder is exceedingly quiet. Sal soda remains about the same as last reported, firm and in better request. We quote: Caustic soda, 2-12½@2-45c. for spot, according to test; carbonated soda ash, 48%, is '85@1c., according to quantities and deliveries. Alkali is 90c.@\$1.15, according to test and package. Bleaching powder, prime brands, \$1.62½@1.87½. Sal soda, 62½@65c.

Acids.—There have been no startling movements in this market, and spot business has been quiet. The volume of trade consists principally of deliveries on yearly contracts. Prices are as last reported per 100 lbs. in New York and vicinity, in lots of 50 carboys or over, as follows: Acetic acid (in barrels), \$1.25@1.33. Muriatic acid 18°, 70@80c.; 20°, 75@80c. Nitric acid, 36°, \$5.00@5.4; 40°, \$4@4.50; 42°, \$4.25@4.75. Oxalic acid, \$7.2@7.50. Mixed acids, according to mixture. Sulphuric acid, 66°, 75@85c.; chamber acid, \$6.00@6.50 per ton at factory. Blue vitriol, \$3.87½@4, according to size of order.

Brimstone.—The market is somewhat improved. We quote for shipments, best unmixd seconds, \$16.00@16.25. Thirds are 25c. less.

Fertilizing Chemicals.—Business in this market is at a standstill. There were rumors of an improvement, but as yet the change has not materialized. Our quotations this week are as follows: Sulphate of ammonia, gas liquor, \$2.27½@2.3; bone, \$2.25@2.30. Dried blood, high grade, \$1.47½@1.50; low grade, \$1.65 per unit. Azotine, \$1.80. Concentrated phosphate, (30% available phosphoric acid), 70@71½c. per unit. Acid phosphate, 13% to 15%, av. P₂O₅, 57c. per unit at seller's works in bulk. Dissolved bone black, 17% to 18%, P₂O₅, 90@92c. per unit. Acidulated fish scrap, \$12, and dried scrap with few or no sales, nominally \$21 f. o. b. fish factory. Tankage, high grade, \$18.50@19.50; low grade, \$18@19. Bone tankage, \$21; ground bone, \$19@20. Bone meal, \$22.50.

Sulphate of Potash: 90-95%. New York and Boston, \$1.66½; 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, \$1.03½.

Muriate of Potash.—New prices for muriate are New York and Boston, 1'80c.; Philadelphia, Baltimore and Norfolk, 1'81½c.; New Orleans, 1'83½c., for 80@85% (basis of 80%), in lots 50 tons and upward.

Kainit.—Quotations for 1896 are as follows: New York, Boston, Philadelphia and Baltimore, \$8.55 per ton; Norfolk, \$8.90, and New Orleans, \$9.05 per ton, for 25 tons and upward. Sylvinit at the same ports is quoted at 36½c., 37½c. and 38c., respectively.

Nitrate of Soda.—Spot, \$1.70@1.72½; to arrive, \$1.70@1.75.

NOTES OF THE WEEK.

Our special correspondent reports the production and shipments of phosphates in the Tennessee re-

gion for the three months ending March 31st as below, in long tons of 2,240 lbs.:

	Production.	Shipments.
January	4,075	3,775
February	3,550	3,740
March	3,800	3,570
Total	11,425	11,085

Stocks on hand at the close of the quarter amounted to 4,100 tons.

According to the report of the *American Fertilizer* the shipments of phosphate rock from Charleston, S. C., in March were 21,004 tons of crude rock, and 167 tons of ground rock. These compare with 15,481 tons of crude and 668 tons of ground rock in March, 1895. Shipments of river rock of Beaufort, S. C., in March were 6,877 tons.

The Italian Government intends to lay before the Legislature bills relating to the export duties on sulphur and the creation of a body representing mineral interests, with special reference to the condition of the mining population. The new Commissioner in whom this great authority is vested is Count Codronchi, a member of the Senate, and he will rank as Minister without portfolio. The decree now awaits parliamentary approval. This, no doubt, refers to a reduction of duty to afford relief to the industry owing to the low grade of sulphur ore now extracted.

Liverpool. April 14.

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

There is a little more doing in some lines of chemicals, but business is still very far from being active. Soda ash in rather better request, and second-hand parcels are less pressed for sale. We quote nearest spot range for tierces about: 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 selling to a fair extent at £2 7s. 6d. per ton, less 5% for barrels and 7s. less for bags. Caustic soda continues quiet, but quotations are nominally unchanged, the range according to export market being about 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 flat, at £7 2s. 6d.@£7 5s. per ton net cash for hard wood packages, but quotations are quite nominal.

Chlorate of potash very slow, at 4¼d.@4¼d. per lb. and inclined to weaken.

Bicarbonate of soda in moderate demand, at £6 15s. per ton, less 2½% for the finest quality in 1-cwt. kegs, with usual allowances for larger packages. Sulphate of ammonia inactive, and is nominally quoted at about £3 3s. 9d.@£3 6s. 3d. per ton, less 2½% for good gray, 24s. for 25% in double bags, f. o. b. here, according to quality. In spite of the low level of prices, buyers hold aloof.

Nitrate of soda is dull, but fairly steady, at £3 5s. @£3 7s. 6d. per ton, less 2½% for double bags, f. o. b. here, according to quality.

Carb. ammonia, Lump, 3¼d. per lb.; Powdered, 3¼d. per lb. less 2½%.

Valparaiso, Chile. March 14.

(Special Report of Jackson Brothers.)

Nitrate of Soda.—During the first week after closing our last circular activity prevailed in this article and sales of both 95% and 96% quality were large, with an increase in price. On March 8th the combination project was officially announced as concluded, since when the market has showed no further symptoms of a rise, and the few sales on this side have been limited to March sailings, several producers holding stocks being anxious to get them away before April 1st and accepting in consequence much lower prices than those ruling for April-May loading. The cause of the fall was partly that the expected rise had already been discounted, and partly that the price reached left no margin for future speculation. We quote 95% for March sailing, 5s. 3d. @5s. 4d.; April, 5s. 8d.; May, June and July, 5s. 9½d.@5s. 10½d.; August, 5s. 11d.; September and November, 6s. For the 96% quality 6s. is quoted for April-May delivery, none other being offered. The price of 5s. 8d. at current freight rates stands in 7s. 7d. per cwt. net cost and freight without purchasing commission. The total sales reported for the fortnight are 951,000 quintals.

In freights higher prices have been obtained for vessels to sail in March, as much as 27s. 3d. having been paid; for May and later the demand for tonnage is light, and we quote for United Kingdom 23s. 9d. per ton for nitrate in iron bottoms. For the United States the nominal quotation is 23s. 9d. to Hampton Roads or orders.

MINING STOCKS.

Complete quotations will be found on pages 414 and 415 of mining stocks listed and dealt in at:

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

NEW YORK, Friday Evening, April 24.

The mining stock market continues in that condition to which it was driven by the speculating

public some time ago. The volume of business has increased, and prices show changes accordingly. The most active stocks recorded on the Consolidated Stock and Petroleum Exchange were those of Colorado, and sales were made as follows: 1,150 shares of Victor at \$7.75@8.50; 2,500 shares of Chrysolite at 13@14c.; 2,500 shares of Creede & Cripple Creek at 5c.; 1,600 shares of Iron Silver at 24@25c.; 1,000 shares of Mount Rosa at 9@11c.; 1,000 shares of Lacrosse at 10@11c.; 1,000 shares of Croesus and 1,000 shares of Golden Fleece at \$1.75, and 1,000 shares of Pharmacist at 9@11c.

The California stocks were dealt in to some extent. There were sales of 1,400 shares of Brunswick Consolidated at 14@15c., and 500 shares of Bulwer Consolidated at 33c. Transactions in the Comstocks were small. Phoenix of Arizona returned to the Exchange this week after a short absence, 100 shares being sold at 3c.

We are officially informed that the new superintendent, Mr. C. H. Morgan, of the Brunswick Consolidated Mining Company, is now in charge of its property in California. Mr. J. J. Halpin, the general manager, will return to New York in a day or so.

Boston. April 23.

(From Our Special Correspondent.)

The market has been extremely dull the past week, and save for two or three stocks there has been absolutely nothing doing. The speculation in copper stocks has well nigh played out, and the investment demand is light and chiefly confined to Calumet & Hecla, Quincy and Tamarack. The dealings in Boston & Montana have dwindled down into the hundreds of shares where thousands were formerly dealt in. The gold stocks are active, but the tendency has been to lower prices, notably in Merced, which declined this week from \$18½ to \$14½, with plenty of sellers. In coppers, Boston & Montana sold as high as \$76½ a few days ago, but to-day was dull and heavy, declined to \$75½, and closed at about the lowest price. Not over 4,000 shares were dealt in for the week.

Only one sale of Butte & Boston at \$2½ was reported for the week.

Calumet & Hecla comes out only in small lots, and sales at \$307 to \$305 are reported. The usual May dividend of \$5 per share was announced yesterday, calling for \$500,000 and making in the aggregate \$43,350,000 paid by this company, a record hard to be beaten.

Quincy sold at \$123 and \$121 in limited amounts, and the scrip at \$80.

Tamarack seems to have found a resting-place at about \$98 and \$99, but the demand for it at these prices is very light.

Of the balance of the list we note sales of Atlantic from \$18½ to \$17½; Franklin, from \$11½ to \$11; Kearsage, at \$11; Osceola, at \$26½ for 50 shares and 50 shares Wolverine at \$7¼; Old Dominion sold at \$16½ and \$16.

Pioneer declined early in the week to \$8½, recovered to \$9 on shorts covering, later it declined to \$8½, closed at \$8½ and \$9.

Gold Coins sold at 70c., but later declined to \$13. The market closed dull and without any feature.

Cleveland, O. April 23.

(From Our Special Correspondent.)

Traders in iron ore stocks have been looking to the sales of ore under the new prices as an index to values for the immediate future, and the commencement of sales this week is regarded as a bullish factor to prices. Actual transactions, however, do not yet indicate any rush to buy at present prices, though the sales are a trifle better than last week. Aurora last week paid a dividend of 50c. per share. Quotations do not vary materially from a week ago:

Name of Company.	Par val.	April 23.	
		Bid.	Ask.
Aurora	\$25	—	88
Chandler	25	\$12	44
Cleveland-Cliffs Iron Co.	100	43	45
Jackson Iron Co.	25	70	75
Lake Superior Iron Co.	25	30	32
Lake Superior Consolidated	100	21	22
Minnesota Iron Co.	100	69	71
Pittsburg & Lake Angeline	25	89	90
Republic Iron Co.	25	19	20

Chicago. April 22.

(From Our Special Correspondent.)

The trading has been light throughout the week. There were a good many buying orders in the hands of brokers, but in several instances the limit was slightly below the price at which holders were willing to sell. In many cases the prices of stocks are below the actual cash value of the properties they represent.

Sunnyside-Gilpin, which opened at 16½, advanced to 17½, and then fell back to 11½c., and closed firm at 12c. This has been one of the most speculative stocks on the list.

Finance was moderately dealt in and gained about 1 cent. advance for the week. The most of this stock is now in the hands of a joint Chicago and Denver pool and until the few thousand shares that are floating on side of this pool are absorbed no further marked advance need be looked for. The property is said to be one of merit and is being well managed, but the stock is the subject of manipulation.

Peerless, Cosmopolitan and Little Gem were all in good demand and closed a shade higher. New stocks listed were the Peerless, the Great Fissure, Little Gem and King Solomon.

The following table gives the highest prices with sales of the stocks recorded on the Chicago Mineral and Mining Board for the week ending April 22:

Stocks.	April 16	April 17	April 18	April 20	April 21	April 22	Sales.
Boston & C. C.	.03 1/4	.03 1/4	.03 1/4	.03 1/4	.03 1/4	.03	11,800
Capazone.....	.06 1/4	.06 1/4	.06 1/4	.06 1/4	.06 1/4	.06 1/4	7,000
C. C. & C. C.	.12 1/4	.09	.08	.06 1/4	.06 1/4	.06 1/4	5,400
Christmas.....	.04 1/4	.05	.05	.05 1/4	.05 1/4	.05 1/4	10,000
Chl. & G. Mt.	.05 1/4	.05	.05	.05 1/4	.05 1/4	.05 1/4	100,400
Cosmopolitan.....	.05 1/4	.05 1/4	.05 1/4	.05 1/4	.05 1/4	.05 1/4	23,000
Delaware Cf.....	.12 1/4	.12 1/4	.12 1/4	.12 1/4	.12 1/4	.12 1/4	22,000
Dictator.....	.25 1/4	.25	.25 1/4	.25 1/4	.25 1/4	.25 1/4	31,300
Finance.....	.15	.15	.15 1/4	.15 1/4	.15 1/4	.15 1/4	16,800
Golden Stairs.....	.01	.02	.02	.03 1/4	.01	.01	6,000
Great Fissure.....	.00 1/4	.00 1/4	.00 1/4	.00 1/4	.00 1/4	.00 1/4	6,300
Gregory Gold.....	.10 1/4	.10 1/4	.11 1/4	.11 1/4	.11	.11 1/4	108,100
Hawkeye.....	.12 1/4	.12 1/4	.12 1/4	.12 1/4	.12	.12	30,700
Imperial.....	.30 1/4	.30 1/4	.30 1/4	.30 1/4	.30 1/4	.31 1/4	8,500
Jefferson.....	.17 1/4	.16 1/4	.14 1/4	.13 1/4	.12	.12	126,100
Justice.....							
Lyons Gold.....							
Medina G. M. Co.....							
Peerless G. M. Co.....							
Pharmacist.....							
Rhyolite.....							
Sonora.....							
Squaw Mt.....							
Sunnyside.....							
Gulpin.....							

Total shares sold, 513,300.

Colorado Springs, Colo. April 18.
(From Our Special Correspondent.)

The market this week showed more strength and there was a decided reaction from last week's depression. Reports from the mines are encouraging and there is again a tendency to higher prices than have been the rule for several weeks. Upon the whole the tone is strong and there is a prospect of continued recovery.

Messrs. Gardner & Co. furnish the closing quotations of the Colorado Springs Mining Stock Exchange for the week ending April 23d, as follows:

Name of Company.	Apr. 17	Apr. 18	Apr. 20	Apr. 21	Apr. 22
Alamo.....	.06 1/4	.06 1/4	.06 1/4	.06 1/4	.06 1/4
Anaconda.....	.61	.62	.62	.62	.60
Argentum-Juniata.....	.54 1/4	.54	.54 1/4	.54	.54 1/4
Blue Bell.....	.07	.07	.07	.07	.06 1/4
Cripple Creek Con.....	.15	.15	.15	.15	.14 1/4
Golden Fleece.....	.70	.70	.70	.70	.70
Isabella.....	.53 1/4	.54 1/4	.54 1/4	.54 1/4	.54
Mollie Gibson.....	.69	.69 1/4	.69 1/4	.69 1/4	.66
Mount Rosa.....	.10 1/4	.10 1/4	.10 1/4	.11	.11
Pharmacist.....	.30	.30	.30 1/4	.30 1/4	.30 1/4
Portland.....	1.45	1.46	1.46	1.46	1.43
Silver State.....	.01 1/4	.01 1/4	.01 1/4	.01 1/4	.01 1/4
Union.....	.40 1/4	.41	.42 1/4	.43	.4 1/4
Work.....	.13 1/4	.13	.13 1/4	.13 1/4	.13 1/4

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

Name.	Apr. 17	Apr. 18	Apr. 20	Apr. 21	Apr. 22	Apr. 23
Bankers.....	.13 1/4	.13	.13 1/4	.13 1/4	.13 1/4	.13 1/4
Des Moines.....	.07	.06	.07	.07	.07	.07
Gold & Globe.....	.22	.21 1/4	.22	.22 1/4	.21 1/4	.20 1/4
Gold Standard.....	.08 1/4	.08 1/4	.09	.09	.08 1/4	.08 1/4
Isabella.....	.53 1/4	.54 1/4	.54 1/4	.54 1/4	.54 1/4	.54
Jefferson.....	.20 1/4	.20 1/4	.21	.19 1/4	.20 1/4	.20 1/4
Keystone.....	.04 1/4	.04 1/4	.04 1/4	.04 1/4	.04 1/4	.04 1/4

Denver, Colo. April 18.
(From Our Special Correspondent.)

The speculative situation has been very strong this week and almost all the stocks on the list have shown advances. At the beginning of the week there was a strong tone and on Tuesday there was a rush, 700,000 shares changing hands on the call alone. Outside trading was also very heavy. Business did not keep quite up to the highest level, but the week closes with prices strong and every indication of continued good business. Buying orders from outside, especially from the East, are coming in fast.

As to special features, Alamo was strong, and sold in large blocks in the rush, with only a very slight reaction later. Portland also sold well. Gold Fleece and Isabella have both declared their usual dividends, and have sold well accordingly. Modoc Consolidated was quite a feature in the market, and sold one day as high as \$5 for a good block.

The market closes strong, with prospects for continued activity in the trading.

Salt Lake City, Utah. April 18.
(Special Report of James A. Pollock.)

The past week in the local stock market has been an extremely active one and the tendency was upward all along the line, this being especially the case in Mercur, Mammoth, Sunshine, Ontario, Silver King, Daly, West and Dalton. Outside orders were numerous and some of them heavy. Ajax was stronger, with increased inquiry. Everything at the properties is reported to be in splendid shape. Anchor was held very firmly, but the vol-

ume of business done in the stock was not very great. Alliance was quiet. Some work is being done at the properties. Bogan was quiet. Centennial Eureka will pay its mid-month dividend of \$1 per share April 20th by which date Secretary Chisholm will have returned from California. The stock was held very firm, sales being made of odd blocks at \$75, with only light offerings. Dalton & Lark paid its second dividend of 1/2c per share April 15th, making a total of \$25,000. During the closing period of the week Dalton made some rapid advances, closing in the neighborhood of 10c. Daly was very strong, with the demand active, sales being made at \$8, and even better. Daly-West made good gains in the bidding, sales being made around \$7.50, with the offerings of stock limited. Eagle maintained its gain of strength, selling higher than for ten days past. Galena attracted considerable attention and was in good demand. The company has just been listed with the Mining Exchange; its report was a very flattering one. Geysir remained practically stationary, although toward the close of the week bidding was higher. Horn Silver did little business, holders and buyers refusing to make necessary concessions. Little Pittsburg was active, but at slightly shaded figures. Mercur was very active, at advancing figures, the close being above \$7, with only a comparatively small amount of the stock offered. Mammoth was the great gainer of the week, selling up to \$3 from \$2.15. Ontario was strong at advancing figures, bids of \$14 bringing out little stock. Silver King also made a strong advance, no stock being offered under \$16.50, with \$15.75 freely bid. Sunshine also made a decided gain, sales being made close to the \$3 mark. Utah was strong.

San Francisco. April 18.
(From Our Special Correspondent.)

The market seemed to take its tone this week from a very quiet opening on Monday, general dullness, low prices and small sales being the rule. On Thursday some effort was made to give it at least an appearance of greater firmness and activity, but with no great success. In fact there was really nothing worth reporting.

Some closing quotations are as follows: Consolidated California & Virginia, \$1.60@1.65; Hale & Norcross, \$1.25; Ophir, \$1.15@1.20; Occidental, 95c@96c; Sierra Nevada, 57c@58c; Union Consolidated, 47c@50c; Chollar, 39c@40c; Gould & Curry, 24c. There was some dealing in the Bodies and sales of Bodie Consolidated were made at 43c; Bulwer, 40c.

The Old Flag Mining Company, of Yuba County, has levied an assessment of 3c per share, delinquent May 10th.

The annual meeting of the Church Gold Mining Company has been called for May 4th.

The annual meetings of the Sterling, Goleta and Montecito mining companies, operating in Jordan District, Mono County, Cal., have been called for May 6th.

Negotiations for an amicable settlement in the Bulwer Consolidated case are going on with a fair prospect of success; latest reports are that a settlement has been made, the New York party securing control.

About all the Comstock companies have agreed to shut down on Sundays hereafter, and the work done will be decreased accordingly. This movement was begun in the Brunswick Lode last Sunday.

The Hale & Norcross Company now has 18 men at work under the new superintendent, and a night shift will be put on soon.

THE NEW EXCHANGE.

Business on the Gold Mining Exchange is active, and a good many sales are reported this week, without any marked fluctuations in prices. The Exchange is attracting a good deal of public attention and interest is expressed in various quarters. The managers are going on quietly and have several properties under examination besides those already approved. The call list will be extended considerably before long.

Some quotations on the Exchange this week have been as follows: Kennedy, \$13; Anahie, \$1.70@1.75; Thorpe, 80c@82c; Savannah, 45c@46c; Lockwood Consolidated, 31c@35c; Grant, 25c@26c. The dealings have been on a considerable scale; on Friday morning, for instance, 7,100 shares of Lockwood changed hands, 2,500 shares Grant, 1,800 shares Savannah and 650 shares of other stocks.

Paris. April 12.
(From Our Special Correspondent.)

In the past week there has not been very much news of importance here. The uncertainty as to the future continues, and has the effect of neutralizing the impetus which the cheapness and abundance of money would otherwise give to speculation.

The metallurgical stocks continue strong, but have not advanced. Apparently they have reached as high a level as can be expected.

The copper stocks have almost ceased to advance. While the market for the metal continues good, the very large imports from your side of the water and the probability that they will continue, is rather a cloud on the future. Boleo continues to advance, and it is reported that the company will pay a dividend of 65 fr. for last year, besides carrying a considerable sum to the reserve account.

The African gold shares continue very quiet, with no prospect of a change until the political situation in the Transvaal clears itself. A new attempt is being made to unload here some of the West Aus-

tralian stocks with which the London market is flooded, but without much success as yet.

Politically, the Egyptian matter is most discussed here just now; the other troublesome questions having been put aside for the moment. AZOTE.

MEETINGS.

Name of Co.	Location of office.	Date.	Time.
Boston & Montana.....	Butte City, Mont....	April 30	12 m.
Church.....	309 Montgomery St., San Francisco, Cal.	May 4	1 p. m.
Constellation.....	Park City, Utah.....	" 4	2 "
Freddie Lee.....	Helena, Mont.....	" 12	12 m.
Goleta.....	330 Pine St., San Francisco, Cal.	" 6	2 p. m.
Jay Gould.....	Pittsburg Block, Helena, Mont.....	" 25	2 "
Montana Con.....	Butte City, Mont....	April 30	12 m.
Montecito.....	330 Pine St., San Francisco, Cal.	May 6	1.30 p. m.
Peruvian Con.....	31 Commercial Block, Salt Lake City, Utah.....	" 11	7.30 "
Placer.....	510 Cooper Building, Denver, Colo.....	" 12	10 a. m.
Rodondo.....	5 Jacobson Building, Denver, Colo.....	" 2	4 p. m.
Sterling.....	330 Pine St., San Francisco, Cal.	" 61.45	" "

ASSESSMENTS.

Name of Co.	Loc'n.	No.	Delq.	Sale.	Amt.
Alpha Con.....	Nev.....	16	May 12	June 2	.05
Belcher.....	Utah.....	52	Apr. 7	Apr. 28	.25
*Buckeye.....	Utah.....	2	May 4	May 19	.00 1/2
Bullion.....	Nev.....	47	Apr. 22	" 14	.10
Caldonia.....	Nev.....	46	" 6	May 27	.05
Challenge Con.....	" 21	Apr. 29	" 20	.05	
*Channel Bend.....	Cal.....	2	May 22	June 13	.05
Con. Cal. & Va.....	Nev.....	6	" 8	Apr. 28	.30
Crown Point.....	" 67	May 6	May 26	.20	
Gould & Curry.....	" 78	Apr. 28	" 20	.15	
Lady Emma.....	Cal.....	" 6	" 27	.15	
Lucky Bill.....	Utah.....	18	" 18	" 9	.02
Margarite.....	Cal.....	2	" 1	Apr. 30	.10
Occidental Con.....	Nev.....	22	May 10	May 28	.10
Old Flag.....	Cal.....	2	" 10	" 26	.03
Paxman.....	Utah.....	" 2	Apr. 18	" 2	.02
Potosi.....	Nev.....	45	May 14	June 4	.20
Tetro.....	Utah.....	3	May 2	May 25	.01
Thorpe.....	Cal.....	1	Apr. 20	" 15	.05
Utah Con.....	Nev.....	22	May 6	" 27	.05

*New assessment.

DIVIDENDS.

NAME OF COMPANY	Current Dividends.		Paid since Jan. 1, 1896.	Total to date.
	Date.	Amount.		
*Aetna Con.....			\$10,000	\$50,000
Alaska-Mexican.....			16,200	119,031
Alaska Treadwell.....			75,000	2,750,000
Anaconda.....	May 1	\$750,000		
Boston & Mont.....	May 20	\$300,000	600,000	4,025,000
*Bullion Beck & Ch.....			65,000	2,015,000
*Calumet & Hecla.....			590,000	43,850,000
*Centennial-Eureka.....			150,000	1,650,000
*C. O. D.....			5,000	25,000
*Dalton & Lark.....	Apr.	12,500	25,000	25,000
D-minion Coal.....			600,000	
*Florence.....			10,818	45,976
*Galena.....	Apr.	3,600	6,000	25,000
*Gold Coin.....	" 30	15,000	45,000	60,000
*Golden Fleece.....			54,000	455,179
Gold & Globe Hill.....			15,000	24,375
Hecla Con.....			30,000	2,130,000
Highland.....			25,000	3,109,918
*Homestake.....	Apr. 25	31,500	125,000	5,837,500
Horn Silver.....			50,000	5,130,000
*Iron Mountain.....	Apr. 13	5,000	25,000	435,000
*Isabella.....	" 25	22,500	67,500	90,000
*Le Roi.....			25,000	1,000
*Mercur.....			75,000	425,000
Minnesota Iron.....	Apr. 15	247,500	247,500	2,932,500
*Mont. Ore Pur. Co.....	" "	40,000	160,000	320,000
Moose.....			6,000	186,000
Napa Con.....	Apr. 1	10,000	30,000	77,000
*Ontario.....	" 30	15,000	60,000	13,235,000
Oscuela Con.....			75,000	2,022,500
*Otaqueachy.....			1,000	1,000
Portland.....			65,000	683,000
Quincy.....	Apr. 17	200,000	400,000	8,070,000
War Eagle.....	Apr. 9	25,000	25,000	157,500
*Small Hopes.....			2,000	
*Silver King.....	Apr. 2	37,500	150,000	600,000
Smuggler-Union.....			500,000	1,640,000
*Utah.....	Apr.	3,600	8,500	140,100
*Victor.....	" 15	20,000	80,000	545,000
*Victor M. & L.....			9,000	33,000
Totals.....			\$1,727,500	\$4,436,018

* March dividend paid.

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

STOCK QUOTATIONS.

BOSTON, MASS. Table with columns for Name of Company, Location, Par value, and dates from Apr. 17 to Apr. 23. Includes companies like Allouez, Arnold, Atlantic, etc.

NEW YORK. Table with columns for Name of Company, Location, Par value, and dates from April 18 to April 24. Includes companies like Adams, Ajax, Alamo, etc.

* Official quotations Boston Stock Exchange. Total sales, 24,446.

INDUSTRIAL COAL AND COAL RAILROAD. Table with columns for Name of Company, Par value, and dates from April 18 to April 24. Includes companies like Balt. & Ohio, Ches. & Ohio, etc.

* Official quotations N. Y. Stock Exchange. Total shares sold, 96,953.

Table with columns for Name of Company, Location, Par value, and dates from April 18 to April 24. Includes companies like Adams, Ajax, Alamo, etc.

* Official quotations Con. Stock & Petroleum Exchange. Total sales, 20,850.

COLORADO SPRINGS, COLO. Table with columns for Name of Company, Par value, and dates from April 13 to April 18. Includes companies like Ajax, Alamo, Am'rican, etc.

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

ST. LOUIS, MO., STOCKS. Week ending April 22. Table with columns for Name of Company, Company's Office, Par Value, Bid, Asked, and Last Dividend.

SAN FRANCISCO, CAL. Table with columns for Name of Company, Location, Par value, and dates from April 18 to April 24. Includes companies like Alts, Becher, Best & Belcher, etc.

* Official telegraphic quotations, San Francisco Stock Exchange.

BALTIMORE, MD. Week ending April 23. Table with columns for Name of Company, Location, Par value, Bid, Asked, and Last Dividend.

* Official quotations Baltimore Stock Exchange.

MISCELLANEOUS SECURITIES. April 23. Table with columns for Name of Company, Location, Par Value, Bid, and Ask.

LONDON. April 10.

Table with columns: NAME OF COMPANY, Country, Product, Capital stock, Par value, Last dividend, Quotations. Lists various mining and industrial companies from Alaska to South Africa.

PARIS. Week ending April 3.

Table with columns: NAME OF COMPANY, Country, Product, Capital Stock, Par value, Div. last year, Prices. Lists companies like Aciéries de Creusot, Anzin, Boleo, Bruay, Callao, etc.

MEXICO. Week ending April 18.

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

NOTE.—In most Mexican mining companies the shares have no fixed par value. The capital is formed of a certain number of shares, the total value not being named. Prices are in Mexican dollars.

VALPARAISO, CHILE. Fortnight, Feb. 29.

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

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

SHANGHAI, CHINA. March 20.

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

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

DENVER, COLO.

Table with columns: NAME OF COMPANY, Par val., Apr. 13, Apr. 14, Apr. 15, Apr. 16, Apr. 17, Apr. 18, Sales. Lists companies like Addie C., Agate, Alamo, Amity, Anaconda, etc.

* All the companies are located in Colorado. Total shares sold: listed, 1,036,812; unlisted, 732,000.

PHILADELPHIA, PA.*

Table with columns: NAME OF COMPANY, Loc'n, Par val., April 16, April 17, April 18, April 20, April 21, April 22, Sales. Lists companies like Acety. L.H. & P., Bethlehem Iron, etc.

* Official quotations Philadelphia Stock Exchange. Total sales, 7,380.

SALT LAKE CITY, UTAH.* Week ending April 18.

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

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

PITTSBURG, PA.* Week ending April 21.

Table with columns: NAME OF COMPANY, Loc'n, Par val., Bid, Ask, Sell. Lists companies like Mansfield, N.Y. & C. Gas Co., etc.

* Official quotations Pittsburg Stock Exchange.

HELENA, MONT.* Week ending April 18.

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

* Special Report of Samuel K. Davis. Total shares sold, 62,530.

DULUTH, MINN.* Week ending April 18.

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

* Special Report of S. E. Smith.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns for Name and Location of Company, Capital Stock, Shares, Assessments, Dividends, and Name and Location of Company, Capital Stock, Shares, Assessments. Includes entries for Adams, Etina, Alaska, etc.

G. Gold. S. Silver. L. Lead. C. Copper. B. Borax. * Non-assessable. + The Deadwood previously paid \$275,000 in eleven dividends and the Delta \$75,000. † Previous to the consolidation in August, 1884, the California had paid \$31,330,000 in dividends and the Cons. Virginia \$42,300,000. 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.
 Burelligh Rock Drill Co.
 Clayton Air Compressor Works.
 Fraser & Chalmers.
 Ingersoll-Sergeant Drill Co.
 Laddlaw-Dunn-Gordon Co.
 (See Diamond Drills)
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
 Ainsworth, Wm.
 Baker & Adamson.
 Becker, Christian.
 Bullock & Crenshaw.
 Denver Fire Clay Co.
 Elmer & Amend.
 Henry Hill Chem. Co.
 Penn Sm. & Ref. Wks.
 Roessler & Hasslacher Chemical Co.
 Sargent, E. H., & Co.
 Soivay Process Co.
 Taylor, John, & Co.
 Troemer, Henry.
 Western Chemical Co.
Attorneys, Corporation
 Emig, C. E.
Automatic Boiler Feeds
 D'Este & Seelye
 Penberthy Injector Co.
Babbitt's Metal
 Besley, Chas. H., & Co.
Bankers and Brokers
 Arkell, E., & Co.
 Bartle & Co.
 Bonbright, W. P., & Co.
 Breitung, E. N.
 Carnouff, A. A.
 Crandell & Huff.
 Crisp, Cr. Syn. Inv. Co.
 Decker, L. H.
 Duer, G. A. & Co.
 Dorsey, H. H.
 Doubleday, Rope & Co.
 Edsall, Clarence & Co.
 Fall, Brooks & Cramer
 Farnsworth, C., & Co.
 Fitts, G. W., & Sons.
 Fletcher, C. S., & Co.
 Sism, Beers & Co.
 Smith, C. H.
 Snow, E. F.
 Sprague, J. A.
 State Trust Co.
 Van Deusen & Waterman.
 Walters, Marshall & Co.
 Wandell, H. V.
 Wayand Bros.
 Welles, E. F.
 White, Fred B.
 White, Samuel.
 Williamson, W. W.
 Woods Investment Co.
 Wyoming Mfg. Bureau
 Mayer, Andrew
 Jeffrey Mfg. Co.
 Link Belt Machinery Co.
 Lupelmeier, N.
 Miller, Chas. N. & Co.
 Lenz, John S.
 Lindley & Fitzpatrick.
 McCoy & Houlahan.
 McIntyre, W. H., & Co.
 Miller, J. W., & Co.
 Morath Investment Co.
 Parsons & Gandy.
 Peck, Frank G.
 Prentice, Russell.
 Prouditt, J. W., & Co.
 Reed Bros.
 Riley, J. W.
 Sheldon, E. C.
 Sill & Sill.
 Sism, Beers & Co.
 Smith, C. H.
 Snow, E. F.
 Sprague, J. A.
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 Van Deusen & Waterman.
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 White, Samuel.
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 Wyoming Mfg. Bureau
 Mayer, Andrew
 Jeffrey Mfg. Co.
 Link Belt Machinery Co.
 Lupelmeier, N.
 Miller, Chas. N. & Co.
Belt Lacing
 Bristol Co.
Blasting Caps
 Metallic Cap Mfg. Co.
Blasting Batteries
 Climax Fuse Co.
 Lau, J. H., & Co.
Blowers, Pressure
 Connorsville Blower Co.
Boilers
 Denver Eng. Wks. Co.
 Enterprise Boiler Co.
 Fraser & Chalmers.
 Philadelphia Eng. Wks., Ltd.
 Pollock, Wm. B., & Co.
 Radion Iron Works.
 Scaife, Wm. B. & Sons.
 Stillwell-Bierce & Smith-Valle Co.
 (See Machinery.)
Brattice Cloth
 Besley, Chas. H. & Co.
Brewers
 Cabot Brewing Co.
Brick Machinery
 Fresno, E. M., & Co.
Bridges
 Berlin Bridge Co.
 Pittsburg Bridge Co.
Buckets
 Scaife, Wm. B. & Sons.
Carbons
 Bishop, Victor, & Co.
 Lexow, Theodor.
Chain and Link Belting (See Belting.)
Chemicals
 Baker & Adamson.
 Bullock & Crenshaw.
 Elmer & Amend.
 Henry Hill Chem. Co.
Coal
 Herwind-White Coal Mfg. Co.
Castner & Orran
 Consolidation Coal Co.
 Davis Coal & Coke Co.
 Ingersoll-Sergeant Drill Co.
 Jeffrey Mfg. Co.
 Leyner, J. Geo. (See Machinery.)
 Link Belt Machinery Co.
Compressors
 Clayton Air Compressor Works.
 Norwalk Iron Works Co.
Concentrators, Crushers, Pulverizers, Separators, Etc.
 Allis, Edw. P., & Co.
 Beckett Fyde & Mch. Co.
 Blake, Theo. A.
 Boston Ore Machinery Co.
 Bradley Pulverizer Co.
 Colorado Iron Works.
 Denver Eng. Works Co.
 Engelbach Mach. Mfg. Co.
 Fraser & Chalmers.
 Frue Vanner Concentrator.
 Hendrie & Bolthoff Mfg. Co.
 Joplin Mach. Co.
 Krom, S. K.
 Krupp, F.
 Link Belt Machinery Co.
 McCully, R.
 Scoville, H., & Co.
 Stedman Foundry & Mach. Co.
 Waburn-Svenson Mfg. Co. (See Machinery Contractors.) (See Machinery.)
 Leyner, J. Geo.
 Marvin Elec. Drill Co.
 McKiernan Drill Co.
 Norwalk Iron Works Co.
 Philadelphia Eng. Wks., Ltd.
 Rand Drill Co.
 American Metal Co.
 Arizona Copper Co.
 Atlantic Mining Co.
 Balbach S. & Ref. Co.
 Baltimore Cop. Wks.
 Bath, H., & Son
 Boston & Mont. M. Co.
 Bridgeport Copper Co.
 Butte & Boston M. Co.
 Canadian Copper Co.
 Copper Queen Mfg. Co.
 Detroit Con'r Mfg. Co.
 Elliott's Metal Co., Ltd.
 Corrugated Iron
 Berlin Iron Bridge Co.
 Scaife, W. B. & Sons
 Sikes Steel Roofing Co.
Crucibles, Granite, Etc.
 Denver Fire Clay Co.
 Dixon, Jos. Cruc. Co.
Dampers Regulators
 D'Este & Seelye.
Cyanide
 Roessler & Hasslacher Chemical Co.
Diamonds
 Bishop, Victor, & Co.
 Lexow, Theodor.
Diamond Drills
 Bishop, Victor, & Co.
 Bullock Mfg. Co., M. C.
 Lexow, Theodor.
 Sullivan Machinery Co.
 (See Air Compressors and Rock Drills.)
Draughtmen
 Young, Wm. R.
Drawing Materials
 Besley, Chas. H., & Co.
 Dietzgen, E. & Co.
 (See Engineering Instruments.)
Dredges
 Bucyrus Steam Shovel & Dredge Co.
 Marion Steam Shovel Co.
 Souther & Co.
Dryers
 Brown, Horace T.
 Cummer, F. D. & Son Co.
 Denver Eng. Wks. Co.
Dump Cars
 Denver Eng. Works Co.
 Hendrie & Bolthoff
 Fraxide & Stover.
 Peck, Frank G.
 Prentice, Russell.
 Prouditt, J. W., & Co.
 Reed Bros.
 Riley, J. W.
 Sheldon, E. C.
 Sill & Sill.
 Sism, Beers & Co.
 Smith, C. H.
 Snow, E. F.
 Sprague, J. A.
 State Trust Co.
 Van Deusen & Waterman.
 Walters, Marshall & Co.
 Wandell, H. V.
 Wayand Bros.
 Welles, E. F.
 White, Fred B.
 White, Samuel.
 Williamson, W. W.
 Woods Investment Co.
 Wyoming Mfg. Bureau
 Mayer, Andrew
 Jeffrey Mfg. Co.
 Link Belt Machinery Co.
 Lupelmeier, N.
 Miller, Chas. N. & Co.
 Davis Colby Ore Roaster Co.
 Hunt, C. W.
 Fraser & Chalmers.
 Truax 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.
Electrical Batteries
 Hacheth, 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 Machines
 Brown, Horace T.
 Conveyors & Conv.
 MacL. Co.
 Caldwell, H. W., & Co.
 California Wire Wks.
 Cooper, Hewitt & Co.
 Crook, W. A., & Bros. Co.
 Denver Eng. Wks. Co.
 Electrical Engineering Co.
 Field & Goetzman.
 Fraser & Chalmers.
 (See Wire Rope Tramway and Machinery.)
Emery Wheels
 Besley, Chas. H. & Co.
 New York Belting & Packing Co., Ltd.
Engineers, Chemists, Metallurgists
 See Directory, Pages 4, 5 and 6.
Engineers' Instruments and Supplies
 Buff & Berger.
 Bullock & Crenshaw
 Dietzgen, F., & Co.
 Fauth & Co.
 Gursley, W. & L. E.
 Engle
 Buckeye Engine Co.
 Bullock, M. C. Mfg. Co.
 Enterprise Boiler Co.
 Ellison, Wm., & Son.
 Fraser & Chalmers.
 Lidgerwood Mfg. Co.
 Philadelphia Eng. Works, Ltd.
Excavators
 Bucyrus Steam Shovel & Dredge Co.
 Marion Steam Shovel Co.
 Souther & Co.
 Vulcan Iron Works.
Fire-Brick and Clay
 Chur, A. T.
 Denver Fire Clay Co.
Furnaces
 Brown, Horace.
 Hoskins, Wm. (See Machinery.)
Fuses, Powder
 Ingersoll-Sergeant Drill Co.
Fuse, Safety
 Climax Fuse Co.
Gas Engines
 Norman, J. J., & Co.
Gas Works
 Pollock, Wm. B. & Co.
 Wood, R. D. & Co.
Gauges, Recording, Etc.
 Bristol Mfg. Co.
Gearing
 Besley, Chas. H., & Co.
 Chester Steel Cast. Co.
 Fraxide & Stover.
Grease, Graphite, Etc.
 Besley, Chas. H., & Co.
 Dixon, Jos. Cruc. Co.
Harveyed Steel
 Pierce & Miller Engineering Co.
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Hose, Rubber, Etc.
 New York Belting & Packing Co., Ltd.
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 Okonite Co., Ltd. The
Insurance Companies
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 Mutual Life Insurance Co.
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 Tight Joint Co.
Lead Linings for Chlorination Tubs
 Raymond Lead Co.
Locomotives
 General Electric Co.
 Hunt, C. W. Co.
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 American Metal Co.
 Arizona Copper Co.
 Atlantic Mining Co.
 Balbach S. & Ref. Co.
 Baltimore Cop. Wks.
 Bath, H., & Son
 Boston & Mont. M. Co.
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 Pierce & Miller Engineering Co.
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 Penberthy Injector Co.
Insulated Wires and Cables
 Okonite Co., Ltd. The
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 Mutual Life Insurance Co.
Joint Fittings
 Tight Joint Co.
Lead Linings for Chlorination Tubs
 Raymond Lead Co.
Locomotives
 General Electric Co.
 Hunt, C. W. Co.
 Porter, H. K., & Co.

Dealers in Machinery, Milling and Other Machinery
 Allis, Edw. P., & Co.
 Bacon, E. C.
 Beckett Fyde & Mch. Co.
 Besley, Chas. H., & Co.
 Blake, T. A.
 Boston Ore Mach'y Co.
 Bradley Pulverizer Co.
 Buckeye Engine Co.
 Bullock, M. C. Mfg. Co.
 Caldwell, H. W., & Co.
 Card Electric Co.
 Carter, Geo. B., & Co.
 Channon, H. Co.
 Colorado Iron Works.
 Connorsville Blower Co.
 Crandall & Huff.
 Crook, W. A., & Bros. Co.
 Davis-Colby Ore R. Co.
 Denver Eng. Wks. Co.
 Ellison, Wm., & Son.
 Engelbach M. Mfg. Co.
 Fraser & Chalmers.
 Hammond, Mfg. Co.
 Hendrie & Bolthoff Mfg. Co.
 Ingersoll-Sergeant Drill Co.
 Jeffrey Mfg. Co.
 Jessop, W., & Sons, Ltd.
 Leyner, J. Geo.
 Taylor Iron & Steel Co.
 Lambert's Wharf. Co.
 Lewisohn Bros.
 Mathison Sm'iting Co.
 Mathiessen & Hegeler Co.
 Montana Ore Purchasing Co.
 Orford Copper Co.
 Pass, C., & Son, Ltd.
 Phelps, Dodge & Co.
 Truax Mfg. Co.
 Raymond Lead Co.
 State Ore Sampling Co.
 Tod, William, & Co.
 Vivian, Younger & Bond.
 Kendall Gold & Silver Extraction Co.
 Farnhiessen & Hegeler Co.
 Joplin Machine Wks.
 Kan. City S. & Ref. Co.
 Leoux & Co.
 Montana Ore Purchasing Co.
 Newark Pulv'ng Wks.
 Orford Copper Co.
 Penberthy Belt Lng. Co.
 Ricketts & Banks.
 Russell Process Co.
 State Ore Sampling Co.
 Waburn-Svenson Mfg. Co.
Mine Cars
 Crandall & Huff.
 Denver Eng. Wks. Co.
 Hendrie & Bolthoff Mfg. Co.
 Hunt, C. W., Co.
 Nelsonville Foundry & Machine Co.
 Sheffield Car Co.
 (See Machinery.)
Mine, Mill and Smelters Supplies.
 Carpenter, Geo. E., & Co.
 Crandall & Huff.
 Denver Eng. Wks. Co.
 Gates Iron Works.
 Park's & Wilkinson.
 Roessler & Hasslacher Chemical Co.
 Stieren, W. H. (See Machinery.)
Mining and Land Companies
 American Dev. & Mg. Co.
 Copper Queen Mg. Co.
 Detroit Copper Mg. Co.
 Eureka Co.
 Kearsarge Mg. Co.
 Ocala Con. Mg. Co.
 Tamarack Mg. Co.
 Tamarack, Jr., Mg. Co.
 Canadian Copper Co.
Ore Cars.
 Truax Mfg. Co.
Ore Roasters
 Brown, Horace T.
 Cummer, F. D., & Sons Co.
 Davis-Colby Ore Roaster Co.
Ore Testing Works
 Hunt, F. F.
 Ledoux & Co.
 Montana Ore Purchasing Co.
 Ricketts & Banks.
 Robertson, W. F.
 State Ore Sampling Co.
Packing and Pipe Coverings
 Brandt, Randolph.
 Jenkins Bros.
 Hine & Robertson.
 New York Belting & Packing Co., Ltd.
 Wyckoff & Son, A.
Refracted Metals
 Aitchison, R., Perf. Metal Co.
 Fraser & Chalmers.
 Harrington & King Perforating Co.
Peroxide of Sodium.
 Roessler & Hasslacher Chemical Co.
Phosphor-Bronze
 Phosphor-Bronze Smelting Co.
Pile Drivers
 Bucyrus Steam Shovel and Dredge Co.
 Ingersoll-Sergeant Drill Co.
Pipes
 Pollock, Wm. B., & Co. | Wyckoff, A., & Sons,
Platinum
 Baker & Co.
 Johnson, Matthey & Co.
Powder
 Atlantic Dynamite Co.
 Acma Powder Co.
 Ingersoll-Sergeant Drill Co.
Pressure Blowers
 Connorsville Blower Co.
Pressure Regulators
 D'Este & Seelye. (Curtis.)
Publications
 American Fertilizer.
 Aims & Explosives.
 Australian Mg. Stand.
 Bullionist.
 Colliery Guardian.
 Denver Republican.
 Economic Mining.
 El Mineral Mexicano.
 Electrical Plant.
 Electrical Industry
 financial Times.
 Indian Engineer
 Iron & C. Trade Review
 McNeill's Code
 Mining Journal.
 Poor's Manual of E.R.'s
 Scientific Pub. Co.
 So. African Mg. Jour.
 Spon & Chamberlain.
 Zeitschrift fur Practische Geologie

Pumps
 Blake, Geo. F. Mfg. Co.
 Cameron, A. S., Steam Pump Works.
 Denver Eng. Wks. Co.
 Fraser & Chalmers.
 Goulds Mfg. Co.
Quarrying Machines
 Ingersoll-Sergeant Drill Co.
 Rand Drill Co.
Sullivan Machinery Co.
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 C. B. & Quincy R. R.
 Denver & Rio Grande R. R.
 Denver, Leadville & Gunnison Ry.
 Florence & Cripple Creek R. R.
 Illinois Central R. R.
 Midland R. R. of Kentucky.
 Rio Grande Southern R. R.
 U. P., D. & G. R. R.
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 Channon, H. Co. | Porter, H. K., & Co.
 Crandall & Huff. | Robinson & Orr.
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 D'Este & Seelye Co.
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 Chromo Steel Works. | Pierce & Miller Eng
 Crescent Steel Co. | neering Co.
 Denver Eng. Wks. Co. |
Shovels (Steam)
 Bucyrus Steam Shovel & Dredge Co.
 Marion Steam Shovel Co.
 Souther & Co.
Smelting and Refining Works
 Balbach S. & Ref. Co. | Orford Copper Co.
 Baltimore Cop'r Wks. | Penna. Salt Mfg. Co.
 Bridgeport Copper Co. | Penn Smelting and
 Elliott's Metal Co., Ltd. | Refining Works.
 Kan. City S. & Ref. Co. | Phosphor-Bronze
 Mathison Smelting Co. | Smelt. Co.
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 Carpenter Steel Co.
 Chester Steel Cast. Co.
 Chromo Steel Works.
 Crandall & Huff.
 Crescent Steel Co.
 Moore, S. L., & Sons Co.
 Taylor Iron & Steel Co.
 Denver Eng. Wks. Co.
 Gates Iron Works.
 Pierce & Miller Engi neering Co.
 Robinson & Orr.
 (See Metal Dealers.)
 Pollock, Wm. B. & Co.
 Scaife, Wm. B. & Sons.
 Taylor Iron & Steel Co.
 Jessop Wm. & Sons Ltd.
 Walker Mfg. Co.
 Williams Mfg. Co.
Telegraph Wires and Cables
 Okonite Co., Ltd., The.
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Testing Laboratories
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 Besley, Chas. H., & Co.
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 Roebing, J. A., Son & Co.
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POSITIONS VACANT.

FREE ADVERTISING

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

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

1447-WANTED-FOR A GOLD MINE in Georgia, competent assistant foreman; also nine miners experienced in the use of power drills as head men; chance for family without children to take charge of boarding house for 40 men; references required - state wages expected for steady work. Address GOLD STAR, ENGINEERING AND MINING JOURNAL.

1448 WANTED.-A CHEMIST WELL UP in the manufacture and analysis of salts. State age, experience and salary expected. Address SODIUM, ENGINEERING AND MINING JOURNAL.

1449 WANTED-ASSAYER AND CHEMIST at gold mine using cyanide process. Have references and experience. Address C. N., ENGINEERING AND MINING JOURNAL.

1450 CHEMIST WANTED FOR A VIRGINIA Furnace Works. Must work very accurate and be able to give proof of his ability. A good position for a good man. Address E. J. S., ENGINEERING AND MINING JOURNAL.

1451 WANTED - A REVERBERATORY furnace foreman, one who understands the Welsh methods of copper smelting and refining to go to the West. Address COPPER BOTTOMS, ENGINEERING AND MINING JOURNAL.

1452 WANTED - AN ACTIVE, AMBITIOUS, young Mining Engineer to act as Assistant in California, British Columbia, and perhaps South Africa. Good recommendations required. Address ACTIVE, ENGINEERING AND MINING JOURNAL.

1453 WANTED A COMPETENT MAN TO take charge of sulphuric, nitric and muriatic acid departments; state age and experience. Address MODERN, ENGINEERING AND MINING JOURNAL.

1454 WANTED-A CHEMIST, ONE WHO has had experience in the assay of silver-lead bullion, doré bars and argentiferous copper; a good salary will be paid to the proper man. Address BI-METALL, ENGINEERING AND MINING JOURNAL.

1455 WANTED-AN ASSAYER FOR SILVER department of smelting works. Must have had experience and be able to furnish testimonials as to ability and honesty. Address DENVER, ENGINEERING AND MINING JOURNAL.

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.

SITUATIONS WANTED.

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

CHEMICAL ENGINEER AND MANAGER. American, with long and successful experience as above with large manufacturing concerns, will shortly be disengaged. Is a technical graduate and has an excellent record as a pushing organizer, developer and manager of manufacturing processes. Good executive and mechanical ability. Excellent references. Address A. X., ENGINEERING AND MINING JOURNAL. No. 17,399, May 2.

DOUBLE ENTRY BOOKKEEPER AND general office man of experience would like a position with mining company. Have lived several years in Western mining country. Can give best of references. Address MANSFIELD, ENGINEERING AND MINING JOURNAL. No. 17,397, May 2.

A COMPETENT SUPERINTENDENT OF fertilizers and acid works, desiring a change of location, would like to correspond with some manufacturer wanting such service. Best references. Address PHOSPHATE, ENGINEERING AND MINING JOURNAL. No. 17,390, May 2.

POSITION WANTED AS ASSAYER AND assistant by young graduate who is at present employed in Colorado gold mine. Considerable practical experience, and has studied abroad. Can survey, keep books and is familiar with cyanide process. Speaks French and some Spanish. Best of references. Address I. S., ENGINEERING AND MINING JOURNAL. No. 17,393, May 2.

ENGINEERING GRADUATE, 15 YEARS' practical experience with large coal corporations in all the departments of coal mining and trade from preliminary prospecting to mine management and general sales agent, is open for engagement, home or abroad. Can guarantee most economical American methods. Best references. Address L. U., ENGINEERING AND MINING JOURNAL. No. 17,401, May 23.

CHEMIST AND ENGINEER (C. E. YALE, 1891), experience in field and office, taken degree Ph.D. in chemistry this June, wishes permanent location. Best references as to ability and energy. Address B. W. McF., 420 Temple Street, New Haven, Conn. No. 17,395, May 2.

METALLURGICAL CHEMIST AND ASSAYER desires position, preferably with smelting company. Competent and experienced furnace manager and rapid and accurate chemist. Proficient and systematic record keeper and is economical. Speaks Spanish. Good references. Address HABIL, ENGINEERING AND MINING JOURNAL. No. 17,398, May 16th.

CIVIL AND MINING ENGINEER (AGE 30), English technical graduate, of late in Her Majesty's service; accustomed to organizing and handling men; thoroughly up on construction work; good draftsman, surveyor and designer, desires position as assistant manager with reliable company, or any suitable position where a first-class man is wanted. Address C. W., ENGINEERING AND MINING JOURNAL. No. 17,404, May 2.

AN EXPERIENCED ASSAYER, LATE with Balbach, S. & R. Co., desires position; either West, Mexico or South America. Address H. Z., ENGINEERING AND MINING JOURNAL. No. 17,438, May 16.

GRADUATE GERMAN SCHOOL OF Mines, 1870, eight years in United States, desires engagement as superintendent or surveyor or other suitable employment with mines. First-class underground surveyor and office man. Address L. Z., ENGINEERING AND MINING JOURNAL. No. 17,402, May 2.

Contracts Open.

PROPOSALS FOR TUNNEL.

The Iron Mountain Company will receive bids for the building or running tunnel at their mine in Missoula County, Montana, up to May 10th, 1896, dimension 6 by 7 ft., length 5,600 ft., specification and conditions will be furnished upon application at the office of the required company at Helena, Montana.

R. S. HALE, President.

TREASURY DEPARTMENT, Office Supervising Architect, Washington, D. C., April 29th, 1896 - Sealed proposals will be received at this office until 2 o'clock p. m., on the 21st day of May, 1896, and opened immediately thereafter, for all the labor and materials required for the completion of the superstructure, interior finish, plumbing, etc., of the U. S. Post Office building at Richmond, Ky., in accordance with the drawings and specifications, copies of which may be had at this office or the office of the Superintendent at Richmond, Ky. Each bid must be accompanied by a certified check for a sum not less than 2% of the amount of the proposal. The right is reserved to reject any or all bids or to waive any defect or informality in any bid, should it be deemed in the interest of the Government to do so. All proposals received after the time stated for opening will be returned to the bidders. Proposals must be enclosed in envelopes, sealed and marked "Proposal for the Completion of the Superstructure, Interior Finish, Plumbing, Etc., of the U. S. Post Office at Richmond, Ky.," and addressed to WM. MARTIN AIKEN, Supervising Architect. Orig.

BRIDGE.-Bids will be received at my office, in Hawkinsville, Ga., until the 6th day of May, 1896, for furnishing material and placing iron or steel viaducts to west side approaches to river bridge, at Hawkinsville, in lieu of present wooden structure. Total length of said approaches is about four hundred (400) feet. Bids are asked on two hundred (200) feet of same, with privilege of whole length. The right to reject any or all bids is reserved. For further particulars address me at Hawkinsville, Ga. P. T. McGRUFF, Ordinary, Polaski County, Ga.

WATER-WORKS.-Sealed proposals addressed to the City Clerk, Bluffton, O., will be received until April 27th, for furnishing material and labor and constructing a system of water-works for Bluffton, O. The work to be done is approximately as follows: 1. Furnishing f. o. b. Bluffton, O., about 245 tons of cast-iron pipe, and about six tons of special castings. 2. Laying of the above pipe, and setting all hydrants, valves and valve boxes. 3. Furnishing f. o. b. Bluffton, O., 38 fire hydrants; also the necessary valves and valve boxes. 4. A pumping station. 5. A steam pumping plant of an easy capacity of 1,000,000 gallons per day, with boilers and all appurtenances. 6. A steel tank 22 ft. in diameter and 30 ft. deep, erected on structural steel tower 80 ft. in height. Bids will be received for the whole or any part of the above work, and the village of Bluffton, O., reserves the right to reject any or all bids. Accompanying each proposal must be a certified check, payable to the order of the City Treasurer of Bluffton, O., as a guarantee to be forfeited if the bidder fails to enter into the contract awarded to him; the amount to be 3% of the amount of the bid, provided no check be less than \$200. Plans can be seen at the office of Sanders & Porter, designing engineers, 998 Columbia building, Louisville, Ky., and at the office of W. H. EULLER, chairman of the Water Works Committee, Bluffton, O. All work to be paid for in cash. W. H. EULLER, Chairman, SANDERS & PORTER, Engineers, Louisville, Ky.

BRIDGE.-Bids will be received at my office in Hawkinsville, Ga., until the 6th day of May, 1896, for furnishing material and placing iron or steel viaducts to west side approaches to river bridge, at Hawkinsville, in lieu of present wooden structure. Total length of said approaches is about four hundred (400) feet. Bids are asked on two hundred (200) feet of same, with privilege of whole length. The right to reject any or all bids is reserved. For further particulars address me, at Hawkinsville, Ga. P. T. McGRUFF, Ordinary, Polaski County, Ga.

NOTICE TO CONTRACTORS-City of Boston, Boston Transit Commission.-Sealed bids for building Section 6 of the subway in Tremont street, from Park street to Scollay square, in accordance with the form of contract and specifications to be furnished by the Commission, will be received at its office, 20 Beacon street, Boston, Mass., until 12 o'clock M., of Thursday, May 7, 1896. The section is in a crowded street in the heart of the city, street railway tracks traverse it lengthwise and there are numerous important buildings on each side. It is intended that most of the work shall be done by tunneling, and little of the surface can be occupied during the day. The section is approximately 1,385 ft. long. The subway from Scollay square to Hamilton place, a distance of about 1,035 ft., will consist of masonry side walls and a masonry arch springing therefrom, spanning two tracks. From thence to the junction with the work already built in front of Park street church, there will be two single-track subways, of construction similar to that of the two-track portion-each being about 50 ft. long. The inner dimensions of these subways will be approximately as follows: Two track, 18 ft. in height from invert, 23-ft span; easterly single track, 16 ft. in height from invert and 13-ft. span; westerly single track, 16 ft. in height from invert and 15-ft. span. The depth from the surface of the street to the bottom of the subway is approximately from 24 to 35 ft. Some other items are estimated to be as follows: 28,000 cu. yds. of earth excavation; 125 tons iron and steel, furnished by the commission, to be set in place; 10,800 cu. yds. concrete and brick masonry.

Plans can be seen and specifications and forms of contract can be obtained at 20 Beacon street, fifth floor. A bond will be required for the faithful performance of the contract in a sum of 20 per cent. of the amount. The commission reserves the right to reject any and all bids. GEORGE G. CROCKER, Chairman; CHARLES H. DALTON, THOMAS J. GARGAN, GEORGE F. SWAIN, ALBERT C. BURRAGE, Boston Transit Commission; HOWARD A. CARSON, Chief Engineer; B. LEIGHTON BEAL, Secretary.

BRIDGE.-Office Commissioners of Roads and Revenues, Fulton County, Georgia, Atlanta, Ga.-Sealed proposals will be received at this office until the 5th day of May, 1896, for furnishing all material and labor and building complete, ready for use, the Bridge over Peachtree Creek on Peachtree road, about five miles from the City of Atlanta, in accordance with plans and specifications prepared by Grant Wilkins, Engineer, copies of which can be had by bidders upon application to the undersigned or to the Engineer. Each bid must be accompanied by a certified check for the sum of Two Hundred and Fifty Dollars, payable to C. A. Collier, Chairman Commissioners of Roads and Revenues of Fulton County. The right is reserved to reject any or all bids. All proposals to be addressed to the undersigned, and must be made upon the blank form for proposal attached to the specifications. ANTON L. KONTZ, Clerk Commissioners Roads and Revenues for Fulton County, Atlanta, Ga.

PUMPING ENGINE.-Office Board of Trustees of Water-Works, Sandusky, O.-Sealed proposals will be received at the office of this Board, in the city of Sandusky, O., until the 1st day of May, 1896, for remodeling a 3,000-gal. pumping engine now in the pumping station of the water-works of said city, according to specifications therefor, which are on file in the office of said Board. All proposals must be on blanks which may be obtained at the office of the said Board. Each bid must be accompanied by a certified check, drawn to the order of the Secretary of said Water-Works in the sum of \$300, as surety that if the bid is accepted a contract will be entered into. The right is reserved to reject any or all bids. P. J. CROSEN, President; ADAM KOLB, I. O. DEHNEL, Trustees; C. A. JUDSON, Superintendent.

THE ENGINEERING AND MINING JOURNAL

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An Anthracite Colliery Property in the Borough of Shamokin, Northumberland County, Pa. Breaker comparatively new, and equipped with the latest coal-breaking and screening machinery; capacity about one thousand tons per day and now in operation. The property is in excellent condition and a large quantity of coal opened.

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Auction of Wallace & Sons' Copper and Brass Rolling Mills, Etc., at Ansonia, Conn.

To close a Trust, the real estate, buildings, machinery, plant, tools, material and shares of stock of WALLACE & SONS, will be sold by auction at their office in Ansonia, at noon on Thursday, May 14th, 1896, unless previously disposed of at private sale.

The property includes Brass and Copper Wire Mills, Brass and Copper Rolling Mills, Casting Shop, Lamp and Burner Shops, Pin, Rivet and Chain Machinery, with auxiliary Shops and Buildings, and all now running. The property also embraces: 1 double tenement, 2-story and extension, on Pleasant St.; 1 double tenement, 2-story, on Fourth St., all at Ansonia; about 744 acres woodland in Newton; about 61 1/2 acres woodland in Ansonia; about 12 acres woodland in Seymour. Also the following shares of stock, viz: 8,000 shares Parrot Silver & Copper Co. stock; 210 shares American Fish Hook Co. stock.

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Catalogues of the property in detail may be had by addressing Wallace & Sons, 29 Chambers St., New York. The Trustees reserve the right to sell all or any part of the property at private sale before the auction.

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HANDY & HARMAN, Dealers in Bullion, Specie and Bonds, No. 32 Nassau Street, New York. Sovereigns, Francs and Marks, Doubloons, Mexican Dollars, Fine Silver Bars, Fine Gold Bars. Special attention given to Investments and to Consignments of Silver and Gold Bullion of all grades. REFERENCE: American Exchange National Bank, New York City.

MISCELLANEOUS WANTS.

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WANTED: A Locomotive, 8 to 10 tons, 42-inch gauge, for underground work. Send particulars to MILL CREEK COAL CO., No. 1 Broadway, New York City.

WANTED—SECOND-HAND CHILEAN rolls; must be cheap and in good condition. Address J. GRAY TORREY, Stirling, N. J.

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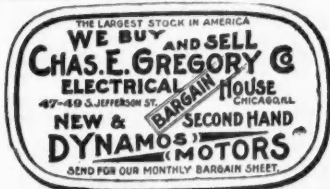
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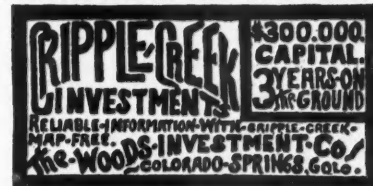
CONTRACTS OPEN.

Continued from Page 18.

TREASURY DEPARTMENT, Office Supervising Architect, Washington, D. C., April 29th, 1896. Sealed proposals will be received at this office until 2 o'clock, p. m., on the 26th day of May, 1896, and opened immediately thereafter, for all the labor and materials required for the interior finish, plumbing and approaches, of the U. S. Post Office, Court House and Custom House at Newberne, N. C., in accordance with drawings and specification, copies of which may be had at this office or the office of the Superintendent at Newberne, N. C. Each bid must be accompanied by a certified check for a sum not less than 2% of the amount of the proposal. The right is reserved to reject any or all bids, and to waive any defect or informality in any bid should it be deemed in the interest of the Government to do so. Proposals received after the time stated will be returned to the bidders. Proposals must be enclosed in envelopes, sealed and marked, "Proposal for Interior Finish, Plumbing and Approaches for the U. S. Post Office, Court House and Custom House at Newberne, N. C.," and addressed to WM. MARTIN AIKEN, Supervising Architect, Orig.

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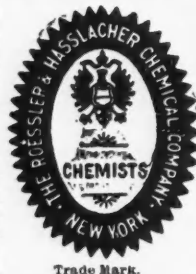
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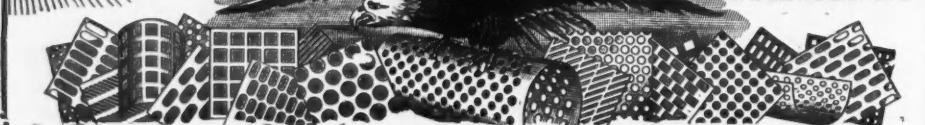
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