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"IMITATION is the sincerest form of flattery," and the imitation of American goods and trade marks is the highest testimony to the superiority of American manufactures. We are constantly hearing of English manufacturers imitating American tools and claiming for their products "American finish" and "American style," in order to sell their wares. An example is given us in a letter from an American consul in one of the West Indian islands, who, advising us of the character of goods taken by the trade, says: "For the local trade American shirtings are preferred owing to the better qualities. Gray domestics, American, are considered in every respect better and have more demand in neighboring markets than English make. *We import this article from Manchester, but we have it finished like the American and stamping on each piece 'Massachusetts,' or something similar, without maker's name.*"

SOME SUGGESTED NEW USES OF PHOTOGRAPHY.

Prof. JOHN TROWBRIDGE, in the May *Scribner's*, calls attention to the importance, from an engineering point of view, of making careful photographs of steel and timber at the point of rupture under a breaking load, suggesting that in this way we may learn something important on the much vexed question of elasticity.

This is a suggestion that we would specially commend to the attention of our metallurgists, some of whom have made a critical study of the behavior of iron and steel under strains. When, by the aid of photography, a medical man can detect an incipient eruption on the skin that is not visible to the naked eye, it would seem that it may be possible, by photography, to learn much concerning the changes going on in the physical condition of metals subjected to strains exceeding their elastic limit. The achievement of Dr. KOENIG, of Berlin, in photographing a cannon ball moving at the rate of 1200 feet per second seems to make all things possible. In his communication to the Physical Society of Berlin, he stated that the ball was projected in front of a white screen and occupied one-fortieth of a second in its passage.

A SPRING BLIGHT ON TRUSTS AND SYNDICATES.

Whether the lesson of the failure of the Copper Syndicate has been taken to heart by would-be Trust formers and cornerers, generally, it is impossible to say; but a sudden blight seems to have fallen on several much talked of schemes in England that looked promising a few weeks ago. A great $500,000,000 English colliery combination, which was, in the usual mysterious way, going to benefit owners, miners, and consumers, has apparently come to an untimely end. The steel rail makers of Great Britain have refused to join the International Association proposed to them by their Continental competitors. The tin-plate syndicate so loudly proclaimed as near accomplishment is trembling in the balance, scared out of existence, say the Dakota papers, by the inexhaustible resources of that State, and the prospect of making tinplate in this country. The caustic soda manufacturers, nearly ruined by competition, were going to remedy everything and inaugurate a good time by a binding combination, but, alas! that also has not materialized.

The latest reports say that the representatives of the American copper mines who went to Paris to endeavor to patch up in some kind of combination the copper producers of the world have failed in their negotiations, and are returning. On the whole, the times do not appear as propitious as they were for trusts and combinations; nevertheless, there are many others forming in every department of politics, trade and manufactures, and many of these will prove very injurious to the causes they nominally are formed to protect.

The best protection any industry can have is to be found in self-reliance, the application of skill, enterprise, economy, and honesty. These are not affected by politics or the vacilations of public opinion.

Give our American manufacturers a fair chance and they will hold their own with those of any portion of the world without "trust" or "syndicate."

MEXICAN FINANCES AND RESOURCES.

The general prosperity of a country is so intimately and indissolubly bound up with the prosperity of its national finance and credit, that to this country, now so deeply interested in the welfare of our sister republic, Mexico, the financial outlook, as presented by the accounts of the Secretary of the Treasury to Congress, is very encouraging. In our issue of April 13th, in which we gave a summary of PRESIDENT DIAZ's address to Congress, we were able to bring before our readers some of the favorable features of the existing state of affairs across the Rio Grande.

The accounts now presented for the fiscal year ending June 30th, 1888, show that the revenue of the country is steadily and substantially increasing, and with a continuance of the recent development bids fair to enable the administration to meet the national obligations and carry on the business of government without having recourse to fresh taxation or loans to discharge a floating debt. During the year under review the duties collected on imports and exports amounted to $19,631,668; the internal revenue (stamps, etc.) to $11,752,588, and from other sources $9,577,788, making a total of $40,963,044. For the previous year the figures were: Duties, $17,864,891; internal revenue, $11,368,018; other sources, $2,893,599; a total of $32,126,508, showing an increase for the last financial year of $8,835,536 over the previous one. This increase of about 25 per cent in the national revenue is extremely gratifying, as there has been nothing like a boom in the country, no unhealthy expansion of trade and no over speculation, only the natural growth consequent on the security felt in the government and the increased means for trading and for bringing produce to a profitable market, by the banking facilities for the first time offered, and the railroad construction which is still continuing on a sufficiently large scale to open up the country rapidly. So much for the past, now for the future. As we have before noted, President DIAZ and his able Finance Minister, Señor DUBLAN, have devoted their energies successfully to re-establishing the credit of Mexico, and in the general reorganization of the finances, the obligations to the railroad companies by way of subvention, the suspension of the payment of which had to take place temporarily, have not been forgotten, but have been re-arranged in an equitable manner, the payments being made in a gradually progressive ratio increasing every six months. This is a liability which was entered into with the expectation of an elastic and expanding revenue, and so far events have justified the expectation, as the increase in revenue above stated is considerably in excess of the increased subvention payments to the railroad companies and it must be very gratifying to the executive to find the expectations thus realized. The returns since the expiration of the financial year continue to show satisfactory gains, and the revenue for the current year promises to fall little short of $50,000,000. The Government has just been notified by the bankers in Berlin and London that they have taken the balance of the loan contracted last year, on which they had an option, so that the credit of Mexico never stood so high before. However, if at any time during the term of these subventions the revenue should fall short of the amount necessary to meet the liabilities, the Government with its improved credit would find no difficulty in raising a loan on advantageous terms to do so. Mexico would even then with her enormous resources be a model country in regard to the smallness of her debt. As evidence of the confidence with which capital is seeking investment in the country, the contracts made with the Department of Public Works (Fomento) for the development of mineral zones, under the special provisions of the mining law of 1887, call for an expenditure of more than $40,000,000 within the next few years, and nearly $300,000 in cash and government bonds have been deposited with the Treasury as guarantee for the fulfillment of these contracts.

FOREIGN INVESTMENTS AS PROMOTERS OF EXPORT TRADE.

There is one feature in connection with our export trade to which, in our previous remarks upon the subject, we have not alluded, viz., the disinclination of our capitalists and merchants to make investments abroad. This is not the least to be wondered at, for although it is easy enough to be duped in New York and other places at home, or to make miscalculations as to the results of an investment in this country, yet there is a certain element of security in the nearness, so to speak, of an investment affording better opportunity for examining into its merits beforehand and watching its progress and prospects after it is made; also the natural preference given to the protection of one's interest under our own laws, in place of subjecting them to foreign jurisdiction, the conditions of which we are more or less ignorant, and more or less suspicious. What has rendered the seeking for foreign investments unnecessary, as well as undesirable, is the same cause that until recent years has rendered the thought of export trade unnecessary, viz., that we have had a more than sufficient field at home for the profitable use of our capital and manufactures. But this is gradually, or rather we may say rapidly, changing. Capital is accumulating at an unprecedented rate, and the fact that the interest on the last issue of New York City bonds was only 2½ per cent, and that they were taken at an average price of over 101, is a promising feature for our export trade. This marks the low return to be secured from home investments of a first-class character, and it is further emphasized by the high quotations current for government bonds and really gilt-edge first mortgage bonds of our leading railroad companies. The natural sequence is that many investors will look abroad for a fair return upon their capital, and for some few years past the shrewder and more enterprising of them have been doing so, and in this way fostering our foreign trade.

One of the main reasons for the supremacy of England and, in a less degree, Germany, in export markets, is the willingness of her capitalists to furnish money to carry out remunerative works abroad. It is not that Englishmen are more enterprising than Americans, but their accumulation of capital has been going on for so many years that they are now accustomed to look upon foreign countries as the natural field for investment, and furnishing the means to carry out the works undertaken it is only natural that the expenditure of the bulk of it is made in the country from which it comes. We are now making a great outcry about the small proportion of the South American trade that we secure, but who has furnished the hundreds of millions of dollars to build nearly all the railroads, water-works, gas-works, factories, and municipal improvements in Brazil and the Argentine Republic?

Naturally the country that has done so reaps the benefit, and England last year, according to the Board of Trade returns, has sent there nearly 150,000 tons of steel rails, against less than 50,000 the previous year, and other articles in like proportion. Foreign trade is not to be created by subsidized steamships and treaties alone, but by genuine enterprise, which will give rise to such a trade that the steamship lines will follow as a necessity to carry it and form a separate and profitable part of the investments. Pessimists may shake their heads and point to the disastrous results of some of these ventures; the Panama Canal for instance, but this is no argument to one who examines into the causes of failure, which are generally found to originate in bad conception or bad execution, causes that produce precisely the same effects at home.

English investments abroad are estimated to be $10,000,000,000. It is only natural, therefore, that Great Britain should nearly monopolize the foreign trade of the world, and when our foreign investments reach only one-tenth of that sum we shall not have occasion to invent mysterious causes for our non-success in foreign commerce.

THE EXTENSION OF THE METRIC SYSTEM OF WEIGHTS AND MEASURES.

To any one who has had practical experience with the metric system it needs little argument to show its immense advantages over the barbaric system, or lack of system, of weights and measures in use in this country, but the great majority of our people dislike to make a change that for a short time would give some additional trouble, though forever after it would be an immense gain. It is indeed strange that a people so intelligent and so progressive should be willing to continue the use of such a hodge podge of weights and measures as we designate by the name of the American, or, rather, the English system.

In a certain copper works we visited some time ago, the ore was mined by the "Cornish ton" of 2352 pounds; at the dressing works and furnaces the long ton of 2240 pounds was used, and after the copper left the furnaces it was counted by the net ton of 2000 pounds. In the coal and coke trade we have tons of 2240 and 2000 pounds, and bushels of 80, of 76, and of 40 pounds, to say nothing of the retailers' bushels and tons, which are what they make them. There are "hundredweights" of 100 pounds, and of 112 pounds. We have pounds of 12 ounces and of 16 ounces, and the ounces themselves differ, the avoirdupois and the troy weights being applied, the former to ordinary metals and things, the latter to gold, silver, platinum, and a few other things.

We have grains and drams and scruples, we have rods and poles and perches of many different sizes, and about twenty different "bushels," as applied to grain and other things.

So we might go on through that whole bewildering relic of barbarism, our "standards" of weights and measures—through a list that our children spend many a weary hour at school to learn, and which when learned are found to apply only locally, in one State or district one measure prevails, a few miles from there a different one.

Nevertheless, though the metric system, so admirable in its simplicity, is legal in this country and in Great Britain, and in many of the English colonies, and has been legal for many years, it seems to make but little progress in general use.

This is sometimes used as an argument against the metric system, but it is no more so than the fact that natural gas was known, its qualities fully described, its advantages in actual use at a few points fully shown, and its general use advocated in a few technical papers for about twenty years before its utilization at any but the few places where originally tested is an argument against its use.

The plain people do not know, and therefore cannot appreciate, the advantages that the sole use of the metric system would bring them, and the mere legalization of the system simply adds another to the already formidable array of "standards" now in use. The government of the United States, and of Great Britain could, by joint or concordant action, secure the universal adoption of this great blessing.

Even if our government were to require all transactions with it to be in the metric standards, it would greatly promote their general use. If, for example, the public lands were measured and all documents connected with them used the metric measures only, and all customs and other transactions with the government used metric weights and measures, it would tend greatly to popularize the use of the system. The Coast Survey already uses the metric measures, and it would be very easy for the government to conduct all its business in the same system; then the public would soon adopt it. We are holding back while all the rest of the world is going on, as is shown in the following paragraph:

At a meeting of the French *Académie des Sciences*, held on the 4th February last, M. de Malaroc, speaking on the subject of the extension of the metric system of weights and measures, said:

"In 1887, the countries where the decimal metric system is obligatory, have an aggregate population of 302 millions of people (302,539,297), an increase of 53 millions over 1877.

"The countries where the metric system is authorized by law as optional (England, usual British Colonies, Canada, United States) include 96,900,000 souls (96,996,499), an increase of 19 millions over 1877; and the countries where the metric system is legally admitted in principle or applied in part (for the Customs) (notably Russia, Turkey, British India) comprise a population of 395 millions (395,282,000), an increase of 54 millions over 1877.

"To sum up, the metric system is legally recognized in the civilized world among 794 millions of people (794,817,796), an increase of 126 millions over 1877. This increase is due to the growth of the population of the countries which had already adopted the system, and to the adoption by new countries.

"These 794 millions of people represent a proportion of 61 per cent. of the population of the civilized world, that is to say of countries which have official censuses and enumerations of the population and which have 1311 millions of inhabitants.

"China, Japan and Mexico have various systems, decimal but not metric; they represent a population of 474,000,000 of souls.

"Other civilized peoples, not included in the foregoing, have systems which are neither decimal nor metric; they represent a small fraction of the civilized world, 42,000,000 of inhabitants!"

CORRESPONDENCE.

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

All letters should be addressed to the MANAGING EDITOR.

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

Mining in Arizona.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: The mining interest of Arizona seems to have received quite an impetus during the past sixty days; properties that have been idle for years are again being opened, with fair prospects for vigorous work. Some of these are represented as possessing real merit, and the neglect they have suffered was mainly due to the fact that they were owned by parties who were destitute of means with which to work them on a paying basis. The Atlas Copper Company, whose mines are situated about 45 miles southwest from Tucson, in this, Pima County, was originated about three years since, and is considered by reliable parties to be one of the best copper properties in Arizona; but unfortunately the management is reported as being as poor as the property is good. Hence, although their furnace has been built over two years, it did little or nothing in the way of work until the close of last year, and since it actually commenced operations it has been kept in blast less than half the time. During the past 30 days, however, indications of activity have been shown, and over 120 tons of high grade matte were shipped from Red Rock, the nearest station. The cause of the delay in making copper while the prices were high, is ascribed to a quarrel among the stockholders and as the majority ruled they no doubt thought the best way to tire the minority out and induce them to sell their stock cheap was to deprive them of dividends by failing to earn them where it was easy to do so. This is an old trick with mine manipulators. It is charitable, however, to assume that the failure was the result of incapacity rather than trickery. In brief, the fact that a man is successful in other lines of business does not warrant the conclusion that he is fit for a mine manager; on the reverse, it not only requires ripe experience but a peculiar talent to succeed.

Among the latest sales reported is the "Bay State Group." This property joins the Atlas on the east. The developments show good bodies of

high-grade carbonates and sulphurets. The price paid is statedat $90,000 for one half. Professor H. J. Cole, who has had many years experience in the copper mines in the Lake Superior districts, recently examined the property and is said to have effected the sale. A dispatch from Chicago, where the company was organized, states that Professor Cole will have the management of the property; hence it is fair to assume that he is satisfied as to its value. And it is certainly the most promising prospect, considering the amount of development, that I have ever seen. The company will be known as the Red Rock. Within a week a Chicago party has bought a supposed gold mine in Maricopa County, and will at once proceed to develop it. The price paid was $16,000; certainly enough for an uncertainty. A number of other sales, including some apparently large although undeveloped properties, are also pending, and the coming 12 months are likely to witness greater practical developments than were ever before recorded in this territory in the same length of time. That Arizona possesses many valuable mining properties is beyond question, and there are few sections that offer as great inducements to the intelligent investor. Unfortunately for the reputation of Arizona and the whole mining industry, too much money has heretofore been put into holes in the ground, and even meritorious mines have failed to pay because they were managed by dishonest or incompetent parties. But it is to be hoped that the swindles and blunders of the past will be a warning to new investors, and that those who decide to buy mining claims will first have them thoroughly investigated by competent and honest experts, and be equally cautious as to whom they intrust their management. A diploma from a mining school does not prove that the holder is competent to manage a mining property; the prime requisites for such a position being intelligence, practical knowledge, economy, and loyalty to those whom he represents. When mine owners understand that those factors are indispensable to success, we shall hear less of failures in mining operations. In closing I wish to compliment the ENGINEERING AND MINING JOURNAL for its fearless course in exposing mining frauds as well as self-styled mining experts, of whom there are altogether too many. T. B. D.

TUCSON, A. T.

THE TRANSVAAL GOLD FIELD—SOUTH AFRICA.

From our Special Correspondent.

The De Kaap, Komatie and Swazieland gold fields lie amongst the mountains that are the continuation of the Drakensberg range, which mountains are here immediately east of the plateau before mentioned, known as the High Veldt, though their highest peaks rarely attain the elevation of that. Perhaps there is nowhere a more rugged and rough country than this is, and when I state that there are only the merest apologies for roads, it can be easily understood that traveling here is the reverse of enjoyable. The usual means of locomotion is on horseback over break-neck bridle paths.

These fields are not more than 100 miles from the Indian Ocean, and Barberton is within 70 miles over a comparatively easy country, from the terminus of the railroad that runs from Delagoa Bay to the Transvaal border; the government will not, however, allow this line to be continued, as I believe they think it would take a large amount of business from those burghers who live by freighting with their ox-wagons. There is, indeed, not a single railroad in this country, nor any likelihood of there being one for some years.

It can easily be believed therefore that these fields are very severely handicapped by want of transport facilities. It not only takes months to get a wagon from the Natal railroad terminus Ladysmith to Barberton, but it costs for freight 10s. to 30s. per cwt. Were these fields on the High Veldt the cost would be but 5s. to 9s. The reason the few miles extra make such a difference in cost is that descending from the level high veldt into the deep valleys and rugged country of these fields only half loads can be taken, owing to the roads; furthermore, for six months in the year cattle will not live in the valleys, and for the other six when they will live there is very little grazing for them, and then transport can hardly be obtained.

THE GOLD FIELDS OVER VALUED.

I may say here that these fields have been much over-estimated and the richness and number of the veins have been much exaggerated. Furthermore the disadvantages under which mining has to be carried on here have never been fully reckoned upon and are now only being realized painfully and at great cost by investors. The natural reaction from disappointed hopes, unwarranted as they were, is the want of confidence that lately has prevailed, though this is being gradually superseded by a conviction of their genuineness and worth.

THE GOLD FIELDS, AND HOW TO GET TO THEM.

It must be remembered that Barberton and these fields generally are situated in what was a very few years ago an unknown and wild country, and lions, elephants, giraffe, etc., abounded in the valley in which the town lies.

Access is obtained to Barberton either from Capetown, Natal, or from Delagoa Bay. Its distance from Capetown is 1202 miles, and the journey is made by rail to Kimberley (647 miles), and thence by coach through Johannesburg, traveling night and day, the whole journey occupying 6¼ days, if the rivers are not full and there are no upsets, the cost being £30, and road expenses.

From Durban, Natal (480 miles), it takes 15 hours by rail, and about 3½ days by coach at a cost of £12 10s., plus expenses.

The third route is from Delagoa Bay by rail to Moveni 50 miles, thence on foot to Barberton 90 miles by road, through a fever country, without accommodation and only safe for white men from June to October.

Practically speaking, there is no timber for mining purposes throughout this part of the country, and none for fuel for motive power purposes. Even the best sticks here would only do for timbering ore passes and lagging, so that not only will the heavy mine timbers have to be brought from other parts, but mines will have to be filled in with waste rock when stoped out, as this will be far cheaper than imported timber.

There is abundance of splendid coal in the country, but it is unfortunately 80 miles off at least and on the high veldt, so that for fuel either to generate steam or for metallurgical purposes its cost would be prohibitory; of course, when the railroad is made this will all be changed, as it must pass on its way to Johannesburg right through these coal fields.

For milling, therefore, companies are forced to place their mills on banks of rivers or streams and use the water power to run them, which, in most instances, are at some distance from the mine itself. Then comes in the question of transporting the ore to the mill. In the De Kaap Valley, which used to be called the Valley of Death, oxen will hardly live, and at best this means of transport is slow and unreliable. Steam tramways are, in my opinion, out of the question, though they are going to try it in one or two cases.

The only solution to the difficulty is the introduction of electricity, which must come sooner or later.

One mine, the "Sheba," erected a 20-stamp mill four miles from the mine, on a small stream having enough water only for boiler purposes and battery requirements. The cost of transport, together with the cost of fuel, was so excessive that, hitherto, the gross expense of producing gold has been £8 per ton of rock. It, of course, speaks well for the mine that it was able to stand this for so long. The mill, however, is now closed, pending the introduction of some less costly method of transporting the quartz to a larger mill driven by water power on a river eight miles from the mine.

As to labor, we are here almost entirely dependant on the native population, which is cheap but unreliable. These kafirs or "boys" are good rough workmen, and learn to "strike" and "turn drill" and all that. Their wages run to about 30s. a month and it costs as much more to feed them on mealie (corn) meal. They are not and never will be skillful miners in any sense of the term; they are therefore "bossed up" by white men who do nothing else, and in most instances could not if they would.

So far mining has been carried on in these fields in a very primitive manner. Fortunately it has been possible to open most of these properties by adits, though, of course, they cannot work for any extended period by them. Where shafts, or rather winzes, have been sunk, the rock is almost invariably hoisted by hand labor, there being, so far as I know, only one or two horse whims in the country. Of machinery, such as hoisting engines, pumps, etc., there are none, owing partially to the high cost of fuel for motive power. There are, I think, two machine drills on the fields. It can, therefore, from all this be easily imagined under what difficulties and expense ore extraction is carried on. The deepest shaft in the country is about 200 feet, and even the best opened properties here would be called prospects in a mining country.

The milling of the auriferous ores is, in all cases, very bad, and only such free gold as is caught on copper plates is in general saved. The pyrites, which generally is extraordinarily rich, is only partially, if at all, saved by blankets, with, of course, 60 per cent or so of quartz sand, the balance being irrevocably lost. This unclean pyrites is sometimes slacked, and sometimes ground with mercury in pans, which, of course, only yield a small portion of the total gold contents. Chlorination can only be adopted when the fuel question is satisfactorily settled. Ore concentrators are not yet in use here.

THE MONOPOLIES.

The Transvaal Gold Law of which I send you a copy, is, as you will observe, very vexatious in petty taxes which aggregate into a large percentage of the gold produced; these laws doubtless will gradually be altered, and in any case are better than the English ones. The worst feature in these being the fact that there is no *absolute* security of title.

The Transvaal Government has done far worse than making these laws so far as the miners are concerned; it has given to certain individuals concessions or monopolies for the sole and exclusive rights to manufacture certain articles and to use certain processes. The ones more nearly affecting mining interests are an absolute concession for the manufacture of iron, an absolute concession for the manufacture of sporting and blasting powder, which is so bad that even the Government itself imports European powder, and, of course, to miners it is utterly useless.

An absolute concession for the manufacture of dynamite and nitro glycerine compounds, which for the present has been got round by their having given permission for the importation of a number of thousand cases which will last for about 5 or 6 years.

An absolute concession to the Newberry Vautin people for the exclusive right to employ chlorine or bromine to extract gold from its ores, this being a most iniquitous one. And I hear that the Government has further granted a monopoly for the sole right to electrically transmit power; some time since it granted a banking concession together with one for a mint; this meant that the gold won would have to be exchanged for the bills of this bank which would be at least at 20 per cent discount anywhere else, thus reducing the value of every property by that amount; this however raised such a storm of protest all over the country that for the present it has been shelved, and it remains to be seen whether or not it will be eventually granted.

THE COST OF MINING.

In spite of all these drawbacks shaft sinking and drifting are carried on here far more cheaply than one would suppose, and not on account of the rock being soft either. The shafts are small in nearly all cases, only about five by seven feet, and not adapted at all for any large output; they are also shallow and not timbered, with, perhaps, the exception of some poles here and there. Such shafts can be sunk to, say, 100 feet deep for from 40s. to 80s. per foot. The drifts, which are of ordinary size, can be run from 30s. to 70s per foot. I do not yet know per fathom what it will cost to stope, nor can I yet form an estimate of what it will cost to produce a ton of ore when deep mining is inaugurated, taking into account timber and waste rock for filling, etc. Leaving the timber out of the question, and with fuel reasonably cheap, I don't think it will cost much more than in most places in the Western States, and, with the quartz at the mill, I am certain that the ore can be milled nearly as cheaply as in California, though it is bound to cost more to extract gold from the pyrites.

HOW THE MINES AND "WILD CATS" ARE FLOATED.

The owners of properties themselves have done nearly as much as the Government to make mining here unremunerative. In most cases after a few feet of winzes are sunk or adits driven, a trial crushing of from 10 to 100 tons (which one may be sure is not the worst or even average

rock) is made. If it goes well the property is "taken over" by a promoter for floatation in London or elsewhere. When the prospectus comes out, we invariably see the usual sum in compound proportion. If 50 tons of our ore yielded 2 ounces 6 pennyweights of retorted gold to the ton and we can crush with the 50 stamp mill we are going to erect 100 tons a day, how many ounces of gold shall we obtain in a year and then the usual calculations follow. All this without the slightest reference to how much ore of this quality there is left, and what proportion the 50 tons bore to the whole mass of the vein.

This is bad enough, but there is worse to follow; the vendors and promoters get the bulk of the shares and the working capital is put down to the very lowest notch; in fact, some companies have been floated with no working capital at all.

The first thing, then, done with the small amount of cash at command is to immediately erect a 5, 10 or 20-stamp battery and build a water race to convey water to drive it with, and this usually absorbs the cash in hand without there being any continuous work for the mill to do. The usual result is there are a few months' crushings; if they turn out well, shares are disposed of. In the meantime the cash is exhausted, mining work has to be suspended, and as a consequence the mill shuts down; then refloatation is necessary, and the property burdened a second time with the new promoters' shares. It speaks very well for the most of these properties that they have any of them held up their heads under this treatment.

Of course, it goes without saying that there are any number of bogus concerns, and in other cases, even supposing the property good, it would have to possess a vein of almost solid gold to be worth the price it is floated for. Properties with, practically speaking, no work at all done on them have been floated in England for as much as £400,000, a sum on which there is not the least likelihood of their ever paying any fair interest.

One pound sterling here is the same as $1 in the States, but even then I don't think think there are many mines which can show value, that could be floated for as many dollars as there are prospects floated for pounds here.

Another curse of the fields is nepotism. Men who have never seen a field of quartz or been underground one foot in their lives are appointed as managers because of some relationship with a director. Of course the same thing obtains more or less in every mining country, but here it is carried so far that really skillful mining superintendents would, unless they had friends, find it hard to get a place. Managers' salaries range from £400 to £1000 per annum, while those of ordinary white miners or laborers run from £12 to £25 per month.

There are a number of properties at work upon these fields, the majority of which are only being worked on a very small scale. The production of gold is inconsiderable, but this is bound to increase largely, for not only are many companies doing good developing work and opening up their mines for a steady output, but they are taking steps to facilitate the transport of their ore to the mills, and it is certain that when true mining is once commenced the gold production from this comparatively limited area will show a large monthly increase, and from the properties now known should eventually not fall short of 50,000 ounces per month.

GERMAN MINING STATISTICS.

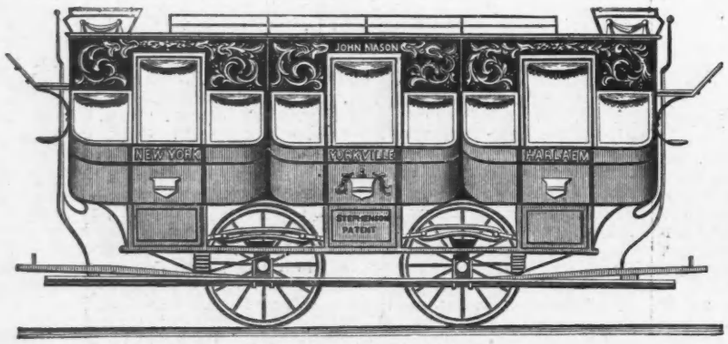
The official statistics in regard to the mining production of Germany in the year 1888 were as follows:

	Total production.		Value in		Average value per ton of 1000 kg.	
	1888.	1887.	1888.	1887.	1888.	1887.
	Tons.	Tons.	1000 Marks.	1000 Marks.	Marks.	Marks.
Coal	65,321,834	60,333,984	341,043	311,077	5·22	5·16
Brown coal	16,541,977	15,883,634	40,769	40,165	2·46	2·53
Salt	414,557	405,420	1,816	1,862	4·38	4.59
Iron ore	10,664,789	9,351,106	39,964	34,005	3·75	3·64
Zinc ore	667,760	900,712	13,747	10,022	20·59	11·13
Lead ore	161,775	157,570	16,635	15,923	102·83	101·06
Copper ore	530,864	507,587	17,513	14,552	32·99	28·67
Salt	493,400	480,962	10,648	11,424	21·58	23.75
Pig-iron, total	4,258,471	3,954,413	186,939	162,625	43·90	41·12
For foundry	597,488	488,573	27,833	22,465	46·59	45·98
For soft steel	1,794,906	1,732,484	78,787	71,432	43·90	41·23
For Bessemer steel	1,825,792	1,692,674	76,564	65,006	41·93	38·40
Zinc (metal)	133,224	130,493	43,576	36,597	327·09	280·45
Lead (metal)	96,995	94,920	24,848	22,495	256·18	236·99
Copper (metal)	20,872	20,202	30,496	17,722	1,146·11	877·24

The production increased in 1888, with the exception of zinc ore. As prices have advanced throughout the results of the year are satisfactory.

STREET CAR BUILDING.

Although the industry of building street cars is not yet able to celebrate its centepary it is one of old standing in this country, and the superiority of American cars is recognized the world over. The first street car was built in 1831 by John Stephenson for the New York and Harlem Railroad, which was originally a street railroad within the city limits of New York. Strange as it may appear to people of the present day, so quick to "catch on" to any new idea or improvement in locomotion or otherwise, the next street railroad was not built till after a lapse of twenty years, and it was many more years before the fashion extended to other countries. This was the small beginning of the business of the John Stephenson Company, which now builds cars by the thousand, and exports them to every country where street railroads or tramways, as they are called abroad, are in use. We give an illustration of the "John Mason," the first car built, so called after the President, at that date, of the New York & Harlem Railroad Company. This, like the early passenger cars or coaches of railroads, was simply an adaptation of the stage coach of the day, and the difference between its appearance and that of the well-known types of to-day is very striking. We illustrate also two standard cars furnished by the John Stephenson Company to show the difference. Fig. 1 the open car, Fig. 2 the bobtail or one-horse car, of which Mr. Stephenson, an undoubted authority on such subjects, is a great advocate as economical and easier on horses. The most important advantages which the American cars possess over all foreign makes are lightness, ease in running, ventilation, and durability, while in the minor points of finish and elegance they are equally unrivaled. As to price, this also is in favor of the home industry, and cars can be purchased at from $500 to $1500, according to size and finish.



THE "JOHN MASON" CAR.

BOB-TAIL CAR.

OPEN CAR

PROPOSED HYDRAULIC LIFT.

The following abstract of a paper communicated to the Manchester (England) Association of Engineers, is taken from the columns of our contemporary *Industries*.

The author, in commencing, referred to the Anderton lift, the distinctive feature of which was the employment of a double lift—the descending trough, being slightly heavier than the ascending one, forced the latter nearly to the top, when the remainder of the stroke was completed by the pressure obtained by the use of an accumulator. The principle of a double lift was determined on with a view to the economy of water; but the waste of water at each lift is equal to 22 tons, in addition to a further expenditure of water from the accumulator. The author proposes, in lieu of a twin lift, to employ a single one, and to arrange it in such a manner that less water is used than with the former system. It was especially his object to suggest a design for carrying the Bridgewater Canal over the Manchester Ship Canal at Barton, for which purpose a swing bridge or caisson had been proposed. The average speed of working at Anderton was three lifts per hour when boats were simultaneously raised and lowered, this slow rate being attributable to the insufficient weight of water taken from the upper level. The actual amount taken by the caisson at each list, and transferred to the river Weaver from the canal, was equal to a depth in the trough of 8 inches, and a weight of 22¼ tons. In a paper read by Mr. Sidingham Duer before the institution of Civil Engineers, it was stated that Mr. Leader Williams had suggested that in lieu of this transference of water a central ram was to be employed, the water necessary to lift the caisson being pumped, and, of course, run away when the descent was made. This is an expensive method, but it obviates the difficulty arising from the removal of the water from the upper level.

The author proposes, in lieu of one central ram, to have three, viz., the center or main lifting cylinder, and two others equal in size and of sufficient capacity to overcome the friction of the lift, from which fact they are termed friction cylinders. The large cylinder has a superior capacity to both combined. At each descent of the caisson, the water from the main cylinder is forced back into an accumulator or its equivalent ready for the next lift, the waste being only that from the small cylinders. In raising the caisson all the three cylinders are put under pressure, their areas being sufficient to raise the weight and overcome the friction. In lowering the caisson the water from the friction cylinders is allowed to flow away, and the whole weight is taken by the main cylinder. The area of this is so arranged that it is not large enough to sustain the weight of the caisson, which thus causes the descent, and at the same time forces the water into an accumulator of sufficient capacity. The Anderton rams are 3 feet diameter, the lift 50 feet 4 inches, and the weight of the caissons or troughs with their contained water is 240 tons. The weight of water transferred from higher to lower level at each lift over that raised is 15 tons, or about 6 inches in depth in the caisson.

Assuming both to be in motion, and passing each other in the center of the stroke, the descending weight would be 240 tons + 15 tons, or 255 tons acting on an ascending weight of 240 tons, this extra weight being sufficient to take the caisson almost to the top of its stroke. In comparing the author's proposed arrangement, the following figures were given: The weight of the caisson is assumed to be, as before, 240 tons, and the weight influenced to lift as, again, 255 tons, which should be got by making the combined area of the three cylinders equal to that using a pressure say of 1 ton per square inch. As, however, the author does not intend to take any water from the upper level, he would take from the main cylinder an area equal to that required to get the 15 tons pressure, and thus make the pressure on the main cylinder 225 tons. The difference between this and the 240 tons is made up by the pressure in the friction cylinders, the release of which would be followed by the establishment of a set of conditions in which the weight of 240 tons would press against one of 225 tons. The water would be forced into an accumulator or tower, the area of which must be equal to a pressure of 225 tons, and thus the water becomes available for succeeding lifts. It is maintained that even where the traffic was great enough to employ two lifts continuously, the pumping would be more economical than on the Anderton principle. The tower tanks could be made of such a capacity that a very small engine would supply the necessary reserve, so as to be capable of making a good many lifts. In this connection it is proposed to have tanks at two or three levels, so as to provide a means of getting an additional pressure. The tanks would be shallow, say 2 feet or 2 feet 6 inches, but of a large diameter, so as to be sufficient for many lifts.

In dealing with an aqueduct such as at Barton, it was proposed to place a caisson between the ends of the canal at each side, and raise it by a similar device to that described. Assuming the weight of this to be 900 tons, and adding one-eighteenth of this for friction, a total weight of 950 tons at about the center of the lift has to be dealt with by the three cylinders. The friction cylinders in this case should overcome the resistance arising from friction, viz., 50 tons, and by making the main cylinder with an area for 850 tons, the ascent and descent is provided for as in the former case. The proportion added for friction is obtained from the actual working of the large lift at La Louviere, in Belgium. Instead of raising the center caisson, in dealing with an aqueduct it may be permanently placed at such a height that ships can easily pass; and there could be two lifts, one at each side, to raise the boats to the level of the center channel. By this arrangement the boat would be raised at one side, traversed across the caisson, and lowered at the other side, the general lifting arrangements being as above described.

Points for Importers to Remember.—Assistant-Secretary Tichenor has informed the president of a chemical company that an importer cannot furnish goods from his stock to an institution as a loan or otherwise and afterwards import an identical lot of goods free in exchange for those furnished; that an importer cannot sell to an institution a shipment in transit and enter such goods duty free, and that an institution has no right to sell to its students any apparatus which has been imported duty free.

THE OSGOOD DREDGE.

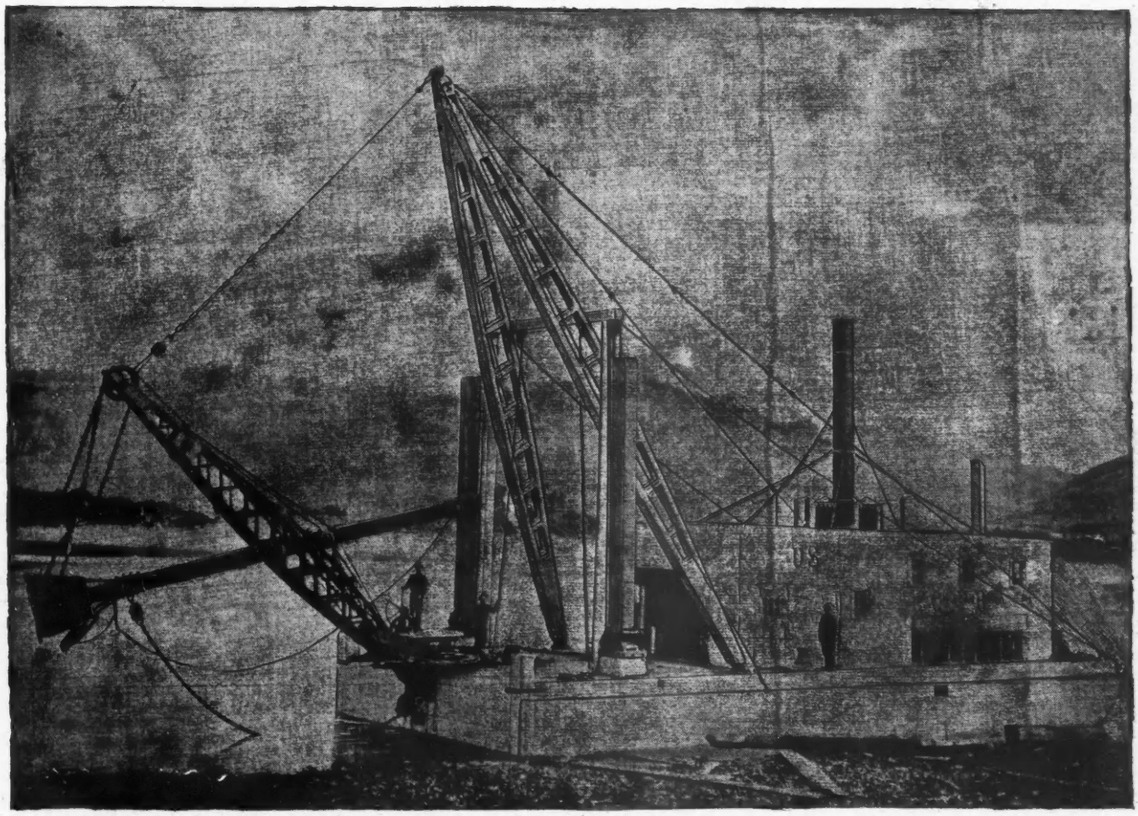
Until within the last ten years, most of the dredges and excavators built in this country were exceedingly crude, both in general design and in the details of construction. Very little mechanical skill, or scientific knowledge, had been displayed either in conception or execution.

This kind of machinery, until recently, showed little progress toward that state of perfection which has been exhibited in other classes of American machinery.

In 1854 Mr. Ralph R. Osgood, then of Troy, N. Y., first turned his attention to the construction and operation of dredging and excavating machines, from which date to the present time he has been devoting almost his entire time to designing improvements in this very important branch of mechanical art. As the result of his labors he has elaborated the now well-known Osgood boom dredge, which is, at present, acknowledged to be one of the most powerful, simple, durable, and economical dredges in existence. It has been adopted, among others, by the Corps of Engineers, U. S. A., for much of the excavation under their charge.

Since these boom machines have been in the market during the past seven years fifty-six have been built, and they have merited and received the praises of all who have used them.

Some of these dredges are built for dumping into scows only, others are built with a very long boom, so that they can be used either for dumping into scows, or, by changing the chains from the intermediate sheaves to those on the end of the boom, they can be used for "casting over" high banks or other obstructions. Several dredges have been constructed which, with the *scoop dipper*, deliver the excavated material at a height of twenty feet above the water and fifty feet from the axis of the dredge.



OSGOOD BOOM DREDGE.

Dredges for canal work, adapted to go through locks and under bridges, and which will also work on rivers, the necessary beam of boat being obtained by means of pontoons which are fastened on each side of the dredge, have in turn been planned and found to meet the requirements of the varied cases as they arose.

In a few words, it may be said that the capacity of these dredges varies from 300 to 3500 cubic yards per day of 10 hours, and the cost of them from $5000 to $22,500, exclusive of the hulls, and the depths of water in which they can be adapted to work are from three to thirty-five feet.

Of course one kind of dredge is better adapted for one kind of work and another for another, but a report recently issued by the Commissioners of Public Works of Canada, showing the work of three elevator dredges and nine dipper dredges for the years 1887 and 1888, is very much in favor of the latter, both in efficiency and economy in repairs. The average work per month of elevators was 5168 yards; of dippers, 6628 yards, with a maximum for the former of 6023, and for the latter 13,470 yards. The repairs on three elevators amounted to $12,081.70, and on nine dippers to $9,664.51. Of course it may be that the work to be done was more suitable for the latter description of dredge, but that it could not have been very glaringly so is evidenced by the continued use by the commissioners of the elevator dredges for two years.

The main advantages of the dipper dredge are that it concentrates all

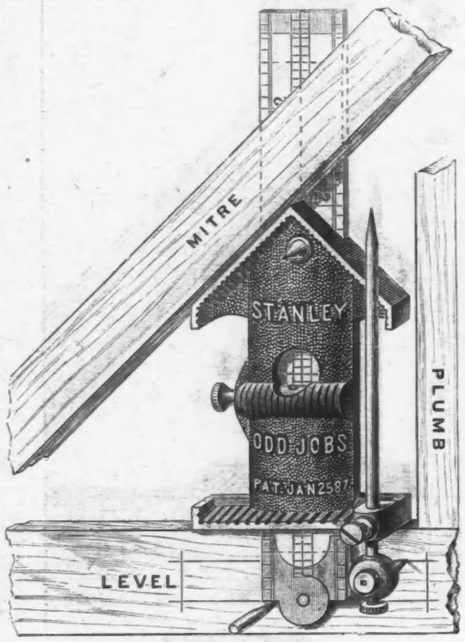
its power on one cutting edge, and that it has but one wearing surface exposed to action of sand and water. That is the pin in the sheave on the dipper bail, and it is cheap and light and easily renewed. Outside of this are few parts exposed to excessive wear, and it is easy and simple to renew these. It is claimed that the friction in comparison with the elevators is small, and the dead weight of machinery moved per yard of material is less than with any other machine, while the first cost is small in comparison, and repairs when necessary are quickly and cheaply made.

A sort of safety valve, so to speak, is provided by the Osgood Company, and it is their custom to so proportion the different parts that some one thing is so much weaker than any other part, that under a sudden strain it will break first. This "breaker" is usually made the chain, as that is the quickest and easiest mended, and does the least damage when parted. Besides this, springs are used in all parts of the machine to intercept shocks, and all arrangements for throwing in and out of gear are friction clutches.

In soft digging it is admitted that other machines do as well or better than a dipper dredge, but in harder digging its concentration of power and freedom from repairs renders it a very economical appliance, and in some circumstances its light draft is an important point.

A USEFUL TOOL—STANLEY'S ODD JOBS

This is the most ingenious device in the way of a combination tool we have ever seen. There are in itself and in combination with an ordinary carpenter's rule, ten tools in one, and yet the whole space taken up is very small and can easily be carried in the pocket. The tools are, try-



A USEFUL TOOL.

square, mitre-square, T square, marking gauge, mortise gauge, depth gauge, spirit level and plumb, scratch awl, beam compass and inside square for making boxes and frames. When the price is considered, only 75 cents, and the fact that the tool can be got at any hardware dealer's, we should think that few households, in all of which odd jobs constantly require doing, would be without this handy tool.

ALTERNATING CURRENT METER.

The meter which we here illustrate has been adopted by the Westinghouse Electric Company, for incandescent light service, and we condense the description given of it in the *Stationary Engineer*.

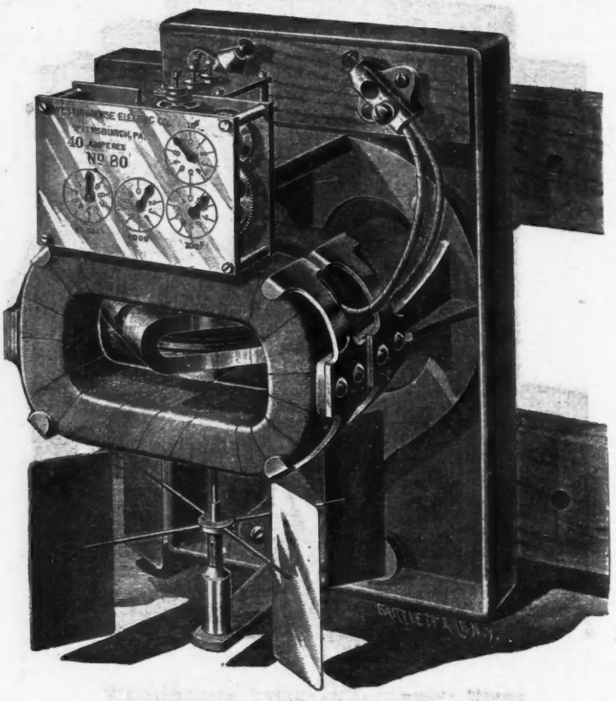
The shaft of the meter is geared to a registering device, similar to an ordinary gas meter. But the rotation of the disk depends upon an absolutely new principle, as simple as it is beautiful, and which is in possession only of the alternating current. The meter is essentially a coil consisting of a few turns of insulated wire, through which passes the entire secondary current to be measured. Within this coil, and partly inclosed by it, is a metallic conductor built up of copper rings. The magnetic axes of the coil and conductor are horizontal and inclose an angle of 45°. This angle can be adjusted, and upon it depends the calibration of the meter.

A light metal disk is carried on a vertical shaft, the two bearings of which are extremely small, and being hardened and polished, friction is practically eliminated. The registers are the usual geared train and dials, to which motion is communicated from the shaft by means of a worm gear.

When the coil is traversed by an alternating current, a field of force is generated having a certain polar axis, with reference to the disk. At the same time currents are generated by induction in the copper rings. These latter currents magnetize the disk, and the position of the two coils is such that the magnetic axes thus established in the disk form an angle with the axis of the magnetic field due to the coil. Consequently, attraction and repulsion are exerted by the poles of the coil upon the magnetized disk and it revolves. The resultant force which rotates the disk is a strictly positive force, but proportional to the square of the current passing through the meter.

This latter fact would make the registration of the current difficult and involve calculations, thus defeating the direct registry which is necessary to a thoroughly practical meter. In order, therefore, that the instrument may register in proportion to the first power of the current, it is necessary to employ some retarding device, in which the retardation shall vary as the square of the speed. This is most perfectly accomplished by the simple expedient of attaching a delicate fan to the shaft of the meter, the light aluminum vanes of which are resisted by the air in the exact proportion required.

The most rigid tests have demonstrated that the number of revolutions of the disk in a given time are exactly proportional to the energy consumed by the lamps. As a matter of fact the meter is accurate, within a percentage of error so small as not to be appreciable. This fact places it very far in advance of even the most carefully constructed gas meters. Its readings are as follows: The unit registered on the dials is ampère hours, from which the equivalent lamp hours of any number or size of lamps, reduced to a 16 candle-power standard, are directly taken by means of a table. At present the Westinghouse Company manufacture these meters in three sizes, viz., 25, 50 and 100 16 candle-power lamps capacity each, and the connection is made by simply cutting one of the service wires in the building and then coupling the two ends on the binding posts of the meter. The entire current is thus measured. The user can



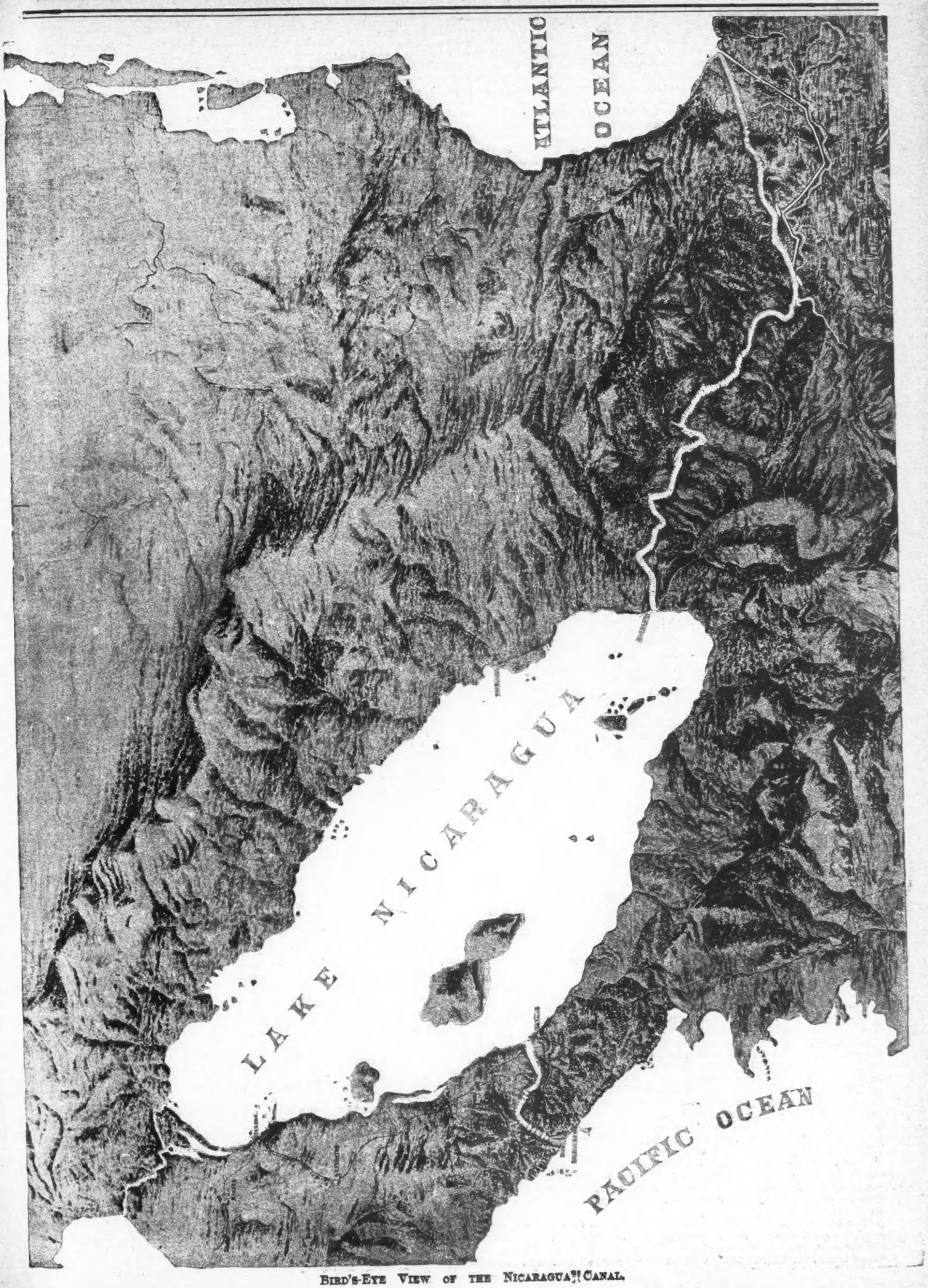
WESTINGHOUSE ALTERNATING CURRENT METER.

at any time test its correctness by burning a known number of 16 candle-power lamps an exact time and noting the readings.

A perfect meter is essential to an extended use of the incandescent light, as the contact system only works with approximate equity in commercial lighting where closing hours are nearly uniform.

American Shop Tools in England.—Yarrow & Co., the famous ship builders of London, have recently received some tools from Brown & Sharpe, Providence, R. I., which are giving great satisfaction and doing valuable work that is opening the eyes of the owners to the merits of American machinery.

The Poetsch Freezing System of Shaft Sinking in Belgium.—A shaft at the Houssu Colliery, Haine Saint Paul, Belgium, which cost £40,000, with engines and buildings, has been saved by the Poetsch freezing method. It had been sunk in the ordinary way to a depth of 60 m. or 33 fathoms, when water rushed in, followed by quicksand, and completely arrested the sinking. At this point Herr Poetsch took the works in hand. The water was pumped out, but the quicksand prevented a greater depth being obtained. Accordingly, at a depth of 54 m. = 30 fathoms, the shaft was widened out from a diameter of 4 m. = 13 feet, to one of 6 m. = 19½ feet, and from the ledge thus formed at this level twenty holes 22 m. = 72 feet deep were bored. When, however, the cold brine was pumped down there it was found that congelation took place only on one side of the shaft. The cause was ultimately found to be the percolation of the condensation water from the winding engine of another shaft, which had to be diverted before the desired result was obtained. Solid clay was encountered at a depth of 77 m. = 250 feet, when the shaft was lined with cast-iron tubing backed by 0·25 m = 10 inches of cement concrete. The works carried out under the Poetsch system cost 100,000f. = £4000, or double what they would have done but for the hot condensation water.



BIRD'S-EYE VIEW OF THE NICARAGUA CANAL.

THE TEHUANTEPEC RAILROAD.

Work has been recommenced on the Tehuantepec Railroad by the contractor, Colonel Macmurdo, an American, who makes his headquarters in London, England. As is well known, the railroad is the property of the Mexican government, and is not the much talked of ship railroad.

Starting at the Port of Coatzacoalcos, in the Gulf of Mexico, the line runs in a southwesterly direction through a comparatively level country, commonly known as the Atlantic Plains, to the town of Suchil, and from there by gradually ascending gradients to the Paso de la Puerta, descending then to Sarabia, and in a southerly direction to the River Almoloya, which it skirts for several miles, passing Paso Guayabo to Chivela, and after crossing the Rio Verde and leaving the Rancho de la Maria, through the Pacific Plains to the city of Tehuantepec, terminating at the Port of Salina Cruz on the Pacific Ocean.

The entire length of the railway is 207¼ miles. Of this, 67 miles have been constructed partly by an American company, whose interest the government has acquired by purchase, and partly by contract at the rate of $40,250 per mile in cash. Of these 67 miles, 29 are on the Atlantic and 38 on the Pacific coast. There thus remains 140¼ to be constructed in order to complete the line.

The Isthmus of Tehuantepec is situated about 10 degrees north of Panama, with a healthier and more temperate climate: in every way fitted for great development of its agriculture and commerce.

This railroad route is shorter than via Panama by from 500 to 2300 miles, depending upon the ports to be connected, as will be seen by the following tabular statement:

From—	Via Panama.	Via Tehuantepec.	In favor of Tehuantepec.
Liverpool to San Francisco	8,607	7,476	1,131
New York to San Francisco	6,218	4,741	1,477
New Orleans to San Francisco	5,718	3,384	2,334
Liverpool to Yokohama	14,540	13,452	1,085
New York to Yokohama	11,256	10,006	1,250
New Orleans to Yokohama	10,611	8,637	1,974
Liverpool to Auckland, N. Z.	13,312	12,809	503
New York to Auckland, N. Z.	10,305	9,424	188
New Orleans to Auckland, N. Z.	9,659	8,095	1,564

Twelve days will suffice for the voyage from New Orleans to San Francisco by the Tehuantepec route, whereas 22 are required via Panama.

There are now 1000 men at work upon the road, and Colonel Macmurdo states his intention to employ 10,000, and to complete the contract in about 18 months.

THE NICARAGUA CANAL.

With the increase in commerce the absolute necessity for better communication across the narrow strip of land which separates North from South America has become more and more pressing. The plan of connecting the Pacific and Atlantic oceans at this point by a canal has been mooted for nearly three hundred years, Gomara in 1551 having pointed out the Nicaragua route, as one of four for crossing the isthmus, but the enormous expense of the work deferred its prospect of accomplishment, until the success of the Suez Canal gave that substance to the scheme, and enabled M. de Lesseps with the prestige of his success to raise the enormous amount necessary to undertake the work. Unfortunately that money has been wasted in a reckless and senseless manner at Panama in place of profiting by the surveys that have been made since Nicaragua invited the co-operation of the United States in 1825 for the construction of a canal by way of Lake Nicaragua and the River San Juan, and constructing a canal in the location selected by nature, which with one-fourth of the expenditure lavished upon its rival would now have been open for traffic to the benefit of the world. The inception of the Panama scheme was the outcome of engineering ignorance and superabundant vanity, and it has now been probably definitely abandoned.

The Nicaragua route presents many advantages over that of Panama, though apparently longer and always necessarily a lock canal: it passes through a healthy country, has favorable winds to bring vessels to and from the harbors, and through the greater part of its length, more than 130 miles, it has the advantage of ample width for the passage of vessels, the navigation being through the Lake of Nicaragua and the San Juan River, leaving much less excavation than was the case at Panama.

As early as 1781 the route was surveyed by order of the Spanish Government by Don Manuel Calisteo, and in 1838 by John Bailey for the government of Central America. In 1851 it was surveyed by Colonel Childs for the Atlantic and Pacific Ship Canal Company, and in 1872, 1873 and 1874 the canal route was again surveyed, this time for the United States Government by Commander Lull, with Mr. A. G. Menocal, U. S. N., as Chief Engineer.

In 1885 Mr. Menocal, made a supplementary survey for the United States Government, and since then has devoted his attention to resurveying this route and selecting the best location possible for the canal, the building of which became more and more certain as the failure of the attempt to cut the Panama Canal became more evident. In this work he has succeeded admirably, as the accompanying map and profile of the line finally adopted will show, and he has also succeeded in securing that financial aid which will enable him to carry through the great enterprise of which he is recognized as the moving spirit.

Nicaragua is possessed of a fertile soil and it is believed of great though but little developed mineral resources. The great gold and silver range which has already produced so many bonanzas in Honduras extends throughout northern Nicaragua, and when once exploited will no doubt produce large amounts of the precious metals. The building of the canal will tend to open up and develop this favored country and it would not be surprising were we to witness a gold fever break out in Nicaragua, for the country has unquestionably large areas of auriferous gravels, from which at some points much gold was formerly washed by the natives.

As within the next few weeks the actual preliminary construction work in connection with the Nicaragua Canal will commence, we describe herewith the leading engineering features of the enterprise, being indebted to Mr. A. G. Menocal, Chief Engineer of the Nicaragua Canal Company, and to Capt. H. C. Taylor, U. S. N., General Manager of the Canal Construction Company, for the data, and to the Canal Company for the drawings which we have had engraved.

The local advantages of the Nicaragua route for a ship canal are generally recognized. The range of what in other parts of Northern and Central America are mountains, and at Panama has proved one of the obstacles that have wrecked the French Company, on the Nicaragua line dwindles to its lowest elevation, as if inviting a junction between the Atlantic and Pacific Oceans. The western shore of Lake Nicaragua is but fifteen miles from the Pacific, and the divide which north and south at this point assumes mountaineous proportions is less than 50 feet above the level of the lake, and about 150 feet above the mean level of the Pacific Ocean. Although so close to the Pacific slope and with so slight a barrier holding back its waters, the great lake of Nicaragua drains through the river San Juan to the East into the Carribean Sea. The lake itself is deep and unobstructed, and that portion of the river San Juan needed for navigation purposes requires but little work to adapt it for the heaviest draught vessels. The Lake of Nicaragua is undoubtedly the key to the situation, forming the summit level and supplying the immense amount of water required to operate a lock canal on the large scale projected.

The route extends from Greytown, on the Atlantic, to Brito, on the Pacific, a distance of 170·099 miles, divided as follows:

	Free navigation.	Canal in excavation.
East side	....	16·048
West side	....	11·160
Six locks	....	0·759
Deseado basin	4·220	....
San Francisco and Machado basins	11·368	....
Tola basin	5·504	....
River San Juan	64·540	....
Lake Nicaragua	56·500	....
	142·132	27·907

The Deseado and Tola basins are new features, brought out by the last location, as well as an increase of 2·13 miles in the length of free navigation in the San Francisco and Machado basins, or in other words, the last location has reduced the length of canal in excavation by that same distance, while the summit level has been extended from 144·8 miles to 153·8 miles.

The minimum radius of curvature is 2500, and the principal dimensions of the canal in excavation are as follows: rock, width, bottom, 80 feet; top, 80 feet; depth, 30 feet; earth, width, bottom, 120 feet, top, 180 feet; depth, 46 feet; sand and loose material, width, bottom, 120 feet; top, 360 feet; depth, 30 feet.

The most important parts of the work are the construction of the harbors. Greytown on the Caribbean Sea and that at Brito, on the Pacific; the damming of the San Juan River, for the purpose of raising and maintaining the level of Lake Nicaragua and the river at about 110 feet above mean tide level; the formation of artificial basins at different levels by means of dams, and the use of locks to pass from one level to another.

The harbor of Greytown is now closed by a sand bar, and nothing of greater draught than six feet can enter, but the work of opening the mouth of the harbor is easy, and in three months or less from the commencement of the work vessels drawing 15 feet of water will be able to land material. It is proposed to make this opening through the sand bar by means of a temporary jetty of brush and pile, to furnish protection to a dredge cutting through the bar. This jetty will also give the necessary protection for the maintenance of the passage by diverting the shore current which has deposited the sand.

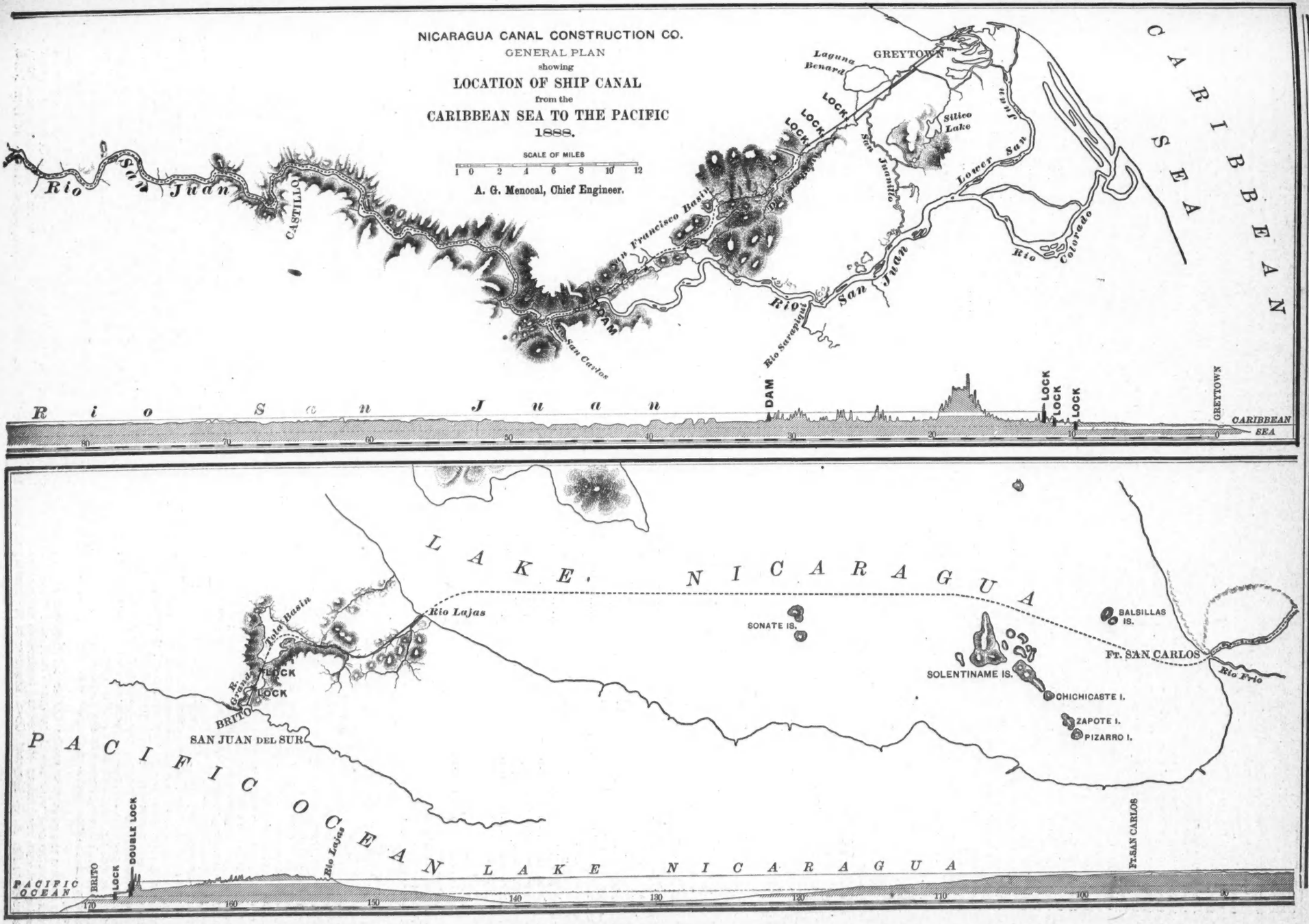
The branch mouth of the River San Juan, which at present empties into the harbor, and is constantly, with every heavy rain, adding to the accumulation of silt in it, will be cut off, and by a short canal diverted so as to empty by the principal mouth of the San Juan some miles to the south.

The extension and making permanent of the jetty by stone taken out of the rock-cuts on the line of the canal, is of course only a question of later work, which will be facilitated by the construction of a wharf and railroad from it connecting with all the canal works. The ultimate intended depth of the harbor is 30 feet. The harbor of Brito will be formed by two breakwaters, giving protection from the swell of the Pacific and by the excavation of the harbor itself from the low ground forming the banks at the mouth of the Rio Grande, following the line of the canal shown on the accompanying drawing.

From Greytown the sea level is carried to the site of the first lock, at the eastern end of the valley of the Deseado, about 8½ miles from Greytown. At this point there is a lift of 31 feet, into the first basin, formed by damming the lower waters of the Deseado River. Through this basin locks Nos. 2 and 3 are reached by which, with their respective lifts of thirty and forty-five feet, the summit level, 4 miles further on, is attained, and there is then clear sailing through the basins of the Deseado and San Francisco, with the divide cut between, and thence into San Juan River, across the lake and finally through the Tola Basin on the western section. Here, by means of a double lock, with a total fall of 85 feet, and again by the sixth and last lock the canal descends to the sea level. This last lock has a variable lift, depending on the state of the tide, which on the Pacific side has a mean rise and fall of about six feet at present. The mean lift of the tidal lock is twenty-five feet. The locks will be $650 \times 70 \times 30$ feet.

The heaviest piece of work on the canal is a rock cut through the divide on the eastern portion of the summit level, commencing about four miles to the west of lock No. 3. This cut is about 2·9 miles long and the average depth is about 150 feet, involving a removal of about 2,150,000 cubic yards of earth and 7,500,000 cubic yards of rock.

As stated before, one of the principal features of the canal is the formation of large basins, by means of which the greater part of the canal is made a navigable body of water, instead of a narrow cut through the earth. As now projected, the first basin begins at the site of lock No. 1. This basin is formed by an embankment 1100 feet long and twenty feet high, which maintains the level of the water at thirty-one feet above the sea level. A second embankment, 1400 feet long and 86 feet high, near lock No. 2 (with a lift of thirty feet), maintains the level in a small basin at sixty-one feet. A third, but smaller embankment, at lock No. 8,


NICARAGUA CANAL CONSTRUCTION CO.
GENERAL PLAN
showing
LOCATION OF SHIP CANAL
from the
CARIBBEAN SEA TO THE PACIFIC
1888.
SCALE OF MILES
1 0 2 4 6 8 10 12
A. G. Menocal, Chief Engineer.
Rio San Juan
CASTILLO
DAM
San Carlos
Rio Sarapiqui
Rio San Juan
Laguna Benard
GREYTOWN
LOCK
LOCK
LOCK
Silico Lake
Lower San Juan
Rio Colorado
CARIBBEAN SEA
LAKE NICARAGUA
Rio Lajas
Tola Basin
SONATE IS.
BALSILLAS IS.
FT. SAN CARLOS
Rio Frio
SOLENTINAME IS.
CHICHICASTE I.
ZAPOTE I.
PIZARRO I.
BRITO
SAN JUAN DEL SUR
PACIFIC OCEAN
DOUBLE LOCK
Ft. SAN CARLOS
Rio San Juan
DAM
LOCK
LOCK
LOCK
GREYTOWN
CARIBBEAN SEA
PACIFIC OCEAN
BRITO
LOCK
DOUBLE LOCK
Rio Lajas
Ft. SAN CARLOS
LAKE NICARAGUA

keeps the level at 106 feet. This is the summit level already referred to as extending from lock No. 3 to lock No. 4, a distance of 152 miles. The dam across the San Juan River at Ochoa, just east of the San Carlos is 1500 feet long by sixty-five high. Its purpose is to bank up the waters of the San Juan River to a level of 106 feet, or fifty-eight feet higher than at this point now. By this means a lock and a large amount of dredging is saved, and the San Juan is thus made practically navigable to Castillo, while the amount of river dredging above this point is reduced to a minimum. It will be noticed that at the dam the level is given as 106 feet. At the lake it is 110 feet, and it is proposed to give the river a fall of 4 feet from the lake to Ochoa, a distance of about 64 miles. Again, on the Pacific side an embankment 2100 feet by 80 is made across the Rio Grande. This floods the valley of the Upper Rio Grande and its tributary, the Tola. Then by cutting through the low continental divide to the lake, the summit level of 110 feet is maintained to within three miles of the Pacific Ocean. The surplus flowage is provided for in all cases by numerous waste weirs of ample capacity. Lake Nicaragua has a water shed of 8000 square miles.

The Rio San Juan, *its only outlet*, discharges at its lowest stage, near the close of the dry season, 11,390 cubic feet per second, or 984,096,000 cubic feet per day.

The amount of water required for thirty-two double lockages is 129,479,968 cubic feet, or a little more than one-eighth of the total supply of the lake alone, to which must be added the flow of the several tributaries of the San Juan, between the lake and the sea, and the San Francisco and its tributaries.

As this supply is *from the summit*, the danger of a dry summit level, which is so serious a question with the Panama scheme, is impossible here. It is also a favorable point that the canal will be a fresh water one.

It is a source of much gratification that this great work has at last been inaugurated under American auspices, though the canal will, of course, be equally for the use of all nations. We are convinced that as an engineering enterprise it will be conducted with that skill, energy and economy which are characteristic of American engineering works where unaffected by politics; and the best guarantee that could be had for its successful completion is the thorough and complete study that has been perfected at a cost of about $400,000.

We append table of distances saved by the Nicaragua Canal prepared by the company:

TABLE SHOWING DISTANCES IN MILES BETWEEN COMMERCIAL POINTS OF THE WORLD, AND DISTANCE SAVED BY NICARAGUA CANAL.

FROM	Cape Horn.	Via Cape of Good Hope.	Via Nicaragua Canal.	Distance saved.	FROM	Cape Horn.	Via Cape of Good Hope.	Via Nicaragua Canal.	Distance saved.
New York to—					Liverpool to—				
San Francisco..	14,840	.....	4,760	10,080	Acapulco.....	12,921	.....	5,870	7,051
Behring Strait..	16,100	.....	7,882	8,218	Mazatlan	13,481	.....	6,430	7,051
Alaska	15,300	.....	6,682	8,618	Melbourne.....	13,352	13,140	12,748	392
Acapulco.....	13,071	.....	3,122	9,949	New Zealand...	12,400	13,975	11,349	1,051
Mazatlan.....	13,631	.....	3,682	9,949	Hong Kong	18,030	15,051	13,786	1,265
Hong Kong.....	18,180	15,201	11,038	4,163	Yokohama.....	17,529	16,040	12,111	3,929
Yokohama.....	17,679	16,190	9,363	6,827	Guayaquil.....	11,321	.....	5,890	5,431
Melbourne.....	13,502	13,290	10,000	3,290	Callao	10,539	.....	6,461	4,078
New Zealand..	12,550	14,125	8,680	5,445	Valparaiso.....	9,600	.....	7,448	2,152
Sandwich Isl'ds.	14,230	.....	6,388	7,842	Sandwich Isl'ds	14,080	.....	9,136	4,944
Callao.....	10,689	.....	3,713	6,976	Spain to—				
Guayaquil	11,471	.....	3,053	8,418	Manilla.....	16,900	13,951	13,520	431
Valparaiso.....	9,750	.....	4,700	5,050	France to—				
New Orleans to—					Tonquin.....	17,750	15,201	13,887	1,314
San Francisco..	15,052	.....	4,047	11,005	Hamburg to—				
Acapulco.	13,283	.....	2,409	10,874	Mazatlan.....	13,931	.....	6,880	7,051
Mazatlan.....	13,843	.....	2,969	10,874	Acapulco	13,371	.....	6,320	7,051
Guayaquil	11,683	.....	2,340	9,343	Fonseca.	11,430	.....	5,530	5,900
Callao	10,901	.....	3,000	7,901	Punta Arenas.. (Costa Rica)	11,120	.....	5,515	5,605
Valparaiso.....	9,962	.....	3,987	5,975					
Liverpool to—									
San Francisco..	14,690	.....	7,508	7,182					

NOTE.—Distances have been measured by routes most convenient for sailing ships and slow freight steamers only. For this reason distances via Suez Canal do not appear in the table.

IRRIGATION IN INDIA.

The officers of the Irrigation Branch of the Public Works Department, say the *Indian Engineer*, who are responsible for the administration of the splendid irrigation system in the Punjab, have received well-merited congratulations, both from the Local Government and the Government of India, on the excellent progress made during the year 1887-88, and on the good results obtained. This important system has now a total mileage of 3730 miles of canal and 4961 miles of distributaries, and during the year under review irrigated an area of 2,250,081 square acres. The system comprises the Swát River Canal, 22 miles; the Western Jumna Canal, 366 miles; the Bári Doáb Canal, 354 miles; the Sirhind Canal, 542 miles, of which 319 run through British territory and 223 miles through Native States; the Lower Sohág and Pára Canal 94 miles; the Sidnai Canal, 37 miles; the Chenáb Canal, of which only 62 miles out of the total length of 115 miles have been completed: the Upper Sutlej Canal, 220 miles; the Lower Sutlej and Chenáb Canal, 741 miles; the Indus Canal, 700 miles; the Shahpur Canal, 92 miles; and the Muzuffargarh Canal, 723 miles. The cost of maintaining such an enormous system is, of course, very heavy, and it is not surprising, therefore, to learn that during the year a total of 20½ lakhs of rupees ($676,500) were expended on the various works, of which 8 lakhs were spent on the Chenáb Canal, a similar sum on the Sirhind Canal, and 3 lakhs on the Western Jumna Canal. The total expenditure up to the end of 1887-88 was Rs 5,41,70,520 on major works, on which a percentage of 4·23 was obtained during the year, and 18,61,151 on minor works which yielded a revenue equivalent of 10·15 per cent. The principal crops grown within the irrigated area are wheat, cotton, rice, sugar cane, jowár and maize, and during the year under review represented an estimated value of Rs. 6,84,66,306. The general result of the year's working may be summarized as follows: The estimated value of crops irrigated by the canals is higher by 117 lakhs than the estimate for the previous year; the net profits have improved to the extent of 6 lakhs, and are now equal to a return of 4 per cent on capital outlay. The area irrigated, which has been gradually developing, is now more than a third larger than it was five years ago. (A lakh is 100,000 rupees, and at the present actual value of the silver currency of India is worth about $33,000, each rupee being about 33c. American coin.—ED. E. AND M. J.)

NOVA SCOTIA MINING STATISTICS FOR 1888.

The report on the mines of Nova Scotia for 1888, by Edward Gilpin, Jr., Inspector of Mines, shows that in gold and coal the past year has been a profitable one, and an increase in the output of both minerals has taken place. In coal there was an increase of over 105,290 tons mined in 1888 over 1887, and in gold 1196 ounces more were produced in 1888 than in the previous year. The following summary taken from the report shows the total mineral production compared with the previous year:

		1887.	1888.
Gold	Ounces	21,211	22,407
Iron Ore	Tons	43,532	41,611
Manganese Ore	"	691	88
*Coal raised	"	1,670,838	1,776,128
*Coke made	"	28,748	29,808
†Gypsum	"	116,346	125,800
Barytes	"	400	1,100
†Grindstones, &c	"	32,669‡	17,225
†Moulding Sand	"	160	169
†Antimony Ore	"	400	308
Limestone	"	31,471	15,448

*Ton of 2,240 lbs. †Amount Exported. ‡Value in Dollars.

Mr. Gilpin, referring to the coal trade, says: "The total sales for the year 1888 amounted to 1,575,692 tons against 1,519 684 tons in 1887. As compared with the sales of the year 1887, the most noticeable points are: The home sales were 509,905 as compared with 469,464 tons in 1887. The Province of Quebec took 678,321 tons against 650,858 tons in 1887, and 538,762 tons in 1886. The sales to New Brunswick were 214,030 tons against 186,511 tons in 1887. The sales to Newfoundland and Prince Edward Island show no change of importance. The sales to the United States were 30,198 tons as compared with 78,892 during the year 1887. Of the amount sent to the United States last year 27,330 tons were slack, 183 tons were run of mine, and only 2,685 were round coal."

LIXIVIATION OF SILVER ORES.

Prof. Fred. F. Sharpless, Instructor in Metallurgy, Houghton Mining School, Mich., in a recent letter writes:

"One of the most valuable additions to metallurgical literature which has recently come to our notice is Mr. Stetefeldt's new book on the 'Lixiviation of Silver Ores,' in which special reference is made to the Russell process.

"Much of the matter has already appeared in the Transactions of the American Institute of Mining Engineers and scientific periodicals of the last four years, yet the book is full of the results of recent experiments by the author and others, and many of the conclusions reached disprove the results of earlier experiments. The language used, the original method of arrangement, and the clearness of the many chemical discussions make it a work of great value to the student; while its details of construction and results of operating plants make it a valuable work for the practical metallurgist.

"Unfortunately the author has been unable to collect many statistics, which greatly enhance the value of such a work for practical purposes. This was, however, through no fault of his, and he promises to give us soon the working results of several of the Russell plants now in operation.

"Only little space is devoted to the comparison of the Russell process with other lixiviation processes and amalgamation, and it is hardly to be supposed that the author intended that conclusions should be drawn from these comparisons, since he dwells only upon the advantages of the Russell process and disadvantages of other processes. The book shows what has already been done and what fields are yet unexplored. One who has had occasion to read up the recent advances of lixiviation processes will appreciate the work which must have been done by the author in compiling and in original research, and the profession should extend its thanks to Mr. Stetefeldt for his successful effort 'to fill up a gap in metallurgical literature.'"

ECONOMICAL MINING IN COLORADO.

We take the following description of the admirable work in the Terrible Mine at Isle, Custer County, from our contemporary, *Mining Industry*. When the amount of timbering that has to be done is taken into account it is a wonderful record. It is probably the largest mine in Colorado and was closed down on the 1st inst. owing to the low price of lead.

It is purely a lead mine, and the only one in the State that has been worked exclusively for that metal. It is owned by the Omaha and Grant smelting people, and its ore is used by them to supply the lack of lead that is sometimes experienced. The ore is exclusively a lead carbonate, entirely free from sulphur, and carrying very little silver. The mine is a vein, dipping about 70 degrees from the horizontal, and measuring 119 feet from wall to wall. Its walls are rhyolite, there being no lime found in the country. The ore body, as it is mined, is 87 feet in width, and it is timbered with square sets. An average of 57,000 feet of timber has been used monthly during the past year. The ore is concentrated without any hand sorting, ten tons being put into one, which averages 68 per cent. lead. For concentration Cornish rolls and Hartz jigs only are used. The average daily product of the mine during the past year has been 150 tons, but 1000 tons could be easily produced with the present opening and hoisting facilities. It is now 300 feet deep. It was expected that the character of the ore would change below water level, which was at a depth of 100 feet, but it has not changed; no galena, zinc or sulphides have been found. The shaft is vertical. 5 × 15 feet in the clear, fitted with a single deck cage that carries two cars. Sinking the shaft, including timbering, cost but $16 per foot. The entire cost of hoisting the ore during the past

year, including fuel, engineers, pumping, etc., it is reported, has amounted to but 13 cents per ton; and the entire cost of putting the ore on the cars, including mining, timbering, hoisting, manager's salary, and hauling nine miles to the railway has been but $1.46 per ton. This is the cheapest mining ever reported in Colorado. No man has yet been killed or injured in the mine, and it is said to be the best sample of good work and timbering in the State.

Prize for Threshing Mill.—A prize of £150 is offered by the Minister of Agriculture in Victoria, Australia, for a threshing machine which can thresh 80 bushels of peas in twelve hours.

The Acre-Foot is a new irrigation unit used by the U. S. Geological Survey. It means an acre of water one foot deep, and it will in the greater part of the United States, irrigate for one season one acre of land.

Prices of Locomotives.—American locomotive builders are complaining of low prices. The Vandalia has recently purchased some engines of the Pittsburg Locomotive Works weighing 105,000 pounds at a cost of $9,000.

The Russian Trans-Continental Railway.—A cable from St. Petersburg, dated May 2d, says: The special commission appointed to consider the question has approved the new Siberian railway scheme. According to this plan a railway is to be built from Zlatoonst to Vladivoostock in six years, at a cost of 25,000 rubles per verst.

Import Duties in Colombia.—According to a recent decree of the Colombian Government, the undermentioned articles, on importation into the United States of Colombia, pay the following Customs duties per kilogramme: Duty of 1 centavo: Iron pestles and rams; steel and brass for the milling and stamping of ores; packing sacks, or ordinary hempen tissue; articles and stuffs which are used for the refining of metals by means of chloric treatment; machines for earthworks. Duty of 2½ centavos: Steel in bars and rods for use in industry, and quicksilver.

Peach Stones as Fuel.—It has been demonstrated in Vacca Valley, Cal., that peach stones will make as good a fire for household purposes as the best of coal. The fruit growers, instead of throwing the pits away, dispose of the stones at the present time at the rate of $6 a ton. A sack of the stones will weigh about 80 pounds, and will last as long as long as an equal number of pounds of coal, and give a greater intensity of heat. The apricot stones do not burn as readily as the peach, and will not command as good a price. A large number of peaches are dried during the summer season for shipment. As soon as the owners find that they have a market for stones, a greater number of pounds will be dried than heretofore.

New Uses for Paper.—It is by no means improbable that paper will yet supersede cotton and woolen cloth as the clothing material of the people. One establishment in the West is already doing an extensive business in the manufacture of paper clothing, and the fabric is said to equal that of any other class of goods in style and durability. For blankets, piano coverings and similar purposes the paper fabrics are an established success. They are light and serviceable. Paper pails, dishes and canes are familiar to almost everybody. Paper boards for making houses, paper boats, paper water pipes, column pipes, tanks, and a thousand other new uses are becoming popular. Paper made from wood pulp is becoming a very important article in manufacturing, and its products are being exported from this country to every part of the globe.

Electric Watches and Clocks.—M. L. Hussey, of Menlo Park, N. J., who has secured a patent for a watch to run by electricity, has almost completed the formation of a company to manufacture his electric clocks and watches. Mr. Hussey has been eleven years at work on his inventions, and has secured patents on thirteen appliances necessary in the manufacture of his clocks and watches. There are four of these, including a marine clock. The peculiarity about them is the gravity movement, which, aided by a small electric current, moves the pendulums of the clocks and the large balance wheel of the watches. The battery is inclosed in the watch case, and with it the timepiece will run for a whole year without any attention. In time it is expected that five-year watches and clocks can be manufactured. The new watches and clocks contain only one-third as many parts as the ordinary instrument.

A Compressed Air Sand Dredge.—In *Les Annales des Ponts et Chaussees*, M. Boulle describes a form of dredger in which the removal of sand or silt is effected by an injection of compressed air instead of by suction. The machine consists of a tube passing through the water to the bottom to be dredged, and a compressed air injector placed at the bottom. The injector surrounds the main tube, and is fitted with a number of small mouthpieces producing a flow of a mixture of water, silt, and air up the main tube. In a trial at Saumur, on the Loire, the main tube was 4 inches in diameter, and sand was dredged from a depth of 15 feet, lifted 5½ feet above the water level, and finally transported to a distance of 50 feet. The compressor was of 15 horse power, which drew in 3·53 cubic feet of air per second, and by it raised 130 cubic yards of sand burdened water per hour, the sand constituting from three-tenths to four-tenths of the whole volume. At Havre a 9 inch tube was used, and the depth was from 26 to 30 feet. Using a compressor of the same power as at Saumur, 390 to 520 cubic yards of silt and water were lifted per hour, the silt forming one quarter of the whole. The dredger is most efficient in soft silt, sand or gravel, but stones weighing 22 pounds have been removed by it, using the 9-inch tubes.

PATENTS GRANTED BY THE UNITED STATES PATENT-OFFICE.

The following is a list of the patents relating to mining, metallurgy, and kindred subjects, issued by the United States Patent-Office.

PATENTS GRANTED APRIL 30TH, 1889.

402,127. Steam-Boiler. John Baird, New York, N. Y.
402,132. Rod-Coupler. Albert G. Berry, Washington, D. C.
402,133. Machine for Finishing Metal Tubes. Lewis F. Betts, New York, N. Y.
402,134. Loading and Hoisting Buckets. Walter S. Bogle, Chicago, Ill.
402,139. Water-Gate. Joseph E. Caplinger, Smithfield, Ky.
402,140. Machine for Shaping Sheet-Metal Pipes. James A. Carr, Woodbury, N. J.
402,142. Brake-Handle. Austin B. Collett, Chelsea, Mass.
402,146. Process of Manufacturing Gas. William M. Cosh, Baltimore, Md.
402,148. Feed and Transfer Mechanism for Rolling-Mill Plants. Robert P. Dolan, Steelton, Pa., Assignor of one-half to A. B. Dunkle, same place.
402,149. Pump. Joseph P. M. Earty, Polk, Ohio.
402,157. Safety Railway Car. Charles C. Gilman, Eldora, Iowa.
402,160. Water Elevator. Alexander Hogeland, Lincoln, Neb.
402,163. Car Truck. Luther K. Jewett, Boston, Mass.
402,164. Railway and Metal Tie Combined. William J. Kenney, Chicago, Ill.
402,168. Railway Car Truck. Bernard J. La Mothe, New York, N. Y., Assignor to the United States Rolling Stock Company, same place.
402,169. Car-Truck. Bernard J. La Mothe, New York, N. Y., Assignor to the United States Rolling Stock Company, same place.
402,174. Freight-Car. Charles Mackall, Baltimore, Md.
402,187. Mold for Casting Hollow Ingots. Ira H. Peck, Providence, R. I.
402,190, 402,191, and 402,192. Distribution of Electricity by Secondary Batteries. George B. Prescott, Jr., Newark, N. J., Assignor to the Electrical Accumulator Co., New York.
402,198. Horse Power. John B. Shear, Auburn, N. Y.
402,199. Feed-Water Purifier. Wm. J. Smith, Chicago, Ill., Assignor to the Smith Feed-Water Heater and Purifier Co., St. Louis, Mo.
402,200. Pole-Piece for Dynamo-Electric Machines. J. G. Statter, London, England.
402,209. Foot-Guard for Frogs, Switches, etc. Chas. H. Wakefield, Sherbrooke, Quebec, Can.
402,210. Method of Condensing Zinc Vapors and Collecting the Metallic Zinc There from. Edward Walsh, Jr., St. Louis, Mo.
402,226. Process of Manufacturing Caustic Soda. J. A. Bradburn, Northwich, Eng.
402,228. Valve. John Burke, Minneapolis, Minn., Assignor of one-half to Patrick H. Gunckel, same place.
402,229. Rock-Drill. Friedrich Buschmann, Heilbronn, Germany, Assignor to Salzwerk Heilbronn, same place.
402,242. Process of Burning Hydrocarbon Oil. Chas. L. Heverin, Philadelphia, Pa.
402,249. Electric Cut-Out, James M. Kimball and Herbert C. Wirt, Boston, Mass.
402,254. Steam Engine, Erasmus D. Leavitt, Jr., Cambridgeport, Mass.
402,255. Device for Connecting the Cranks of two Independently Acting Engines. Erasmus D. Leavitt, Jr., Cambridgeport, Mass.
402,256. Steam Cylinder for Steam Engines. E. D. Leavitt, Jr., Cambridgeport, Mass.
402,257. Hoisting Engine. Erasmus D. Leavitt, Jr., Cambridgeport, Mass.
402,284. Coal Conveyor. Gustavus L. Stuebner, Long Island City, N. Y.
402,288. Rivet-Holding Device. John P. Weidemeyer, Ashland, Ky.
402,290. Electric Motor. Frederick Yeiser, Tampa, Fla.
402,298. Combined Telephone and Telegraph System. Wm. Burnley, North East, Assignor of two thirds to C. A. Hitchcock and S. A. Davenport, Erie, Pa.
402,300. Brake Pipe Coupling. George P. Campbell, Cincinnati, O., Assignor to the Friction Car Brake Company, East St. Louis, Ill.
402,305. Cable-Grip. Chas. S. Chapman, Kansas City, Mo.
402,308. Rail Joint. Edwin M. Cooke, Brooklyn, Assignor of one-half to Noyes C. Wooster, New York, N. Y.
402,310. Machine for Drilling Rails for Fish-Bolts. John Davis, New Bedford, Mass.
402,311. Electro-Locomotive Engine. Sebastian Ziani de Ferranti, Hampstead, Eng.
402,319. Elevated Railway. Alfonso D. Gates, Cleveland, Ohio.
402,322. Driving-Gear for Locomotives. Alfred Hasbrouck, Ithaca, N. Y.
402,325. Ingot-Forming Apparatus. Wm. R. Hinsdale, Hoboken, N. J.
402,349. Distribution of Electricity by Secondary Batteries. Matthias Pfatischer, New York, N. Y., Assignor to the Electrical Accumulator Company, N.Y.
402,361. Grip-Car. Charles T. Snedekor, New York, N. Y.
402,362. Smoke-Consuming Boiler Furnace. James Stapleton, St. Louis, Mo.
402,363. Gas-Engine. Henri Tenting, Paris, France.
402,368. Anvil-Mold. Thomas W. Vare, Trenton, N. J.
402,371. Fish Plate and Chair. George A. Weber, New York, N. Y., Assignor to Caroline C. Weber, same place.
402,372. Rail Joint. George A. Weber, New York, N. Y., Assignor to Caroline C. Weber, same place.
402,393. Machine for Mixing Mineral Compounds. M. Broughton, Syracuse, N. Y.
402,398. Automatic Railway Signal. John T. Carter, Baltimore, Md., Assignor of one-half to F. J. Hilbert, same place.
402,402. Rail Joint. Edwin M. Cooke, Brooklyn, Assignor of one half to Noyes C. Wooster, New York.
402,404. Lubricator. William H. Cooper, San Jose, Cal., Assignor of one half to Christian Anderson Fox, same place.
402,408. Railway Telegraph. Frank J. Crouch, Oakland, Assignor of one-half to C. P. Houston, Junction City, Ore.
402,410. Electric Meter for Alternating Currents. Delamore L. Davis, Salem, O.
402,416. Method of Expanding Hoops or Tires. M. W. Dewey, Syracuse, N. Y., Assignor by direct and mesne assignments to the Dewey Co., same place.
402,418. Air Brake. Thiron S. E. Dixon, Hyde Park, Ill.
402,419. Apparatus for Unloading Boats. James M. Dodge, Philadelphia, Pa., Assignor to the Dodge Coal Storage Company, same place.
402,420. Insulating Cut-Out Joint. H. M. Doubleday and R. Doubleday, Pittsburg, Pa.
402,422. Process of Burning Carbonaceous Material. E. H. Edgar, New York, N. Y.
402,448. Sprocket Wheel. John R. Hersch and James M. Staley, Dayton, Ohio.
402,457. Hydraulic Shears. Julian Kennedy, Latrobe, Pa.
402,458. Hydraulic Machine. Julian Kennedy, Latrobe, Pa.
402,471. Motor. Hans M. Olsen, Sacramento, Cal.
402,472. Steam Engine Valve and Seat. Robert C. Paul, Cumberland, Md.
402,474. Furnace. Michel Perret, Paris, France.
402,475. Wind-Wheel. Leroy S. Pfouts, Wilmot, Ohio.
402,484. Containing Cell for Secondary Batteries. Paul Schoop, Zurich, Switzerland.
402,511. Cement. Uriah Cummings, New Haven, Conn.
402,513. Steam Injector. John Desmond, Wadsworth, O., Assignor to the Garfield Injector Co., same place.
402,517. Air Compressor. Hugh F. Fitzpatrick, New York, N. Y., Assignor to Edwin K. Conover, Newark, N. J.
402,525. Air Motor. Samuel C. Hill, Newark, N. J., Assignor of one-half to Albert A. Schmidt, same place.
402,532. Dumping-Wagon. Charles Linn and Andrew B. Linn, Sioux City, Iowa.
402,532. Tunnel-Yoke for Cable Railways. Chas. A. Marshall, Johnstown, Pa., Assignor to The Johnson Company, of Kentucky.
402,548. Spring-Motor. Benjamin Turton, Newark, N. J., Assignor of three-fourths to Joseph L. Doremus, John Turton, and Harry Turton, all of same place.
402,549. Gas or Air Engine. Stephen Wilcox, Brooklyn, N. Y.

DIVIDENDS PAID BY MINING COMPANIES DURING APRIL AND SINCE JANUARY 1ST, 1889.

NAME OF COMPANY.	Paid in April.	Paid since Jan. 1st.	NAME OF COMPANY.	Paid in April.	Paid since Jan. 1st.
Alaska, Ala.	25,000	25,000	Mammoth, Utah.	.....	10,000
Alma, Idaho	.....	15,000	Mt. Diablo, Nev.	10,000	30,000
Aspen, Colo.	40,000	160,000	Montana Lt., Mont.	.....	41,250
Atlantic, Mich.	.....	80,000	Napa, Cal.	10,000	10,000
Boston & Mont., Mont.	.....	200,000	Navajo, Nev.	10,000	40,000
Caledonia, Dak.	8,000	32,000	N. Y. & Hond. R., C.A.	.....	30,000
Calumet & Hecla, Mich.	.....	500,000	Ontario, Utah.	75,000	300,000
Central, Mich.	.....	40,000	Osceola, Mich.	.....	50,000
Colorado Central, Colo.	.....	13,750	Pamlico, Nev.	6,000	9,000
Confidence, Nev.	24,960	24,960	Parrott, Mont.	.....	18,000
Cons. Cal. & Va., Nev.	108,000	324,000	Plumas-Eureka, Cal.	70,312	70,312
Copper Queen, Ariz.	.....	70,000	Poorman, Colo.	.....	15,000
Daly, Utah	37,500	150,000	Tamarack, Mich.	200,000	200,000
Dunkin, Colo.	10,000	20,000	Quicksilver, Cal., Pref.	.....	64,319
Evening Star, Col.	12,500	12,500	Quincy, Mich.	.....	200,000
Granite Mt., Mont.	200,000	600,000	Young America, Cal.	.....	10,000
Homestake, Dak.	12,500	87,500	Webb City, Mo.	1,100	2,200
Hecla, Mont.	15,000	60,000			
Idaho, Cal.	15,500	77,500	Total, 37 companies.	907,372	3,636,291
Jay Gould, Mont.	16,000	44,000			

PERSONAL.

Mr. John F. Everhard, the pioneer coal operator of the Wyoming region, died at his home, in Pittston, Pa., on the 29th ult., aged 73 years.

Mr. L. V. Bond has been appointed to represent the mining and smelting interests of the State of Colorado at the World's Exposition, to be held in Paris this summer.

Mr. Adolph Whepel has been appointed superintendent of the Leith works of the Chicago & Connellsville Coke Company, Pa., in place of Mr. Charles M. Sweeney.

Mr. David W. Seligman, a member of the Seligman family of New York, and interested in various mining enterprises, has been appointed Commissioner to represent Montana as the Paris Exposition.

Mr. F. E. Bachman has resigned his position as manager of the Tennessee Coal, Iron & Railway Company's furnaces at Ensley, Ala., on account of his health. His address is now Strasburg, Pa.

M. Emile Braive, Mining Engineer, has sailed from Marseilles for China, where he has been appointed by the Chinese Government Chief Engineer and Inspector of Mines, with headquarters at Chee Foo, and a salary of $6,000 a year.

Governor Cooper, of Colorado, has approved the following appointments for deputy inspectors of metalliferous mines: First District, John Frame, of Central City; Second, Daniel L. McCarthy, of Leadville; Third, George Keslingbury, of Silverton.

Mr. William H. Barnum died at his residence at Lime Rock, Conn., on the 30th ult., aged seventy-one years. His father, originally a farmer, established the first iron foundry at Lime Rock, Conn., and for many years Mr. Barnum was extensively engaged there in the manufacture of pig iron and car wheels, and was at the same time interested in mines in the Lake Superior region.

Mr. G. W. Griffin, the United States Consul at Sydney, is about to pay a visit to his old home in America. During his sojourn in Australia Mr. Griffin has made many friends. He has gained a wide and favorable reputation in New South Wales for the concise, accurate and complete reports which he has given to the public on matters peculiarly valuable to Australians; as well as for the able and courteous manner in which he has represented his government in this country.

Frederick Augustus Porter Barnard, President of Columbia College, whose death occurred late Saturday afternoon, was born in Sheffield, Mass., on May 5, 1809. In 1828 he was graduated from Yale College, the second in his class, and soon began, at the Hartford Grammar School, his life-work of teaching. Two years later he was a tutor at Yale. He then became an instructor in the Hartford Asylum for Deaf-and Dumb, and in 1832 he joined a similar institution in this city. For the eleven years following 1837 he was Professor of Mathematics and Natural Philosophy in the University of Alabama, and from 1848 until 1854 he was Professor of Chemistry. In the last-named year he became a minister of the Protestant Episcopal Church. Afterwards he joined the University of Mississippi as Professor of Mathematics and Astronomy, and was elected the president in 1856. Owing to the breaking out of the civil war, he severed his connection with the University and came North. For a time he was director in the map and chart department of the Coast Survey. In May, 1864, he became president of Columbia College, which he has since devotedly served, and for which he has done a great deal of valuable work. Dr. Barnard was the author of various scientific and educational books He received the degree of LL.D. from Jefferson College in 1844, and from Yale four yearslater. The degree of D.D. was conferred upon him by the University of Mississippi, that of L.H.D. by the Regents of the New York University, and that of D.C.L. by Kings College, Canada. He was United States Commissioner to the Paris Exposition of 1867, and Assistant Commissioner-General to that of 1878. In 1860 he took part in the astronomical expedition for the observation of the total eclipse of the sun in Labrador. That year he was elected President of the American Association for the Advancement of Science. Later he became a member of the American Institute, and he was one of the original incorporators of the National Academy of Sciences. Dr. Barnard was the President of the American Meteorological Society from its formation in 1873, and he was connected with many other scientific and literary societies both in this country and abroad.

AMERICAN GOODS WANTED ABROAD.

We invite manufacturers to send us catalogues, price lists, with export discounts, and we will forward the same to our correspondents free of charge.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them, without charge, information concerning American manufactures of every kind.

These services are rendered gratuitously, solely in the interest of our subscribers and advertisers; the proprietors of the ENGINEERING AND MINING JOURNAL are not brokers, or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

Under this head we publish each month a list of inquiries received at this office from foreign subscribers of the ENGINEERING AND MINING JOURNAL for various articles of American manufacture. During the past month inquiries have been received as follows:

FROM AUSTRALIA.—Trunks, rubber boots, soap, hams to average 14 to 16 lbs. weight each, desks, hay rakes, leather, shovels, type, axe and hammer handles (made by firms outside of combination), stoves, steam pile drivers, catalogues of novelties (agency wanted), household novelties.

FROM ARGENTINE REPUBLIC.—Household goods and hardware.

FROM INDIA.—Sugar machinery.

FROM FRANCE.—Canned goods adapted to first-class shipping trade.

FROM MEXICO.—Equipment electric railroad 12½ miles long; printing presses, 6×9, 8×10, 10×12; spinning machines, to spin 20 to 25 threads; carding and weaving machines. *To Order*—A centrifugal dryer, 30 inches, sample. If satisfactory 80 or 100 will be required.

INDUSTRIAL NOTES.

The Richmond Locomotive Works, of Richmond Va., have been awarded the contract to construct the engines for the warship Texas.

The Sprague Electric Railway and Motor Company, of New York, will open a consignment office in Salt Lake City, Utah, with a full stock of apparatus to be kept for distribution all over the West.

It has been decided by the Treasury Department that an article imported from Germany under the name of peat moss is entitled to free entry. It has heretofore paid a duty of 10 per cent ad valorem.

The Ensley furnaces of the Tennessee Coal, Iron and Railroad Company, though laboring under the usual disadvantages of new furnaces, netted during the last fiscal year $202,851.23 profit on 78,089 tons of iron produced.

The Welsbach Incandescent Gaslight Company, of Philadelphia, Pa., which was incorporated a year ago, with a capital of $3,000,000, is to be dissolved The stockholders will get their money back, minus $1.53 per share deducied for the expenses of the company.

The Bureau of Navigation of the Navy Department is about to begin the preparation of plans and specifications for lighting by electricity the Miantonomah, Monadnock, Petrel and Vesuvius, for which purpose the last Congress appropriated $55,000.

The Meriden Malleable Iron Company, of Meriden, Conn., is reported to be financially embarrassed, owing to recent failures of Western houses, whose notes the company held. The employés in the iron and brass foundries have been notified that their services will not be required until further notice.

The Treasury Department has decided that certain pieces of machinery invoiced as a "steam merry-go-round," having a steam engine for motive power, are dutiable at the rate of 45 per cent. ad valorem, as "manufactures of metal." The importers claim it to be exempt from duty as a "tool of trade."

The new charcoal blast furnace of the Mont Alto Iron Company, at Mont Alto, Pa., was destroyed by fire on the 31st ult. The furnace was entirely new and had been put into operation only two weeks ago. It was fitted up with the latest improvements in engines, and was the finest charcoal plant in the country.

The Thomson-Houston Electric Company has secured the lighting of the boulevards of Paris, the only arc lighting in Paris. It has already exclusive contracts for Panama, Venzuela, Bogota, U. S. of Colombia, Guatemala and Central America, as well as a large business in Australia, Japan and Buenos Ayres. The increase of business during the past year has been marvelous.

The Williams Engine Works are to have a Shaw electric traveling crane for their new shops at Beloit, Wis. It will have a span of 40 feet and be proportioned for a working load of 15 tons, but is to sustain a test load 50 per cent in excess of this, or 22½ tons, without injury. It is being built by Edw. P. Allis & Co., of Milwaukee, who have had one of these cranes of 25 tons capacity in successful operation in their foundry for several months.

The Pelton Water Wheel Company, of San Francisco, Cal., have recently issued a new edition of their catalogue, containing much important information in regard to their remarkable motor, that will be of value to parties interested in the development of water powers, intending to use them either by direct application or electrical transmission. Applications for this can be made either at their works, 120 First street, San Francisco, Cal., or at their New York office, 145 Broadway.

RAILWAY EXTENSION IN CHINA.—Consul Smithers at Tientsin reports to the State Department that the Chinese Government has recently authorized an extension of the Tientsin & Tongshan Railway, which will make it possible to reach Peking from Tientsin in about three hours, where it now requires as many days. The consul says that the opposition of the conservatives having at last been overcome, China may now be said to have fairly entered upon a career of railway construction.

The Government of Newfoundland contemplates the construction of 250 miles of railway with a view to making the mining districts, and certain tracts of land said to be capable of agricultural development, more readily accessible. Newfoundland has at present 85 miles of 3 feet 6 inch gauge worked by a company aided by a Government subsidy, and it has opened for traffic a branch line 25 miles long, built and operated by the Government. These facts are given on the authority of Mr. H. C. Burchell, Government Engineer of Newfoundland.

The St. Paul & Pacific Coal Company, at West Superior, Wis., has posted a card notifying coal heavers that the price for working in the hold this season will be 40 cents an hour instead of 50, the ruling price of previous seasons. It is said that all of the other companies represented have organized to establish this figure. The coal heavers are excited and refuse to accept the new price for their labor. Trouble is anticipated, as the coal companies are determined to stand by their proposed reduction, while the coal heavers are equally determined to re-establish the old rate.

The Baltimore United Oil Company has erected at its oil warehouse, Canton, a Blake triple compound condensing pump, with a capacity of 3,500,000 gallons per hour. It is for a water supply for condensers at the works of the company, about 4,200 feet distant. An extra water supply is also afforded in case of fire. The pump is the first of its pattern ever erected. Its high pressure cylinder is 8 inches, intermediate 12 inches, low pressure 24 inches in diameter. The water cylinder is 20 inches in diameter and the stroke of piston 24 inches.

Messrs. H. K. Porter & Co., of Pittsburgh, are shipping six locomotive engines to Buenos Ayres, South America, to be used on a railroad which runs between that city and some plantations. Each engine has been put together in their works, and subjected to all necessary tests They were then taken apart and each piece of the engine packed in a separate box, made expressly for it. About 1500 feet of the best hemlock lumber are required to pack each engine They are accompanied by Mr. William Byers, a Lawrenceville mechanic, who will superintend their reconstruction.

At the meeting of the stockholders of the North Chicago Rolling Mill, held in Chicago on the 1st inst., it was voted unanimously to increase the capital stock from $6,000,000 to $25,000,000. Fifty-five thousand shares out of 60,000 were represented. Another meeting was held on the 2d inst., with closed doors, considering the question of the consolidation of the Union Steel Company and the Joliet Steel Company. It is stated that the amended articles of incorporation of the North Chicago Rolling Mill Company were filed with the Secretary of State on the 2d inst., indicating that the proposed consolidation has been practically accomplished.

The stockholders of the Union and Joliet companies will take action similar to that of the North Chicago Company. Sixteen million four hundred and fifty thousand dollars is the amount of new stock to be issued to cover the value of plants and cash surpluses. The balance will be held in the treasury. Nine million dollars in new stock will be immediately distributed to the stockholders of the North Chicago Company in exchange for the $6,000,000 of old stock. This is equivalent to 1½ shares of new stock for one share of old.

The Fomente Fabril, a society in Chili, which is organized under the auspices of the Government for the purpose of promoting home industries, has just taken an important step to increase the export trade in flour. Chili is a large grain-raising country and already has about 800 flour mills. The company will hold a competitive trial of flour milling machines in Santiago on November 15th, 1889, and will give a premium of 20,000 francs to the best system. They will also pay the freight on all machinery sent out for trial, and the passage of a machinist to and from Chili. They desire to provide all the mills with the best machinery, and the successful competitor will have a large trade in the country.

The Reading Trust Company, assignee of the Reading Iron Works, Reading, Pa., to the financial difficulties of which we referred in our issue of April 6th and previous issues, have filed an inventory of the estate and effects of the insolvent concern. It is divided into 12 parts, and the thousand and one items are given without valuation. This will be added after the appraisers have completed their work. The inventory includes a number of mining stocks and bonds and shares in an oil company, of no specific value. The real estate is situated in Pennsylvania, New Jersey and Maryland, and comprises a large number of properties. Some idea of the magnitude of the record filed may be formed when it is stated that the inventory of the articles in the Philadelphia storehouse alone cover 122 pages of legal cap. It is expected that the appraisers will complete their labors some time next week. The assignee has ordered that the large pipe mill should start up on May 5th for the purpose of furnishing a large quantity of pipe under contract at the time of the company's suspension. This work will occupy three weeks. The two large blast furnaces of the works, which have been in operation since the failure, will go out permanently this week. The assignee will in a few weeks begin to dispose of the property.

The diversity of purposes for which portable buildings may be advantageously used is well illustrated by a list of the recent sales of the Ducker Portable House Company, among which were a residence for the engineer of the Empire Iron and Manganese Company, of Cuba; two hospital annexes for the New York Board of Charities and Correction; three hospital buildings for Mt. Sinai, Port Jefferson, L. I.; three camping houses for the Paradise Fire and Feather Club, an organization of well known New Yorkers

owning hunting and fishing grounds in Canada; an officers' building for the Long Island Live Stock Fair Association at Huntington, L. I.; three buildings purchased by the American Committee on the Bartholdi Statue, to be erected on Bedloe's Island for the entertainment of visitors, and an office building for a well known physician of Williams Bridge, N. Y. It is pleasing to also record that the building recently shipped to Arizona for the Copper Queen Mining Company has been received and erected, and is giving satisfaction.

The sharp competition which Southern iron has been forcing on our Northern furnaces, has led to many important economies in the Northern works and mines. It has especially been sought to lessen the cost of mining iron ore, and in no other item has the economy effected been more marked than by the adoption of the best class of mining machinery, which permits of a larger output per man, and a less cost per ton of ore. The rock drill and the air compressor, which supplies it with motive power, are among the most important cost reducers in modern mining, and the iron ore miners of New Jersey and New York have been waking up to an appreciation of the necessity of using these improved appliances, and many of them have at once adopted the very latest types of compressors and drills, those manufactured by the Morris County Machine and Iron Company, of Dover, N. J. This concern makes an excellent compound-condensing-duplex air compressor, that embodies all the most advanced principles of steam-saving, and is extremely economical in fuel. It is said that it furnishes compressed air at about one third less cost than the ordinary single steam cylinder compressor, and is giving great satisfaction. The same company is also manufacturing a rock drill for which extraordinary efficiency is claimed.

THE PANAMA CANAL.—The London *Economist* says: The affairs of the Panama Company were lost sight of during the more recent catastrophe of the Comptoir d'Escompte, but a communication made by the official liquidator, M. Brunet, at a drawing of lottery bonds recently, revealed the fact that no steps have yet been taken towards forming a new company, or obtaining funds for the old company to continue the works. He stated that he had succeeded in obtaining a sum of a million and a half of francs by a compromise with contractors, but was now almost at the end of his resources, and important works of maintenance for which he had no funds would be necessary before the rainy season set in. Four months have been absolutely wasted, for no measures have have been taken to ascertain by independent engineers the state of the works, and the sum required to terminate them. M. Brunet excused himself for having done nothing by the reason that any reports he might have obtained would not be accepted by a new company. A survey and the reports of engineers would, besides, occupy a period of six months, and cost 10 or 12 millions, which sum he did not possess. He regretted that he had not been able to obtain authorization to sell the 1,200,000 unissued bonds for what they would fetch, for he believed he could have obtained 130 or 140 millions for them. With that sum he could save the canal. The case is now hopeless, as it was, indeed, from the moment that the direction passed out of the hands of M. de Lesseps. Where he, with his enthusiasm, and possessing the blind faith of his supporters, failed, it is scarcely probable that a cautious lawyer, without knowledge of the work or interest in it, would succeed. As M. Brunet believes that it is not his duty to ascertain what has been accomplished towards making the canal and what remains to be done, and as company promoters are not likely to expend 10 or 12 millions in making such a survey, the present state of things will probably continue for a few weeks longer, after which the machinery and the canal will be abandoned to rust and ruin.

CONTRACTING NOTES.

Our list of machinery and supplies wanted will be found on page xvi. Manufacturers of machinery, engineers and contractors should also consult our directory of "Contracts Open" on the same page. This week, proposals are invited for the following new contracts: No. 1385, Material for Water-Works; No. 1386, Dredging; No. 1387, Bridge Construction; No. 1388, Electric Plant.

The Boston, Mass., Water Board has received the following proposals for cast iron pipe and special castings: Glouscester Iron Works, $96,135; Warren Foundry and Machine Company, $99,232; R. D. Wood & Co., $98,727; McNeal Pipe and Foundry Company, $100,435; Mellert Foundry and Machine Company, $101,223. The contract was awarded to the Gloucester Iron Works.

GENERAL MINING NEWS.

ARIZONA.

COCHISE COUNTY.

STERLING SILVER MINING COMPANY.—The new stamp mill at Tombstone will shortly begin operations. The diamond drill has been put in the well to prospect for an additional supply of water, although the well is now producing about 3000 gallons of water every 24 hours. After prospecting for water is finished the drill will be placed in the Vizina mine and will be used to thoroughly prospect the mine. The company will accept custom ores in ten-ton lots and over, in addition to working the ore from its own mines. It can work $15 ore at a profit and has now about 6500 tons of ore on hand that will be graded up to $17 per ton. The mill has a capacity of 30 tons per 24 hours.

COLORADO.

For some years past the need of a proper medium of exchange and exhibit of mineral ores of the State has been sorely felt in Denver, says the *Republican*, and in order to supply the want as nearly as practicable, the Real Estate Exchange has adopted the following resolution:

Resolved, That all owners of gold, silver, lead, iron, coal and other mineral lands, desiring to sell or lease their property, be invited to send them to any member of the Denver Real Estate Exchange to have placed for sale daily under calls for offers and wants.

Although the present movement, as indicated in the resolution, does not cover all the ground desirable, still it will be much of an improvement upon present facilities, and it is hoped that a full-fledged mining exchange will be developed from this initiatory effort.

MARSHALL CONSOLIDATED COAL MINING COMPANY.—At the annual meeting held in Denver the following gentlemen were elected directors for the ensuing year: L. W. Winchester, New York; Austin G. Gorham, Denver; E. V. Loew, New York; Marcus Stine, New York; J. E. Heimerdinger, New York; J. J. Morrison, New York; A. Banks, New York. At the directors' meeting held later in New York, L. W. Winchester was elected President; Austin G. Gorman was elected Vice-President and General Manager; J. E. Heimerdinger, Secretary; A. H. Rubidge was appointed Treasurer and Assistant Secretary. In our issue of March 30th we published the annual report of the company.

BOULDER COUNTY.

In the mining case of James M. Phillips vs. Henry Neikirk et al., involving an alleged cross section of the Osceola and White Crow mineral veins at Sunshine, Judge Hallett, in the United States Circuit Court at Denver last week, granted an order of injunction restraining the latter from working upon the ground in controversy until the case shall have been definitely decided by the court. The bond was fixed at $20,000, and the case will probably come up for trial at the May term.

LAKE COUNTY.

MIKADO MINING COMPANY.—Arrangements are now being made for the machinery to be placed at the new shaft; the contract has been let to Messrs. Hendrie & Bolthoff, of Denver. The new plant of machinery will cost about $30,000. The hoisting engine will have two cylinders, each 15 inches in diameter, with 24-inch stroke, and will develop about 200-horse power. There will be two reels, each capable of holding 1,050 feet of rope. Flat ropes, 3 inches wide and ⅛ inch thick, will be used. For generating steam there will be two Abendroth & Root sectional boilers, each rated at 205 horse-power. It is intended that this machinery shall be used to operate the shaft to the depth of 900 feet, if it become necessary to sink to that depth. The shaft is now down about 450 feet, and is is expected that connection will be made with the workings of the Chadbourne shaft very soon.

OURAY COUNTY.

FLORENCE MINING AND MILLING COMPANY.—This company, which owns the Florence C., Neodesha and a five acre millsite, located in the Uncompaghie mining district, about three miles north of Ouray, was organized in St. Louis. Since then the company has been prosecuting a thorough system of development. A 350-foot cross-cut tunnel has been driven on the Florence, to cut the Neodesha vein, besides other workings of less consequence. Three tunnels, ranging from 125 to 250 feet in length, have been run on the Neodesha, the lower one giving them a depth at the present time of 200 feet from surface. In all the levels on the Neodesha ore bodies have been opened from which they are stoping, and a car load has been shipped. Regular shipments will now be the order. Twenty men are now employed, but it is stated that the force will be increased.

ILLINOIS.

At a convention of the miners of the northern district of Illinois, held at Streator, on the 1st inst., a resolution was unanimously adopted refusing to accept a reduction of 10 cents per ton for mining during the coming year as offered by the operators. Machine men and day laborers who are producing coal will also go out pending the settlement of the difficulties. A resolution was also adopted directing the District Officer to call a national convention of all the miners in the bituminous coal fields as far as the competition reaches, and that there be no work in these districts until such convention is called.

INDIANA.

The greatest cut ever made in the price of coal mining in the West was made at Brazil on the 30th inst. It was from 90 cents to 70 cents on Indiana block and from 75 cents to 60 cents on Indiana bituminous coal. Two years ago the Indiana operators and miners, jointly with the Ohio and Pennsylvania operators, fixed upon a yearly scale for mining in the three States. Because of natural gas, Ohio and Pennsylvania were given as a rate respectively 60 and 69 cents. The Indiana rate was fixed at 80 cents, because it was nearer to the market. This scale was renewed a year ago.

MICHIGAN.

COPPER MINES.

ADVENTURE.—The stamp head at this mine has been started up, and all the machinery in connection therewith works satisfatorily.

CALUMET & HECLA MINING COMPANY.—Shafts Nos. 3 and 4 of the Calumet & Hecla mines, in which fire has been burning for months, were opened on the 30th ult., and no indications of flames were discovered. It is thought that the mine fire is entirely out. A careful examination of the entire mine will be made before work is resumed in the burnt portions.

MASS.—The machinery is being arranged preparatory to hoisting the tributers' copper which they have taken from the Knowlton vein during the past winter. There are about twenty-five tons of copper in the mine that will be hoisted to the surface and shipped to Ontonagon.

IRON MINES.

EAST JACKSON IRON MINING COMPANY.—At a meeting of this company held in Negaunee, the following officers were elected: Wm. Condon, President; J. E. Scallon, Vice-President, and W. B. Northup, Secretary and Treasurer. It was decided to remove the office of the company from Negaunee to Hancock. The mine has been unwatered to the first level, and the unwatering operations are being continued. A force has commenced to mine ore and stope on the first level, at the point where considerable ore was left by the Burts, formerly lessees, in 1874.

NEVADA.

STOREY COUNTY—COMSTOCK LODE.

CONFIDENCE MINING COMPANY.—The bullion shipment on April account, up to the 25th ult., amounted to $34.120.13.

CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.—Up to the 26th ult. the company shipped bullion valued at $69,299.75, making total shipments thus far on April account of $133,378.71.

CROWN POINT MINING COMPANY.—Up to the 25th ult. the company shipped bullion on April account, the net proceeds of which in gold coin are $15,375.02.

ST. LOUIS MINING COMPANY.—A United States patent granted this company for the ground known as the St. Louis mine, in Gold Hill, district has just been filed. The area of ground included is $7\frac{43}{100}$ acres. The development of the mine will be immediately proceeded with, and it is anticipated that the ore taken out in explorations will more than pay the cost of operations.

NEW MEXICO.

[From our Special Correspondent.]

Shakespeare, poor old pleaser of his fellow mortals, has had at least one cruel practical joke played on him in the Southwest (and it was out of the roughest liberties taken with his name) when that so called mining camp three miles from Lordsburg, N. M., was christened. If his immortal spirit hears the curses, loud and deep, heaped upon "Shakespeare," how naturally he could take the part of the ghostly creation in "Hamlet" saying to some wanderer standing alongside this grave of dead hopes, "I could a tale unfold—" of how Shakespeare, dead, was murdered by a cruel joker.

It's the same old story of these parts: The "Humboldt Mining Company, Limited" builds a new process mill—two patent double-jaw rock breakers, two centrifugal pulverizers and "disintegrating riffles"—to have a crushing capacity of fifty tons per 24 hours; boilers, good single sheet style; engines, likewise, "Atlas" make and double, and electric light plant the same. But as for the rest of the machinery, it would be hard to say what it was intended for, as it does not seem reasonable to expect that it could fulfill the claims made for it. When the trial came it was found wanting. The mill was built to "concentrate" the ore, and the concentrating "machinery" consisted of a set of "Howland Disintegrating Riffles," bits of castings resting in the bottom of a sluice. As a matter of course, it did not "concentrate." "Gilpin Company concentrators" were then ordered, end bump, continuous discharge tables and very good machines. The mill ran not quite 24 hours when the "chilled iron" rings of the pulverizers wore out completely! The chill was elsewhere. The capacity of each of these two pulverizers was claimed to be 25 tons per 24 hours, and the screen surface did not exceed two square feet of 60-inch wire cloth. Twenty-four hours is not a very long run for a mill, but very properly considered long enough in this case.

Dr. Arrington, of Memphis, Tenn., the president of the company, is now East, and is said to be negotiating the purchase of a ten-stamp mill. Notwithstanding his unprofitable experience with the revolutionary new process, the doctor's confidence in his ability to conduct successfully a mining enterprise remains unshaken. It's sad, however, that enterprising men should not get rightly started in that section, for what southwest New Mexico needs most is energetic men.

Shakespeare, and indeed, all the camps near Lordsburg, Pyramid, Lis endorf and Gold Hill have an unsavory reputation where ever known, not only among investors in their unsatisfactory properties, but among miners and mechanics, for whatever poor devil of a workman has had the bad luck to find himself in need of work in any of those camps, has ultimately gone away from them more in need than ever. The majority of the "enterprises" have been operated upon borrowed labor. The usual plan is to defer payments as long as possible. Pay-day never comes, but some day the collapse comes, as each bubble is pricked, and the workmen go away poorer by the clothes they've worn out and the time they've lost. There's an uncovered stamp mill a monument in Shakespeare to this practice. The Humboldt Mining Company was an exception to this rule of non-payments, and it is a pity that it met with such poor luck (for it was all left to luck) in its mill. Such, however, is life, especially in the "far West," where we trust to luck. Had the head of that company been a reader of the ENGINEERING AND MINING JOURNAL, it is doubtful if he would have made any such egregious blunder.

Deming is having a subdued stir over the prospect of a railroad south into Mexico, to which the Mexican National Government has granted a large subsidy. The road is said to traverse a region rich in mineral and agricultural wealth, and to reach the coast in Sonora. In this connection, your correspondent had

conversation with a Mexican prospector, at Lordsburg, who had been searching for coal along the proposed route of the new railroad. The Mexican displayed several specimens as the result of his search, one of which was coal looking somewhat lignitic, while the remainder was black quartzose rock. Of the quantity of the coal, the prospector could say nothing, as he professed to know nothing concerning coal, although a successful gold finder. As he is interested in a rich strike of gold in Graham County, Ariz., and is generally regarded as truthful, it can be relied on that he found the coal in place.

GRANT COUNTY.

SMITH & AILMAN.—This mine and mill at Pinos Altos will be sold under a mortgage next month. The property is now being worked under a lease, and it is said the lessee has been making it pay much better than the owners of the mine were able to do.

OHIO.

The deal between the Standard and the Trenton Rock Oil Company has been completed. The Standard will acquire 10,000 acres of land by this move, 7,000 of which has been developed. The Trenton Rock Oil Company were among the earliest producers in the region near Lima. The Standard Company will conduct under the name of the Ohio Oil Company, incorporated under the laws of Ohio, a land department which they have arranged. There is a well-founded rumor that the Globe Refinery Company, of Philadelphia, will build or buy a refinery at Lima.

The strike among the miners of the Akron District expected on the 1st inst., when the summer scale of wages went into effect, did not occur. Operators had decided, instead of dropping from 85 cents to 80 cents, the summer price, to insist on 75. After much parleying a compromise was made on 77½ cents, and all miners in the district have accepted it.

HANCOCK COUNTY.

The Standard Oil Company has bought the Mellott gas well, of Findlay, which is almost within the city limits. The Standard paid $25,000 cash for the well and $8 per acre per annum for 660 acres of gas territory surrounding the well. This gives the Standard a hold on the Findlay gas field, for which it has long been scheming.

PENNSYLVANIA.

The E. & G. Brooke Iron Company has started to work its mines at Beartown, Lancaster County, Pa., after an idleness of six years. One of the mines is filled with water, and it will require several months to drain it before it can be worked successfully.

PHILADELPHIA & READING RAILROAD AND COAL AND IRON COMPANIES.—The statement for March shows a decrease in gross for the R.R. of $215,135, for the Coal and Iron Company, $240,441; decrease expenses on R.R. $60,908; Coal and Iron Company, $45,607; decrease in net for both companies, $348,971. Four months ending March 31st shows increased gross $958,249; increased expenses, $935,469; increase in net $22,780.

COAL.

The report issued by the Schuylkill Coal Exchange, dated Pottsville, May 1st, shows that the collieries drawn to return prices of coal sold in April, 1889, to determine rate of wages to be paid, make the following returns: Girard Mammoth colliery (P. & R. C. & I. Co.), $2.42; Bear Ridge colliery, $2.34·8; Indian Ridge colliery, $2.37·7; Knickerbocker colliery, $2.37; Kebley Run colliery (Thomas Coal Co.), $2.43·6. The average of these rates is $2.39, and the rate of wages to be paid is four per cent below $2.50 basis.

The railroad coal miners' strike, inaugurated on the 1st inst. against a reduction, has spread to a number of other mines. The works along the Pennsylvania Railroad are all in operation, a compromise having been effected.

H. C. FRICK COKE COMPANY.—Mr. H. C. Frick has sold to this company a large amount of valuable property held by him individually, consisting of lands and coal and mineral under land in George and Lake Union townships for $70,370.15.

OIL.

An oil well was struck near Legronville, on the Fort Wayne road, nineteen miles from Pittsburg, last week. When the sand was tapped the oil spurted 115 feet in the air and it is reported flowing about 700 barrels a day. The well is the first gusher ever struck in that vicinity.

UTAH.

JUAB COUNTY.

[From our Special Correspondent.]

Eureka, a mining camp of 600 population, is situated about 85 miles southwest of Salt Lake City. The principal mines are the Eureka, Bullion Beck, California Belcher and Keystone. The ore is shipped to Salt Lake City, Denver and Pueblo smelting works. Messrs. G. L. Sanborn and Vincent, of Aspen, Colo., have taken a lease and bond on the Silvercopolis and Phœnix, adjoining the Mammoth Copperopolis. The Lehigh branch of the Utah Central Railway is being built from Silver City to Mammoth and Eureka.

COPPEROPOLIS.—This mine is being worked by 25 men. The ore contains gold, ⅛ to 1 ounce; silver, 30 to 60 ounces; lead, 25 per cent.; copper, variable.

EUREKA.—This mine is supplied with a 300 H. P. Corliss hoisting engine, double compartment shaft with safety cages, sampling works and machine shop. The character of ore is sulphides, lead smelting ores; average value, 60 ounces silver, and carbonate of copper, average 20 per cent. copper, 6 to 30 ounces of silver per ton.

MAMMOTH.—This mine employs 120 miners. Mr. H. G. Reed is the superintendent. The ore body is from 28 to 100 feet in width, and occurs in limestone formation.

BEAVER COUNTY.

HORN SILVER MINING COMPANY.—The following financial statement for three months ending March 31st, 1889, has just been issued:

January 1st—Cash balance, per last annual report	$131,257.38
Receipts.	
Sales of ore: January, February, March	$70,102.74
Outstandings due company: Proceeds of sale of 400 shares capital stock Horn Silver Mining Company, held as collateral	304.00
Smelter Expense: Sundry rents, etc	69.00
Sundry persons: on deposit	661.88
Iron ore: Rebate freight on 16,000 pounds Marion iron ore	24.00
Total	$202,419.00
Disbursements.	
Mining: Labor, supplies, timbering, dead work and expenses	$18,655.71
General expenses: Frisco and Salt Lake City	2,783.91
Chicago refinery: Insurance, taxes, etc., on real estate	1,368.94
New York office	5,201.55
Total working expenses for first quarter.	$28,010.11
Balance cash on hand: J. T. Little, Treasurer, Salt Lake City, $134,419.51; First National Bank, New York, $39,817.66; petty cash, New York, $16.87; F. Honkamp, Chicago refinery, $154.85	174,408.89
	$202,419.00

NOTE.—Of the item, "legal expenses," $4,372.95 was for expenses and services rendered to the former management during the years 1887 and 1888.

FOREIGN MINING NEWS.

AUSTRALIA.

NEW SOUTH WALES.

BROKEN HILLS PROPRIETARY COMPANY.—This mine continues its large production of silver, the last advices give the week's output, with eight furnaces, running. Ore treated 2605 tons, yielding 505 tons base bullion, containing 106,091 ounces silver. The previous week's returns were nearly as large.

CENTRAL AMERICA.

HONDURAS.

A correspondent of the *Financial News*, of London, writes from Tegucigalpa, March 6th: "The outlook for mining in the Republic of Honduras is steadily improving, and during the past month there have been quite a number of arrivals from the United States, mostly capitalists and practical miners. President Bogran feels confident that before the close of 1890 there will be a large increase of population, as the attention of the agriculturists of the Southern States has been called to the large profits now being made by the fruit-growers in that stretch of country between Truxillo and Puert Cortez. It is understood that active operations will soon be commenced on the proposed line of railroad that is to connect these two points, and that the money is being found in the United States. It is estimated that the fruit, mahogany and rubber trade of that section of the country will alone earn sufficient to pay the interest on the bonded debt of this road. The Government are anxiously awaiting the result of Mr. Lee Smith's report on the Interoceanic Railroad. Mr. Smith recently made a very careful examination of this proposed line of road, and left for London to make his report to the capitalists by whom he was employed. The construction of this road and the settlement of the old debt will prove one of the most important elements towards the development of this Republic that could possibly be effected. There is quite a boom going on in mining, and new enterprises are being started every day. Up to the present the Rosario silver mine is about the largest producer in the Republic, and is turning out about £15,000 in silver every month. The San Marcos, with its 10-stamp mill, is also giving satisfaction to its owners, and arrangements are being made to add 30 stamps to the present machinery, giving the mine 40 stamps in all, and the capacity for a production of over £100,000 per annum in silver. Captain Imboden has sold the famous mines of Opoteca to some London capitalists, and arrangements are now being made to commence work with 100 stamps, with the intention of eventually adding 200 more stamps, making 300 in all. These mines are considered by President Bogran and all the leading citizens of Honduras as the largest silver mines in the world. Their value is estimated on the absolutely unlimited supply of pay ore that may be termed in sight, and has only got to be quarried out and run down an incline to the mill, which will be located by the river, where there is ample water power all the year round for 300 stamps or more. The ore is free milling, and will average about £5 in silver to the ton, and can be reduced at a cost of £2 per ton. The mill is located on the line of the Interoceanic Railroad, and these mines will prove an important feeder to that enterprise.

Great things are expected from the Guyapé River this year—that is, about October, when the rainy season closes. The Honduras Gold Placer Company have built quite a small town at Buena Vista, on the Gayupé, and have a large force of men at work making all the necessary preparations to get at the river-bed as soon as the river commences to fall. Their pack trains are on the road all the time between Truxillo and their camp, bringing up machinery and mining utensils, and it is thought here that the first clean-up from that famous river-bed will astonish even the most sanguine of the many believers in its great riches. Mr. Douglas L. V. Browne, the very energetic manager of this enterprise, is at present in your city, and his superintendent Mr. Phillips, is hard at work on one of the old bars of gravel in a former bed of the river, and expects soon to be able to ship results. In one shaft in this gravel he is down 15 feet, all in pay dirt: so there is no lack of material for sluicing. It is understood that Major Burke will commence work in the adjoining portion of the Guyapé, so as to reach results as soon as the Honduras Placer Company, and with that object in view has already shipped some of his machinery to the ground. When the Guyapé and Hulan Rivers are fairly opened up the production of gold will be very large, and the revenue derived by the Government from this source will enable the President to do a great many things towards the development of the country that are at present badly needed. There is some talk about a company being formed to open the Patook River to navigation. This river is the continuation of the Guyapé and Hulan, and flows into the Caribbean Sea. By the removal of two obstructions this river would be opened to navigation, and the gold-bearing quartz ranges on both sides and between the Guyapé and Hulan Rivers, would then be in a position to be worked, as heavy machinery could easily be brought into that part of the country, and the gold production largely increased. A mining engineer who spent six months prospecting on these mountains reports gold ledges that will run all the way from 1½ ounces to 8 ounces in gold to the ton. The Concordia Mine, near the head of the Guyapé, is being worked with a 5-stamp mill, and averages about 7 ounces in gold to the ton."

MEXICO.

[Specially Reported for the ENGINEERING AND MINING JOURNAL by R. E. CHISM, M.E.]

CHIAPAS.

In the Pichucalco district, in this state, there is a copper mine which is said to be the richest one in the world. Whole mountains of the red metal, or at least of its ore, are said to have been found, and the silver and gold contents are so great that the lowest price of copper cannot affect the question of output. These mines are in the hands of some capitalists of the City of Mexico, who will work them for all they are worth.

CHIHUAHUA.

The company owning the smelter at Chihuahua City is reported to have reorganized, and the works will soon resume operations.

COAHUILA.

The Dieffenbach Sampling Works at Sabinas on the Mexican International Railroad, are perhaps the most complete of their kind in the Republic. They are capable of handling over three hundred tons of ore per day. Mr. Dieffenbach will soon open a branch establishment at Potrero de la Mula for the purpose of reaching the rich mineral region around and beyond Cuatro Cienegas.

The railroad to Sierra Mojada is reported to be already in process of construction; any way it will certainly be built ere long if the parties interested are to be believed.

DURANGO.

The Recompensa Mining Company owns a mine of that name near Bella Vista in this State and has recently bought a Huntington gold mill, which is being put up at the mine. Three Bryan gold mills have been recently put up in the San Dinas district and at Guscomaya. A company made up of Ohio and Phildelphia capitalists owns a mine called the Candelaria at San Lucas, fifty miles north of Durango City, and is putting up a smelting plant on the property.

A quicksilver vein is said to have been discovered somewhere in this State with a four feet vein that averages 20 per cent of mercury. The vein is said to be continuous for the distance of nearly a mile.

One of the driving-wheels in the mill at the San Gayetano mine at Ventanas has broken, and the mill is taking an enforced rest, which will probably last some two months until a new wheel can be brought from the States.

The Town Council of Durango City is said to be thinking of paving the great plaza of the city with iron blocks from the iron mountain works, near the city gates.

GUANAJUATO.

The Santa Rosa mine, in the Dolores district, has now under exploitation a new vein of gold ore four feet in width, which yields about $250 per ton of ore.

GUERRERO.

Among the many new denouncements on lately discovered veins made in this State during the past year perhaps the most notable one is that of the mine Hermenegildo Galeana, in the Bavos district, near the village of Ochipala. This is a copper mine from which some very rich specimens have been extracted, which will go to astonish the visitors at the Paris Exposition.

This State contains, besides many other mines of lesser note, those of the Estrella, Delfina and San Cristobal in the central district, the historic mines of Tasco, those of the Guadelupe camp in the La Union district and the Alvarez, Morelos, Aldama and Mina mines, all of which have yielded and are still yielding large amounts of the precious metals. Guerrero has been one of the most inaccessible States of the Republic, but the locomotive is within its borders and the treasures of its mountains will soon be searched for more diligently than they have hitherto been.

The San Jose property, near Tasco, has workings and cross-cuts reaching under 1600 feet of the property, with two shafts 175 feet deep. The vein varies in width from 18 inches to five feet, and carries gold and silver ores averaging $110 per ton. There is a 10-stamp mill on the property, which is now in full

run. It is said that some New York capitalists are negotiating for the purchase of this property.

JALISCO.

There is a quicksilver mine at Huitzurco, in this State, and works newly erected in connect on therewith. The furnaces were duly blessed by the priest last month and started up to run, but after the crowd had left, and scarcely three hours after the benediction, there was a great explosion heard, and three retorts were totally destroyed and two others badly cracked. The cause of the explosion is not exactly known, but it is thought that some malevolent person had placed a dynamite cartridge somewhere about the furnaces.

It is said that a contract has been made with a syndicate of capitalists of New York, Washington and Philadelphia for the exploitation of some tin veins near Autlan.

The mines at Bolanos are said to have been a failure in the hands of the former American owners because they did not understand how to treat the ores which contain large amounts of carbonate of lime. The new Eagle Mountain Mining Company has found that these ores can be worked by the Russell lixiviation process and a plant is to be put up for that purpose. An investigation has shown that there are 20,000 tons of ore on the dump which averages $15 per ton and this is now being worked at an alleged profit of $5,000 a month. Lately the company has purchased some 25,000 acres of timber land near the mines. The water now in the mines has been drained off enough by steam pumps to determine more or less the value of the property and much larger pumps will now be put in as a permanent installation. There are at present 400 men employed by the company, but this number will be doubled after the new machinery is ready for operation.

SPAIN.

RIO TINTO, THARSIS AND MASON & BARRY DIVIDENDS.—The three principal European copper producing companies have recently declared their dividends for the second half of last year. The distributions for the year compare as follows with those of the two previous years:

	1888. Per cent.	1887. Per cent.	1886. Per cent.
Rio Tinto	17	10	3
Mason & Barry	9	5	2½
Tharsis	20	10	7½

In view of the altered condition of the copper market, says the London *Economist*, the companies act wisely in writing off large sums and carrying handsome balances forward, instead of dividing their profits up to the hilt. Thus, the Rio Tinto Company writes off £210,000 and carries forward £203,000, these sums together representing about 13 per cent on the ordinary capital of the company; Mason & Barry carries forward a balance of over £40,000, while the Tharsis Company, after writing off £69,000 for depreciation, carries forward £27,000. Under ordinary circumstances, results such as these would have had the effect of advancing the price of copper shares very considerably, but the announcements, instead of strengthening the market, have rather weakened it, for in each case the declaration of the dividend has been followed by a drop in price.

BUILDING MATERIAL MARKET.

FRIDAY EVENING, May 3.

Bricks.—There has apparently been little inclination to buy building material this week on account of the rainy weather of last week, the holidays of this week and the general interruption of business occasioned thereby. Consequently there is quite an accumulation of brick on the market. A reliable authority to-day estimated the amount unsold at from four to five million brick. It is believed, however, that this will be largely distributed to second hands during the early part of next week, and strenuous efforts are being made to prevent any cutting of prices. It is argued that new brick will not be received in sufficient quantities to affect the market for the next three weeks at least, and in the meantime, if consumption continues as large as it has begun, there will be a demand which will be difficult to supply, in view of the low stocks now at the yards. All of this may be true, but it is probable that except on very superior quality receivers will occasionally be forced to make concessions. About two-thirds of the present supply is said to be rather lacking in quality. We allow our quotations to stand at $8@$8.50 for Haverstraws, $7@$7.50 for Jerseys, and $3@$3.75 for Pales.

Lime continues in good demand at unchanged prices St. John lime is rapidly becoming a formidable competitor of the Rockland article in American markets. The following from the St. John, N. B., *Sun* of a recent date will therefore be of interest:

"The attempt to gain a footing (for St. John lime) in the American market had to meet and overcome much prejudice. That the prejudice has been overcome is proved by the wonderful development of the trade as shown in the customs figures already quoted. The New York market, until the last year or two, received the largest shipments, but Boston and adjacent towns now receive large quantities. Maine also affords a market. The Aroostook country is almost wholly supplied, and shipments are made to Bangor and other points. cheaper labor, cheaper wood and much less labor required to quarry the raw material and place it in the kiln enable the operators here to compete successfully with Rockland in the New England market. The lime here is also claimed to be of superior quality. Stetson, Cutler & Co., the Drury Cove Lime Company and Randolph & Baker, export practically their whole output. The Portland Lime Company export nearly all, and Chas. Miller about two-thirds of his entire output. The others export in smaller proportion. The local or maritime province trade is of course large. Purdy & Green ship largely to Nova Scotia; J. Hornbrook and W. Lawlor have a large New Brunswick trade, being situated conveniently near the railway. Five-sixths of the output of J. & F. Armstrong, at Green Head, goes outside the province. In connection with the export trade it is worthy of note that, in addition to their lime shipments, Stetson, Cutler & Co. shipped 675 tons of limestone to the State of Maine last year. A bill to increase the duty on lime has been introduced in Congress and has passed the Senate, but the dealers here are of opinion that it will not become law. It is extremely unlikely that the duty will be raised to a point that will close the New England market to our lime. Rockland, it will be remembered, depends on the provinces for its wood supply. The fact that the firms here are enlarging their business proves their confidence in the permanency of the demand for their product."

MEETINGS.

Columbus & Hocking Coal and Iron Company, Columbus, Ohio, May 15th, at noon.

Neath Gold Mining Company, Idaho Springs, Colo., May 20th.

DIVIDENDS.

Granite Mountain Mining Company, of Montana, dividend No. 50, fifty cents per share, or $200,000, payable May 10th, in St. Louis.

Marshall Consolidated Coal Mining Company.—May coupons of the first mortgage and debenture bonds are being paid by the Farmers' Loan and Trust Company, of New York.

Pamlico Mining Company, of Nevada, paid April 13th a dividend of $6,000.

ASSESSMENTS.

COMPANY.	No.	When levied.	D'l'nq't in office.	Day of Sale.	Amn't per share.
Belle Isle, Nev.	12	Apr. 19	May 23	June 13	.10
†Big Hole Placer, Utah	...	Feb. 25	Apr. 8	May 6	.005
Bulwer Cons., Cal.	5	Apr. 10	May 15	June 12	.25
Bodie, Cal.	10	Mar. 27	Apr. 13	June 4	.50
East Jackson, Mich.	....	Apr. 19	May 1	...	.25
Exchequer, Nev.	27	Apr. 2	May 7	May 28	.25
Eureka Cons, Nev.	11	Mar. 19	Apr. 27	May 20	.50
Found Treasure, Nev.	5	Apr. 10	May 16	June 6	.12½
Gould & Curry, Nev	62	May 1	...	...	.30
Grand Prize, Nev.	20	Mar. 15	Apr. 20	May 13	.30
Gray Eagle, Cal.	12	Mar. 19	Apr. 23	May 14	.05
Honorine, Utah	....	Apr. 2	May 2	June 1	.05
Mono, Cal.	27	Feb. 28	Apr. 2	May 8	.50
North Commonwealth, Nev.	2	Apr. 4	May 8	May 30	.30
Occidental Cons., Nev.	4	Apr. 8	May 13	June 5	.50
Peerless, Ariz.	12	Mar. 25	Apr. 26	May 21	.25
Pinal Cons., Ariz.	8	Apr. 13	May 20	June 12	.10
Potosi, Nev.	32	Apr. 10	May 15	June 5	.50
Ruby Hill Tunnel & Mg. Co., Nev	17	Mar. 12	Apr. 20	May 20	.01
San Francisco Copper	3	Mar. 18	Apr. 23	May 21	.10
Silver Hill, Nev.	24	Apr. 20	May 23	June 13	.20
Sierra Union, Cal.	1	Apr. 10	May 13	June 5	10.00
Taylor M. & M., Cal.	17	Mar. 30	May 1	May 18	3.00
Trinity River T. & Mg., Cal.	1	Apr. 11	May 14	June 3	.07½
Yellow Jacket, Nev.	46	Mar. 28	May 1	June 1	.50

* Delinquent day and day of sale postponed to dates given above.

† An additional .005c. a share is payable May 6th, delinquent May 8th and saleable June 10th.

MINING STOCKS.

New York.

FRIDAY EVENING, May 3.

Both the Stock Exchange and the Consolidated Stock and Petroleum Exchange were closed on Monday, Tuesday, and Wednesday of this week to allow their unsophisticated members an opportunity to see the sights of the town; this was the real reason. Ostensibly they closed to participate in the Centennial celebration.

We have, therefore, the transactions for only two days and a half to record and review. During this time, there has been no change in the situation. Speculative or investing demand from the public is conspicuously absent.

Horn Silver is being offered freely and sold at $1.15 The report of Professor Lavagnine, who is a Utah man, and a financial statement were issued by the company this week. The portion of his report which has apparently occasioned so much uneasiness among stockholders is this: "Taking all into consideration, I do not see how the Horn Silver mine could at present be able to pay anything above working and exploration expenses, while I think that, by working with great economy, these explorations could be made out of the resources of the mine."

There has been little or no pressure to sell Homestake this week; the holders of the stock have evidently gotten over their scare. On the other hand, there has been no disposition to increase bids for the stock until the present financial condition of the company is more definitely known. There was a sale of one hundred shares to-day at $7.50. Deadwood shows the same transactions at $1.50. Caledonia at from $3 to $3 10. Sullivan Consolidated was firm, and was dealt in every day at from $1.25 to $1.30.

Several orders from San Francisco to buy North end Comstock shares have been received in New York this week and brokers are wondering whether or not it portends that the "boom" machinery of the Pacific Coast has been set in motion. The San Francisco *Stock Report* is authority for the statement that the Consolidated California & Virginia Mining Company would declare the usual dividend of 50 cents per share on May 31, and that there is no prospect that the dividend will be suspended for several months to come. There was one sale of the stock at $8.38. Yellow Jacket was quoted at $4 25. Sierra Nevada at $3 55. Ophir at $5 50. Hale & Norcross at $4.60. Utah, $1.45. Union Consolidated at $4.30. Potosi at $2.25. Exchequer at from $1 to $1.15. Bullion advanced from $1.15 to $1.30.

The Tuscaroras were neglected, and only one sale of Belle Isle at 25c. is reported.

A sale of Sutro Tunnel was made at 10c.

Moulton shows a further advance, and was quoted this week at 27c.

United Copper this week showed again signs of an upward movement, the price going from $1 to $1.20.

Mutual ruled at $1.45.

The California stocks were quiet.

Bulwer shows a few transactions to-day at 25@27c., and Mono at $1.75.

Plymouth Consolidated was quoted at $10.

Quicksilver preferred ruled at from $37.75 to $38.

The Amadors sold at the usual prices.

There was little or nothing doing in Silver King at from 83@85c.

El Cristo shows two quotations, one at $1.60 and one at $1 65.

Among the Colorado stocks Lacrosse was the most active, and shows transactions amounting to 10,500 shares at 9@10c. Silver Cord was quoted at 80c. Leadville at 14c. Plutus at from 95c. to $1. Little Pittsburg at 5@6. Little Chief was active at from 24 to 26c., and Aspen at $11.

Colchis records one sale at $4.25.

Kingston & Pembroke moved from $1.13 to $1.25.

Boston.

May 2.

[From our Special Correspondent.]

Another broken week and an extremely dull market for copper stocks leaves little to be said regarding the outlook for the future which is not very encouraging to buy stocks on. The copper position is still unsettled, and until something definite is determined in regard to the price which the companies are to receive for their production, we do not look for a bull market, but rather expect to see prices go still lower than at present. Calumet & Hecla made a further decline to $207½, with a reaction on small lots to $208. Boston & Montana touched $29½, and rallied to $30.

Tamarack declined from $208@$205½. Franklin sold at $9. Osceola at $9⅝, a small lot selling at $10. Atlantic at $9⅝. National at $1¾. Kearsarge advanced from $5¼@$6 on a 50 share lot, and is in rather better demand. Santa Fe holds quite steady at 62½c., while Bonanza is dull and heavy at 77½c. The balance of the list shows no recorded transactions and the total business of the week aggregates not much over 5000 shares, one half of which was in the low priced stocks. Dunkin silver is strong with sales at 93c. The latest reports from the mines are of a more favorable character.

3 P. M.—At the afternoon sales Calumet & Hecla declined to $207½, and the Boston & Montana to $29¾. No change in balance of the list.

LATER PRICES.

(*By Telegraph*)—May 3d, one o'clock P. M.—Boston & Montana weakened from 30 to 29¼. Calumet & Hecla, 207½, and Tamarack, 106½.

Gogebic Stocks.

[From our Special Correspondent.]

MILWAUKEE, April 26, 1889.

The following stocks were sold at public auction by the sheriff yesterday to satisfy a claim of the Merchants' Exchange Bank against the old firm of Moore, Benjamin & Co., of $29,743.23: 200 shares of the Kakagon Mining Company's capital stock, at one-fourth of one cent per share. Another block of 500 shares of Kakagon stock was sold for $1; 800 Amora, at $4.90 per share; 1000 Sunday Lake for $10 the lot; 250 Gogebic Investment Company, $28 the lot; 1000 Northern Chief, $25,792.28, which was the amount, with interest, for which the stock had been deposited as collateral. The recent demand for Bessemer Consolidated stocks and bonds is falling off and prices rule lower.

In the case of J. G. Sherman, of Milwaukee, to recover $975, alleged to be the unpaid balance of $1 assessment on 1575 shares of Anvil Mining Company stock, Sherman demurred, alleging no cause of action, but the motion was overruled. The Supreme Court now sustains the demurrer. Very little, if any, change in stocks since my last report.

Kansas City.

April 29.

Company	Par value.	Bid.	Asked.
Burch L. & Z., Mo.	$ 1	$ .25	$ .50
Ida Hill, S., N. Mex.	100	....	100.00
K. C., Colo.	...	....	1.00
Kentuck, Z., Mo.	1	....	.25@.40
La Motte, Mo.	100	98.00	100.00
Maverick, S., Colo	10	.97	1.00
Sonora. G. & S., Mex.	10	1.00	1.02
Standard, S., Colo.	1	1.10	....
Templar, S., N. Mex.	1	.15	.25
Webb City, L. Z., Mo.	5	5.25	5.50
Wichita, L. C., Kan.	100	....	40.00
Granite	...	....	....

St. Louis. May 1.

[From our Special Correspondent.]

The feature of the week has been the gradual hardening and advance of Small Hopes. The publication in one of our local papers of the article published in the last issue of the ENGINEERING AND MINING JOURNAL in regard to the financial condition of the company, did a great deal towards strengthening the feeling, and besides it was vaguely rumored that very favorable developments had been made in the lower workings of the mine. The stock closes to-day $1 25 bid. The rest of the list has undergone no change worth mentioning. Adams has been very quiet, with a good demand at 25c. While the listed stocks have shown but little activity, it need not necessarily be inferred that their dullness is any indication of the condition of the mining market; in fact, quite a number of our local capitalists have made heavy investments in mining properties during the past sixty days, and in very many instances the results have proven most satisfactory. Indeed, there are very many more mines paying dividends into the pockets of St. Louis investors than even St. Louis people themselves imagine.

CLOSING PRICES.

	Bid.	Asked.
Adams, Colo	$ .25	$ .26¼
Anderson, Mont	.22½	.28¾
Aztec, N. Mex	.25	.27½
Bi-Metallic, Mont	40.50	41.50
Black Oak, Cal	.47½	.50
Carriboo, Idaho	.15	.17½
Central Silver	.15	.30
Concepcion, Mex	.09	.10
Dinero, Colo	.08	.09
Golden Era, Mont	.14	.15
Golden King	.38¾	.40
Golden West	1.05	1.10
Granite Mountain, Mont	49.50	50.50
Hope, Mont	4.25	5.25
I. X. L., Colo	.07½	.08
Jumbo, Colo	.14	.15
Mary Foster, Colo	.03	.03½
Major Budd, Mont	.12	.13
Mexican Imp., Mex	.26¼	.27½
Mountain Key	1.60	1.65
Pat Murphy, Colo	.37½	.40
Neath, Colo	.25	.27½
Phillips, Colo	1.10	1.20
San Francisco, Mont	.42½	.45
Small Hopes, Colo	1.25	1.40
Silver Age, Colo	3.12½	3.25
West Granite, Mont	1.12	1.15
Wire Patch	.30	.32½
Yuma, Ariz	.40	.42½

San Francisco.

There has been a slight recovery from the sharp break in prices which occurred last week, and the tone of telegraphic advices for the past few days has been much more confident. To day's quotations, by telegraph to the Consolidated Stock and Petroleum Exchange, were as follows: Bulwer, 25@30c.; Eureka, $2.25; Consolidated California & Virginia, $8.37½; Gould & Curry, $2.60; Hale & Norcross, $4.80; Mexican, $4.55; Navajo, 85c.; Ophir, $5.50; Sierra Nevada, $3.70; Union, $4.40: Utah, $1.45.

Auction Sales of Stocks.

On account of the general interruption of business by the Centennial celebration of Washington's inauguration for three days this week, there have been no auction sales of stocks.

Pipe Line Certificates.

[Special report by Messrs. WATSON & GIBSON.]

Owing to the interruption of business by the Centennial, and the adjournment of the Exchanges from 12 o'clock last Saturday until Thursday morning of this week at 10 o'clock, the petroleum business has been of small consequence and without important fluctuations. There has been a little more strength perhaps, but no interest has been taken in it by the public, and nothing is in sight calculated to improve values or increase speculation. The Ohio oil situation will no doubt determine the value of Pennsylvania oil one way or the other before very long; and we still believe that Lima crude is susceptible of successful treatment, that it is altogether cheaper at its ruling price of say 20 cents than the Pennsylvannia oil at 85 cents, and that the value between the two oils must be equalized sooner or later.

NEW YORK EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
April 27	84⅛	84⅞	84¼	84⅝	203,000
*29	....	....	....	....	.....
*30	....	....	....	....	.....
*May 1	....	....	....	....	.....
2	84½	86⅛	84½	85¾	296,000
3	85⅞	85⅞	85	85½	233,000
Total sales in barrels					732,000

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
April 27	84⅞	85	84⅝	84¾	260,000
*29	....	....	....	....	.....
*30	....	....	....	....	.....
*May 1	....	....	....	....	.....
2	84¾	86⅛	84¾	86	598,000
3	86	86	85⅛	85⅞	174,000
Total sales in barrels					1,032,000

*Holidays.

Trusts Stocks.

The following closing quotations are reported to-day by C. I. Hudson & Co., members New York Stock Exchange:

American Cotton Oil Certificates	$55⅛@55¾
Sugar Refineries "	91⅛@92
Distillers' & Cattle Feeders' Certificates	32 @34
Linseed Oil "	39 @43
Natural Gas "	95 @98
Standard Oil "	165 @169
National Lead "	215⅝@215¾

Electric Stocks.

The following closing quotations are reported to-day by J. Heron Crosman, New York City:

Stocks.	Par value.	Market price.
Brush	$100	$70 @ $75
" Illuminating	100	80 @ 85
Daft	100	40 @ 45
Consolidated	100	70
Edison	100	180 @ 190
" Illuminating	100	90 @ 95
Julien	..	..
" Traction	..	15½
United States	100	50 @ 60
" " Illuminating	100	50 @ 60
Westinghouse	50	57 @ 58
Thomson-Houston	..	.....
" " Welding Co.	..	.....

COAL TRADE REVIEW.

NEW YORK, Friday Evening, May 3.

Statistics.

PRODUCTION OF ANTHRACITE COAL for week ended April 27th, and year from January 1st.

Tons of 2240 lbs.	1889. Week.	1889. Year.	1888. Year.
P. & Read. R.R. Co	140,178	1,764,235	1,472,507
Cent. R.R. of N. J	121,315	1,562,438	1,502,199
L. V. R.R. Co	150,000	2,020,903	1,640,948
D., L. & W. R.R. Co	73,782	1,164,515	2,169,197
D. & H. Canal Co	60,500	1,088,068	1,455,234
Penna. R.R	61,164	1,063,641	1,350,516
Penna. Coal Co	11,312	236,238	460,677
N. Y., L. E. & W	20,000	366,628	280,493
Total	638,251	9,266,666	10,331,771
Decrease	.....	1,065,105	....

The above table does not include the amount of coal consumed and sold at the mines, which is about six per cent of the whole production.

Production for corresponding period:

1884	8,610,380	1886	9,652,229
1885	7,822,587	1887	10,559,247

PRODUCTION OF BITUMINOUS COAL for week ended April 27th, and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

Tons of 2240 lbs.	1889. Week.	1889. Year.	1888. Year.
Phila. & Erie R.R	2,769	28,994	20,606
Cumberland, Md	62,348	935,400	1,092,028
Barclay, Pa	3,000	41,503	61,525
Broad Top, Pa	8,560	135,258	135,393
Clearfield, Pa	69,801	976,241	1,171,689
Allegheny, Pa	15,768	310,576	281,377
Beach Creek, Pa	31,267	439,030	558,814
Pocahontas Flat Top	30,208	483,615	469,234
Kanawha, W. Va	21,219†	502,050	545,109
Total	244,940	3,852,667	4,332,775

† Week ending April 21st.

WESTERN SHIPMENTS.

Pittsburg, Pa	11,753	197,434	232,756
Westmoreland, Pa	21,811	486,141	510,967
Monongahela, Pa	9,466	64,006	92,697
Total	43,030	747,581	836,420
Grand total	287,970	4,600,248	5,169,195

PRODUCTION OF COKE on line of Pennsylvania R. R. for week ending April 27th and year from January 1st, in tons of 2000 lbs.: Week, 88,864 tons; year, 1,455,354 tons; to corresponding date in 1888, 1,255,147.

Anthracite.

The anthracite trade has somewhat improved during the week, though it has been interrupted by the Centennial celebration. The demand from points in the East shows a better consumption, and prices are inclined to harden. The large companies are firm at schedule rates, and it is becoming more difficult to get cheap coal outside of them. The opening of the Erie Canal and of the Lakes to navigation gives a market for a large amount of coal, and the influence of this will certainly be felt in the course of a few weeks.

We are enabled to give our readers herewith the usual monthly official statement of anthracite production which we were unable to get in time for last week's issue. We shall endeavor to give it punctually hereafter.

The efforts of some of the companies to keep secret from the public their coal output is in our opinion very ill considered. The rumors that will inevitably be circulated in the absence of trustworthy statistics will be used to the injury of the trade.

There should be no need of mystery in such matters; it is altogether out of place at this late day. Mystery is the cloak if not the very cause of many dishonest acts, and when it is found convenient to use it as against the public in one matter, it may serve as a precedent for using it against the other interests in the trade at another time.

It will be seen from the following table that the companies exceeded in March the output they had agreed upon by about 100,000 tons, and the stock of coal at tide-water, as announced by us last week, increased 61,567 tons. The stocks would have declined slightly had the output been restricted within the limit of 2,000,000.

Mr. John H. Jones, Chief of Bureau of Anthracite Coal Statistics, has issued the following statement of anthracite coal tonnage for the month of March, 1889, compared with same period last year. This statement includes the entire production of anthracite coal, excepting that consumed by employés and for steam and heating purposes about the mines, but does not represent the entire anthracite coal tonnage actually transported by the respective railroad companies, adjustment being necessary in the compilation to avoid duplications, etc.

STATEMENT OF ANTHRACITE COAL PRODUCTION, FOR MONTH OF MARCH, 1889, COMPARED WITH SAME PERIODS LAST YEAR. COMPILED FROM RETURNS FURNISHED BY THE MINE OPERATORS.

COMPANIES.	March, 1889.	March, 1888.	Difference.
Phila. & Reading RR	385,659	550,950	Dec. 165,291
Lehigh Valley RR	311,028	448,507	Dec. 137,480
Central RR. of N. J	362,614	361,055	Inc. 1,559
Del., Lack. & West. RR.	305,048	498,652	Dec. 193,604
Del. & Hud. Canal Co.	261,793	371,290	Dec. 109,497
Pennsylvania RR	316,160	303,933	Inc. 12,228
Pennsylvania Coal Co.	68,695	80,423	Dec. 11,727
N. Y., L. E. & W. RR.	92,065	70,919	Inc. 21,146
Total	2,103,063	2,685,729	Dec. 582,666
From Wyoming Region	1,221,251	1,661,833	Dec. 440,583
From Lehigh Region	279,279	216,327	Inc. 62,953
From Schuylkill Region	602,533	807,569	Dec. 205,036
Total	2,103,063	2,685,729	Dec. 582,666

	For year, 1889.	For year, 1888.	Difference.
Phila. & Reading RR.	1,291,034	859,736	Inc. 431,299
Lehigh Valley RR*	1,295,200	1,080,859	Inc. 214,341
Central RR. of N. J	1,149,560	1,051,983	Inc. 97,577
Del., Lack. & West. RR.	913,963	1,756,838	Dec. 842,878
Del. & Hud. Canal Co.	847,021	1,182,278	Dec. 335,256
Pennsylvania RR	846,126	969,229	Dec. 123,103
Pennsylvania Coal Co.	187,657	361,329	Dec. 173,672
N. Y., L. E. & W. RR.	292,694	207,493	Inc. 85,201
Total	6,823,254	7,469,743	Dec. 646,489
From Wyoming Region	3,634,668	5,592,104	Dec. 1,957,436
From Lehigh Region	1,266,139	316,599	Inc. 949,541
From Schuykill Region	1,922,447	1,561,041	Inc. 361,406
Total	6,823,254	7,469,743	Dec. 646,489

* An official correction has been made in the returns of this company.

The stock of coal on hand at tide-water shipping points March 31st, 1889, was 898,783 tons; on February 28th, 1889, 837,216 tons; increase, 61,567 tons.

Bituminous.

This branch of the coal trade has been somewhat affected by the stoppage of business in this port during the past week, but on the whole it may be considered as fairly good. Most of the large contracts have now been closed, and it is pretty well known that the coal has been sold in a number of cases at figures below those stipulated in the combination agreement. Just how this will be settled between the several companies we do not know, but if violation of such an iron-clad agreement as that which the companies entered into is to be permitted, then it is evident that no combination is needed to run the coal trade. So notorious has the cutting of the schedule become that some of the more honourable members of the trade are seriously contemplating withdrawing from the combination. Should they do this it would probably be the last combination we would see for some years, and prices would go still lower than they have been in the past. We do not, however, anticipate this, though the danger is certainly present. It may be that this fact will induce the companies to look into the abuses and apply the remedy.

The New York Central contract has not yet been placed. There will no doubt be close competition for this.

Vessel freights on Eastern trade have been a little higher, and the railroads are competing so closely with the ocean traffic from Baltimore that the proportion of sea-borne coal carried will probably decline; in fact, it has already declined to such an extent that the prominence of Baltimore as a coal shipping port is seriously affected.

The Pocahontas Company still pushes business with its accustomed energy, and is taking a good many of the large orders in the East. What profit the railroad company has in this business it is difficult to understand, but if the railroad stockholders like it the consumers of coal have no reason to complain. It is, perhaps, only a question of how long the railroad stockholders will continue to furnish the capital for the coal companies to make large dividends on.

We continue our quotations as heretofore. They are nominally unchanged, and, in fact, are not cut any more than they have been for some time past; perhaps even a little less, as the great temptation of large contracts is passing away: $2.30 to $2.50 f.o.b. at Baltimore may be considered a fair price for coal, and here in New York perhaps $3.25 to $3.50 alongside.

The Erie Canal opened on May 1st, except for the distance between Utica and Little Falls, which opens May 4th.

The contract of the Detroit Gas Company of Detroit, Mich., for 16,000 tons of coal was let April 27th. The Youghiogheny & Ashtabula Coal and Coke Company received the contract for 8000 tons, and the West Newton mines, operated by Osborn, Sager & Co., were awarded a contract for a like amount. The rate is $2.16 per ton for run of mine, free on board, afloat at the company's docks in Detroit. The contract was awarded at the rate of $2.65 per ton last year for coal passing over a one and a half inch screen, free on board, at Detroit. The rate this year is somewhat lower than that of the year before, taking into consideration the difference in the grade of coal.

BOSTON. May 2.

[From Our Special Correspondent.]

The market is running along quite smoothly. Jobbers have no reason to complain as far as anthracite trade is concerned. While there is nothing like a rush, there is a very fair call, considering the stocks in the

market and the unusual scarcity of vessels. This latter factor is more and more of a puzzler. The season for our lowest freight rates is rapidly nearing, with every indication that the extremes of last season will not be realized. The f.o.b. prices of coal remain unchanged, and the best company coal is firm at quotations, but considerable coal of the larger sizes not strictly first-class in quality, or at least in reputation, can be had at concessions, and taken altogether it is a market which will repay for time spent in thoroughly canvassing it before buying. The small sizes continue comparatively scarce and in demand at sellers' prices. The first of May and assessors' period being passed, a more liberal buying movement will follow if the general conditions are unchanged. As the most forcible argument of what the companies will do, the agents here point to what they have done during the past year in regulating the trade and, as all admit, they have done exceedingly well, all things (mild winter included) considered.

Bituminous coal business is always done in a comparatively short period, so far as the disposition of large contracts go, and this year is no exception. Expectations on the part of some that trade would be late, do not seem to have been realized. Here it is, May 1, and about everything of consequence is cleared up, and but poor picking is left. The pool price of $2.60 continues as the nominal quotation, with no open violations.

Freights are high and vessels are not in adequate supply, although there are continued expectations on the part of many that rates will be lower. New York rates continue at 70@80 cents, and Philadelphia 95@$1.00. At Baltimore $1 05@1 10 rules, with $1.10 the usual rate. At Hampton Roads $1.00 is the average rate.

The retail movement is very light. The combination prices are steady.

Receipts for the week were 27,608 tons anthracite, 26,629 tons bituminous; from January 1st to date 283,267 tons anthracite, and 289,918 tons bituminous. The evenness of anthracite and bituminous receipts is worthy of passing comment.

BUFFALO. May 2.

[From our Special Correspondent.]

The retail prices of anthracite coal, until further notice, commencing yesterday, are as follows: $4.50 for grate and egg; $4.75 for stove and chestnut; $5 for No. 4 stove, and $3.75 for pea per 2000 pounds delivered.

The comments made relative to the abbreviated anthracite coal statement issued last month in lieu of the usual document were anything but of complimentary character.

There are no features of interest to note in the bituminous coal trade here, or at points tributary. The bituminous operators do not make any statements of consequence to jot down, and are reticent in all conversations which might draw from them their ideas on the situation as it exists at present.

Stocks of hard and soft coal here large.

Coke quiet and unchanged. A Connellsville newspaper says the trade is in grave danger of demoralization, and that one-fourth of the ovens in that district are idle. Over production and keen competition have produced bad results, such as cutting rates, men out of employ, etc. Later reports are more encouraging.

Lake freights on coal quiet, and at unchanged quotations. The strike among the coal handlers at West Superior has stopped shipments to that point. Ten cents per hour is the difference to be adjusted. The men at Duluth are in sympathy with their fellows at Superior, and have ceased work. One vessel coal laden left that port, returned to and unloaded at Washburn, and two vessels here cancelled contracts.

The shipments of coal hence by lake from April 25th to May 1st inclusive were 37,050 net tons, namely: 24,510 to Chicago, 5980 to Milwaukee, 1700 to Racine, 1800 to Duluth, 600 to Sheboygan, 600 to Detroit, 960 to Green Bay, 800 to Gladstone and 100 to Bay City; total shipments thus far this season 112,650 net tons. The rates of freight were 45c. to Chicago, Milwaukee, Sheboygan and Green Bay, 50c. to Racine, 40c. to Duluth, Superior and Gladstone, and 20c. to Detroit and Toledo per net ton.

The Lake Carriers' Association, at a meeting held here last week, takes very positive grounds in opposing the construction of a bridge over the Detroit River, holding that a tunnel is cheaper and more practicable. United States Commissioners were to take evidence on the subject yesterday at Detroit.

Mr. James T. Moore, for several years the agent here of the Riverview Coal Mining Company, has been appointed General Manager thereof, and will have charge of all its works at Riverview, on the Allegheny River. His office in Buffalo will not be discontinued.

A charter has been secured for a railroad to connect the Beech Creek with the Buffalo, Rochester & Pittsburg. The new line will commence at Gazzam, the western terminus of the Beech Creek, and connect with the Buffalo, Rochester & Pittsburgh at Big Run, a few miles north of Punxsutawney, giving a direct outlet from the mines to Western New York and the great inland lakes.

Bids are wanted by May 8th for soft coal by the New York Central & Hudson River Railroad Company for one year from June 1st, 1889.

The Rochester (N. Y.) Transportation Company is the name of a new organization with coal men for managers, viz: M. F. Brown, President; C. H. Blakeslee, Treasurer; C. C. Hicks, Secretary. The principal object of the company is the transportation of coal by water from Charlotte (Lake Ontario) and other lake ports to Canada and Western points.

A movement is contemplated to prosecute the parties guilty of violating the Inter-State Commerce Law in the manipulation of coal shipments over the Chicago & Northwestern and the Chicago, Milwaukee & St. Paul railroads. The firm benefited by the transactions and reductions is said to be Messrs. J. W. Ellsworth & Co., of Chicago. Here are two instances illustrating the method pursued: 1. Consignments of coal from Buffalo via Chicago to pro rating points west thereof have been reconsigned at Chicago to another destination, thus operating to reduce the rate east of Chicago 35c. per ton. 2. Coke from Connellsville, etc., consigned to a pro rating point west of Chicago, has been stopped at Chicago, and rebilled to Omaha (Neb.), Argentine (Kan.), St. Joseph (Mo.), and other points, reducing the rates of proportions east of Chicago 35c. per ton. Evidence shows a reduction of freight earnings since March 1st, 1889, to date of discovery, of over "$4000." The offending railroad lines are subject to heavy penalties.

PITTSBURG. May 2.

[From our Special Correspondent.]

Coal.—We have to report a dull and unsatisfactory market. Another rise in the upper rivers enabled coal men to send out the coal loaded in the pools, about 3,000,000 bushels. The shut-down is nearly complete and soon will be.

The nominal rates are:

PRICE OF COAL PER 100 BUSHELS = 7600 LBS.

First pool	$4.75	Fourth pool	$3.25
Second pool	4.50	Railroad coal	5.00@6.00
Third pool	3.90		

Connellsville Coke.—The coke trade made a gallant effort to brace up; cutting of prices ceased on account of a more liberal demand. Production showed a material increase. It would hardly be safe to regard this as a permanent advance. Just who started the cutting of prices is a matter of dispute, but the guilt is not confined to any particular firm. Eleven thousand one hundred and forty-four of the 13,266 completed ovens in blast and 2122 idle. Production last week, 98,727 tons, against 91,221 for the previous week; increase, 7506 tons. Shipments, 5800; previous week, 5545; increase, 255 cars. Crushed coke is growing in favor at Chicago and through the Northwest. Sales steadily increasing.

Quotations are as follows:

Furnace coke	$1.05@$1.10	Crushed	$1.50
To dealers	1.15	Foundries	1.25

Freight rates from the ovens to Pittsburg, 70c. per ton; to the Mahoning and Chenango valleys, $1.35; East St. Louis, $3.50; Cleveland, $2.80; Chicago, $2.75.

FREIGHTS.

Coal Rates in Iowa.—The Railroad Commissioners, at a meeting held last week, completed its revised schedule of coal freight rates, to go into effect May 13. The main change is on the short haul, the rate on the first five miles being reduced on soft lump and nut from 55 to 30 cents per ton. The reduction continues up to 70 miles. Beyond 70 miles the charge is slight.

The following rates per ton of 2240 lbs. for coal charters are reported:

From New York to: Boston, .70*; Cambridgeport, .75*; Fall River, .55*; Lynn, .80*; Medford, Mass., .75*; New Bedford, .55*; Newburyport, .90*; New Haven, .45; New London, .55*; Newport, .55*; Portsmouth, N. H., .85*; Quincy Point, .70*; Salem, Mass., .70*.

From Philadelphia to:—Boston, .95*; Charleston, .75; Fall River, .80@.90*; Georgetown, D. C., 1.00; Gloucester, 1.05*; Lynn, 1.20*, New Bedford, .80@.90*; Newburyport, 1.15@1.20*; New York, .90†; Norfolk, Va., 55@70; Portland, .95*; Portsmouth, N. H., 1.10*; Providence, .80@.90*; Richmond, Va., .60; Savannah, .80; Washington, 1.00.

From Baltimore to: Bangor, 1.25; Bath, Me., 1.25; Boston, Mass., 1.15; Bridgeport, Conn., 1.00; Charleston, .80; Fall River, 1.00@1.15; Galveston, 3.00@3.25; New Bedford, 1.00; Newburyport, 1.25@1.30; New Haven, 1.00; New London, 1.00; New York, 1.00; Portland, 1.15@1.20; Portsmouth, N. H., 1.20@1.25; Providence, 1.00; Quincy Point, 1.15; Richmond, Va., .70; Salem, Mass., 1.15; Savannah, .80; Somerset, 1.00@1.05; Williamsburg, N. Y., 1.00; Wilmington, N. C., 1.00.

* And discharging. † Alongside.

METAL MARKETS.

NEW YORK, Friday Evening, May 3, 1889.

Prices of silver per ounce troy.

Ap'l	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.	May	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.
27	4.88½	42 3-16	92¼	1*	.....	.....	.....
29	4.88½	42⅛	92⅛	2	4.88½	42 1-16	92
30*	.....	.....	.....	3	4.88½	42 1-16	92

* Holiday.

Council bills declined $\frac{1}{16}$d. this week and silver showed corresponding weakness.

There were large shipments last week to London, making supply more than adequate to the demand and resulting in lower prices. Exchange is very firm, and gold shipments to Europe being made.

The United States Assay Office at New York reports total receipts of silver for the week, 95,500 ounces.

Foreign Bank Statements.—The governors of the Bank of England at their weekly meeting made no change in the minimum rate of discount, which remains at 2½ per cent. During the week the bank lost £150,000 bullion, and the proportion of its reserve to its liabilities was lowered from 42 36 to 39 per cent, against a reduction from 40$\frac{13}{16}$ to 37¼ per cent in the same week of last year, when its rate for discount was 2 per cent. The weekly statement of the Bank of France shows an increase of 2,050,000 francs gold and an increase of 2,200,000 francs silver.

Domestic and Foreign Coin.

The following are the latest market quotations for American and other coin:

	Bid.	Asked.
Trade dollars	$ .72	$ —
Mexican dollars	.72½	.73¼
Peruvian soles and Chilian pesos	.72¼	.72¾
English silver	4.83	4.87
Five francs	.94	.95
Victoria sovereigns	4.86	4.88
Twenty francs	3.88	3.92
Twenty marks	4.75	4.80
Spanish doubloons	15.60	15.75
Spanish 25 pesetas	4.80	4.85
Mexican doubloons	15.55	15.70
Mexican 20 pesos	19.50	19.65
Ten guilders	3.96	4.00

Copper.—Owing to the Centennial holidays this week business has been greatly interrupted, and, in fact, almost entirely suspended up to Thursday morning. In the copper market the general position is without any important change to report, and nothing definite has yet transpired regarding the result of the meeting in Paris on Friday last, to which we alluded in our last issue. It was reported yesterday, however, that the representatives of the American mining companies would leave Europe to-morrow without having come to any understanding or arrangement. Whether this report is authentic we are unable to say at present, but as predicted by us from the very beginning the obstacles in the way of an arrangement on a broad basis have apparently proved insurmountable. In the interest of the various mining companies and smelters some kind of an arrangement to deal with, output and stocks is apparently very desirable; but on the other hand the enormous stocks have now got into the hands of financially strong people and many deeply interested parties are now of opinion that the market may be safely left to itself without any artificial support, as even if a further decline in prices took place things would quickly adjust themselves.

The London market for G. M. B. copper has been subjected to a considerable amount of fluctuation during the week, opening on Monday morning at £37 7s. 6d. to £37 10s. spot, and £37 10s. to £37 15s. three months, and rising later on to £38 5s. spot, and £38 7s. 6d. three months; it afterward relapsed about 5s, but subsequently rallied again, and closes to-day (Friday) at £39 to £39 2s. 6d. for spot and future.

Best selected copper is quoted in London £46 to £47; tough copper, £44 to £45, and strong sheets £50 to £51.

The only transaction reported in the New York market was a lot of lake copper on the 29th ult. at 14¼c. per pound.

According to cable advices received from Messrs. Henry R. Merton & Co., the statistics of stocks have decreased for the second half of April 2200 tons.

The Paris Tribunal of Commerce has decreed the judicial liquidation of the Société des Métaux, and a meeting of creditors attended a meeting in one of the rooms of the Tribunal on April 27th. The Public Prosecutor has also instituted proceedings against MM. Secretan and de Laveissiere, the manager and chairman, and other members of the board, for infractions of Art. 419 of the Penal Code, which punishes with imprisonment from one month to one year, and fines of 50 francs to 10,000 francs, collusion and manœuvres with the object of influencing the prices of merchandise, and impeding the free action of the laws of demand and supply.

The report of the liquidation of the Société des Métaux says that the liabilities of the concern exceed its assets by about 50,000,000 francs.

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

	Copper matte.	Lbs.	
To Liverpool			
By S. S. Celtic	Bbls 214	224,515	$12,675

Tin.—Whilst almost all the tin arriving lately in this country has gone at once into consumption, the market in London has continued in a downward direction, and a further decline of about £1 10s. has taken place during the week.

The dealings in London have been on a pretty large scale from day to day. Shipments from the east have not been so heavy as was anticipated. The latest quotations in London are: £89 17s. 6d. to £90 spot, and £90 10s. to £90 15s. futures. In our home market some transactions took place early in the week at 20·30 spot, and closing quotations to-day are: Spot, 20·30; May, 20·30; June, 20·35; July, 20·40.

Lead.—At the end of last week the value of lead had settled down to 3·60c. with very little disposition on the part of either buyers or sellers to do anything. During the holidays it became known that the Treasury had appointed a day for a hearing in the question of the desirability of continuing to admit importations of silver-lead ores free of duty and this encouraged the speculative operators to work the market up, and we have to quote our closing prices to-day at 3·75 spot, 3·75 May, 3·77½ June and 3·77½ July.

Consumers have not yet shown much disposition to rush in to buy, and as the question of imposing a duty on such ores has only arrived at the point when the pros and cons are to be discussed, it may be more prudent to act with a little caution.

St. Louis, Mo.—Messrs. John Wahl & Co. telegraph us to-day as follows: Subsequent to our last week's report a few hundred tons were sold at 3·40@3·45c., when suddenly a stronger feeling manifested itself, and a few small lots have been placed at 3·45c. Buyers seem to have more confidence in the market, and are

looking around more freely. Both refined and common unobtainable at the close below 3·45c.

Spelter continues rather irregular, but a slightly better demand is observed. We quote prime Western at 4·65@4·67½.

In London ordinaries are quoted at £17 10s., and specials £17 12s. 6d. to £17 15s.

Antimony is still in very good demand at rather higher prices. We quote Cookson's 13½@13¾c.; Hallett's 12½c.@12¼c.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, May 3, 1889.

The Centennial celebration during the past week has cut down the business to a lower point than we have heretofore had to report. For some time past there has been but little activity in the iron trade and the "boomlets" that have been started from time to time in the West have not extended to this market; on the contrary, the tone of the market has been steadily "bearish" and prices, where they have been maintained nominally, have been kept up in the absence of business. There has been a good deal of talk here about an improvement in the iron business to have occurred even before this date, but it has made no appearance. As we pointed out some time ago, when $18 was announced as the price of No. 1 Foundry iron, there was a good deal of Southern iron selling at a lower figure than this. This has continued to be the case, and during the current week we hear of sales of 1000 tons No. 1 Southern Foundry, it is said, at $16. In the East it is rumored that No. 1 Foundry has also been offered at this figure, but for this we are not able to answer. There is no doubt whatever that a good deal of Southern iron has been offered and some sold at figures below our regular quotations. It is also true that a few of the larger Southern companies maintain prices pretty well up to our Eastern standards, but the same grade of iron made in the same district from similar ores and coal are still being offered at low prices and in the end this must tell upon quotations. We continue to quote No. 1 Foundry at $17@$18; No. 2 Foundry, $16@$17, and Forge, $15@16. These figures can be shaded under favorable circumstances.

Scotch Pig.—We have nothing new to report in this article. Prices continue high here on account of the boom in the Scotch market, and trade is correspondingly dull, with a probability of becoming still worse.

Spiegeleisen.—There has been no business reported in this article, or in ferro-manganese, and prices continue nominally unchanged.

Steel Rails.—Nothing of importance has been transacted in this market, but Pittsburg is reported as again cutting prices heavily. It is stated that $26 has been accepted there for rails, and the effect has been to weaken the tone of our own market, though transactions have not yet reached that level. The consolidation of the Chicago mills, which is now assured, the chief company having now voted upon it, will tend to strengthen the rail market and will divert a portion of the rail capacity for production on to other classes of steel and iron.

Structural Iron and Steel.—The demand here is confined at present to some contracts for large building and gas works. Prices are cut to a very low point, owing to the dullness in the trade and competition from several of the large works. The Metropolitan Gas Light Company, of Brooklyn, recently gave a contract to Milliken Bros., at private figures, for the erection of a very large roof.

The Old Rail Market remains without change, with quotations at $22 to $23 for Tees.

Bar and Plate Iron is also dull, both in prices and the amount of business doing. We expect during the next few weeks to report some better business, but it will be confined to the manufactured articles and not to the crude iron, which seems to be rather more depressed than we have found it for some time.

We refer to our table of current prices for quotations of different articles coming under this list.

LOUISVILLE. April 29.

[Special Report by Messrs. HALL BROTHERS & Co.]

Extreme quietness prevailed during the past week. There were no transactions worthy of mention, buyers following the hand-to-mouth policy. The product of some new furnaces recently appearing on the market is being forced upon the trade in a way that has completely unsettled any feeling of satisfaction or confidence that buyers might have had, and in consequence the tendency is to try to pull prices lower; aside from this the market is about the same as previously reported. The current mail orders keep up to about the average.

Quotations, which are for cash f. o. b. cars at Louisville, will be found in our weekly register of prices.

PHILADELPHIA. May 3.

[From our Special Correspondent.]

Considerable commotion has been created in steel rail circles by the confirmation of rumors that have circulating for a few days that one or two mills in this State were taking orders below the usual quotations. The extent of the cut is represented to be one dollar. The anxiety of rail makers now is, as to how long this cutting will continue. Brokers, representing buyers, think there will be a combination of the rail makers to patch matters up; in fact, it is stated that the Board of Control have already recommended such a course. Some makers decline to accept orders at less than current quotations, which are given at $27 to $27.50, but it is supposed that large orders at a little less would be promptly accepted. Only small sales have been made in mills this side of Pittsburg. A good many inquiries are on the market, most of them from the South. In the pig-iron market expectations have been raised of another cut. Eastern makers have had concessions in coal and freights amounting to from 30 to 40 per cents per ton. This has as yet made no difference in prices. Buyers here are looking for large offerings of Southern iron at further concessions. All that is known here at present is that large deliveries are being made on old contracts in mills throughout the country. Whether the Southern iron makers will be able to take summer and fall orders at less than present quotations buyers do not seem to know. Those who are making the better and finer brands of Eastern irons are inclined to stand out for top prices on their brands. Lehigh and other Pennsylvania makes are held firmly, but the transactions up to this hour show that consumers are making no haste to cover forward requirements. In blooms there is nothing whatever to note. Fair sales are being made. Buyers are still offering to make muck bars at their own terms, but millmen are not booking much business. A better report comes this week from the interior bar iron mills, but city mills are not doing much more work. A few large orders have improved the market prospects. Nothing has been done in skelp iron. Sheet iron is dragging along slowly, but there is nothing of particular moment, outside of the fact that three or four large buyers have placed their contracts for the season. There is nothing new in nails, and an easy movement is in progress at old figures. Quite a number of good sized plate iron contracts have just been placed, and bridge builders are preparing specifications for a large amount of material that manufacturers say will strengthen the market decidedly when the orders are placed. Quite an improvement has set in for structural iron, but much of it is for building purposes. No concessions have been made. Old rails are very dull. There are several buyers in the market who want large lots, but they are not willing to pay the present asking prices. Among consumers stocks are low. Manufacturers are avoiding anything like an accumulation. There is no improvement in the coal trade.

PITTSBURG. May 2.

[From our Special Correspondent.]

Raw Iron—We have to report a very unsatisfactory market, the difference in the views of buyers and sellers not yet satisfactorily adjusted. Of course, both parties seem to think they hold the right view. We are reported gray forge iron at $14@$14.50 cash. At the same time, while sales were made at the former figure to a limited extent, we could name five leading iron dealers who have refused to sell thousands of tons at that figure, contending that good gray forge iron at that price is better than cash, and while they hold that opinion will not sell. With certain parties there is a feeling of confidence that is very remarkable. The idea is that while there may not be much change until later in the season, there must be a great improvement during the fall months, if not sooner, presuming, of course, that nothing of an

IMPORTS AND EXPORTS OF METALS AT NEW YORK APRIL 23 TO APRIL 25, 1889, AND FROM JANUARY 1.

IMPORTS.

Spelter.	Week. Tons.	Year. Tons.
Amer. Metal Co		67
Lamarche's Sons, H		5
Naylor & Co		33
Total		105
Corres. date, 1888		313

Nickel.	Lbs.	Lbs.
McCoy & Sanders		11,240
Total		11,240

Antimony.	Casks.	Casks.
Total	150	1,114
Corres. date, 1888		1,423

Pig Lead.	Lbs.	Lbs.
Erie Dispatch		17,428
Foley, E		85,000
Henderson Bros		22,445
Hendricks Bros		111,977
Total		236,850

Tin.	Tons.	Tons.
Amer. Metal Co	17	262
Bidwell & French		345
Bruce & Cook		7
Carter, Hawley & Co		11
Crooks & Co		88
Daval & Son, John		11
Hendricks Bros		70
Knauth, N. & Kuhne		10
Lehmarer, S. & Co		57
Mendel & Tompkins		1
Muller, Schall & Co		678
Naumann, F		1
Naylor & Co	84	785
Phelps, Dodge & Co		1,372
Pope, J. E., Jr		118
Schmarer & Co		11
Thomsen, A. A	11	151
Thomsen, D		75
Townsend, J. R	55	55
Wheeler & Co		1
Total	167	4,350
Corres. date, 1888	100	3,609

Tin Plates.	Boxes.	Boxes.
American Metal Co		30
American Metre Co		299
Brown & Co., V. H		350
Bruce & Cook		40,080
Byrne & Co., J		7,583
Central Stamp. Co		38,046
Coddington & Co		63,568
Cohen, S. M		272
Cohn & Co., H		2,916
Con. Fruit Jar Co		303
Cort & Co., N. L		41,623
Corbier, F. & S		1,455
Crooks & Co	160	42,583
De Milt & Co		7,349
Dickerson, V. D	1,465	131,804
Erie Dispatch		103
Foley, E		39
G. L. N		72
Holder & Herrick		271
Iron Clad M. Co		283
Ismay, J. B		350
Lalance & G		5,988
Lazard Bros	2,356	2,356
Lombard, Ayres		3,000
Merchant & Co	1,361	6,491
Mersick & Co		4,556
Morewood & Co		7,030
Newell Bros		150
Payne & Son		208
Phelps, Dodge & Co	3,095	218,055
Pratt Mfg. Co		77,923
Sanders Bros		479
Shepherd & Co		12,869
Somers Bros		569
Taylor & Co., N. & G		214
Thomsen, A. A	4,837	85,465
Warren & Co., J. M		3,134
Wheeler & Co		6,234
Whittemore & Co		10,560
Wolff & Reesing		500
Total	13,274	805,143
Corres. date, 1888	35,591	549,307

Pig Iron.	Tons.	Tons.
Bartlett, N. S		500
Crocker Bros		2,720
Crooks & Co		500
Henderson Bros		166
Godwin & Son, A. G		390
Irwin & Co., R		190
Martin, W. T		150
Naylor & Co		50
Page, Newall & Co		60
Perry & Ryer		125
Pope, J. E., Jr		250
Sheldon & Co., G. W		200
Stetson & Co		2,400
Walbaum & Co		250
Williamson & Co		1,125
Total		8,836
Corres. date, 1888	1,625	18,846

Steel Sheets, Billets, Forging, etc.	Tons.	Tons.
Abbott & Co		2,251
Ames, W. T		253
Baldwin Bros. & Co		15
Belcher, H. W	11	75
Bowker, C. F	16	116
Carey & Moen		108
Carter, G. F		200
Coddington & Co		21
Crenshaw, Hugh		27
Crooks & Co	5	290
Cortis, R. J		408
Curran, J		5
Dana & Co	501	8,556
Downing & Co	23	131
Erie Despatch		40
Hugill, Chas	2	86
Ismay, J. B		174
Lalance, & G		106
Leng's Sons, J. S		114
Lundberg, G		50
Mersick & Co		5
Milne & Co		1,204
Montgomery & Co	5	5
Naylor & Co	21	2,152
Newton & S		21
Oelrich & Co	50	319
Pierson & Co		276
Pilditch, F. S		67
Power, C. W		36
Prosser, Thos		386
Roebling's Sons		101
Schulze & R		7
Standard Oil Co		112
Strouse & Co., M		6
Temple & L		12
Wagner, W. F	15	324
Wallace & Co		5
Whitney & W		30
Wiel Elie		44
Wiell & Co		7
Williams & W		93
Wolff, R. H		246
Total	626	18,478
Corres. date, 1888	325	2,167

Bar Iron.	Tons.	Tons.
Abbott & Co., J		670
Bacon & Co		87
Downing & Co		230
Jacobus, E. G		17
Milne & Co		89
Muller, Schall & Co		10
Ogden & W		7
Plenty, John		2
Troment, F		440
Wells, F., & Co		15
Total		1,572
Corres. date, 1888	96	1,918

Steel and Iron Rods.	Tons.	Tons.
Abbott & Co., J		1,151
American S. Co		450
Boker, H		3
Bruce & Cook		8
Carey & Moen	23	393
Crabb & Co., W		15
Dana & Co		1,915
Downing & Co		580
Fuller, D. & T		11
Galpin, S. H		76
Hazard Mfg. Co		20
Heyn, A		1,154
Lilienberg, N		56
Lundberg, G		56
Lundell, C. G		50
Milne & Co		301
Montgomery & Co		16
Muller, Schall & C		202
Naylor & Co		7,249
Nichols, B. J		10
Page, N. & Co		274
Pratt Mfg. Co		30
Roebling's Son		769
Wheeler & Co., E. S		120
Whitney & Co		70
Wolf & Co	9	2,257
Wright, P. & Co		3
Total	33	17,889
Corres. date, 1888	1,077	21,541

Old Rails.	Tons.	Tons.
Baldwin Bros. & Co		240
Bowring & A		57
Crossman & Bro		320
Henderson Bros		150
Neumark & Gross		3,186
Perkins, C. L		433
Perry & Ryer		177
Sheldon & Co		203
Ward & Co., J. E		21
Total		4,787
Corres. date, 1888	100	5,602

Scrap Iron.	Tons.	Tons.
Burgass & Co		162
Downing & Co		250
Funch, E. & Co		397
Spaulding & Co		172
Ward & Co., J. E		269
Watjen, F. & Co		152
Total		1,402
Corres. date, 1888	70	1,962

Sheet Zinc.	Lbs.	Lbs.
Crooks & Co		276,468
Lemarch's S's, H		1,554
Total		278,022

Sheet Iron.	Tons.	Tons.
Coddington & Co		346
Downing & Co		16
Kelly, Hugh		5
Total		367
Corres. date, 1888	40	567

Charcoal Iron.	Tons.	Tons
Bacon & Co		97
Downing & Co	100	671
Lilienberg N		6
Milne & Co		94
Muller, S. & Co		110
Naylor & Co		45
Page, N. & Co		704
Total	100	1,30

Spiegeleisen.	Tons.	Tons.
Abbott & Co		350
Blakely & McLellan		2,101
Crocker Bros		4,522
Dana & Co		3,786
Farris & Co		325
Geisenheimer & Co		85
Jansen, J. A	690	7,610
Naylor & Co		7,839
Perkins, C. L		1,401
Walbaum Bros		675
Total	690	29,097
Corres. date, 1888	1,000	17,364

Iron Ore.	Tons.	Tons.
Earnshaw, A		3,515
Total		3,515
Corres. date, 1888		10,190

EXPORTS.

Copper.	Pounds.	Pounds.
Abbott & Co		463,109
Amer. Metal Co		585,050
Hurst, F. W. J		113,000
Naylor & Co		1,197,024
Orford, C. & S Co		112,013
Piper, D. & Co		3,898
Seaman, Sam'l H		141,800
Total		2,615,894
Corres. date, 1888		18,076,885

Copper Matte.		
Abbott & Co		427,613
Amer. Metal Co	224,815	3,101,170
Am. & Paterson		134,220
Clark, W. A		879,019
Henriott, F		5,083,269
Seaman, Sam'l H		13,000
Wilms, Terbune		692,494
Total	224,815	10,330,783
Corres. date, 1888		22,375,111

Old Copper.		
Burgass & Co		32,460
Total		32,460
Corres. date, 1888		181,698

CURRENT PRICES.

These quotations are for wholesale lots in New York.

CHEMICALS.

Acid—Acetic, ℔ 100 lbs..... 2.00@2.25
Muriatic, 18°, ℔ 100 lbs ..... 1.15@1.20
Muriatic, 20°, ℔ 100 lbs..... 1.35@1.50
Nitric, 36°, ℔ 100 lbs ..... 4.00@5.50
Nitric, 42°, ℔ 100 lbs..... 5.50@7.00
Oxalic, ℔ 100 lbs..... 9.50@10.50
Sulphuric, 60°, ℔ 100 lbs. ..... 90@95
Sulphuric, 66°, ℔ 100 lbs ..... 95@1.25
Alkali—36 p. c..... 1.12½@1.15
Refined, 48 p. c ..... 1.22½@1 25
Refined, 58°..... 1.15@1.20
Alum—Lump, ℔ lb..... 1¾
Ground, ℔ lb ..... 1½@2
Lump ℔ ton, Liverpool £4 17 6
Sulphate of Alumina, ℔ ton..... £4 10
Aqua Ammonia—18°, ℔ lb..... 4¾
20°, ℔ lb..... 6
22°, ℔ lb ..... 6@7
26°, ℔ lb..... 10@11
Ammonia—Sul., ℔ 100 lbs... 3.30@3.35
Carb., per lb..... 7½@8½
Muriate per lb..... 6½@ 8
Arsenic—White, powdered, ℔ lb...3@3½
Red. ℔ lb 7
White, at Plymouth, ℔ ton. .. £12 2
Asbestos—Am., p. ton..... $50@$300
Italian, p. ton, c. i. f. L'pool..£18@£60
Asphaltum—P. ton 13.00
Prime Cuban, ℔ lb ..... 4½@5½c.
Hard, ℔ ton..... $28.00
Trinidad, refined, ℔ ton..... $30.00
Barytes—Sulph., Am. prime white17.00
Sulph., foreign, floated, p. ton....20.00
Sulph., off color, p. ton 13.00
Carb., lump, f.o.b. L'pool, ton . £6 5 0
No. 1, casks, Runcorn " "£4 10 0
No 2. bags, Runcorn " " 3 15 0
Bleach—Over 35 p.c., ℔ lb..... 1·60
Borax—℔ lb 9¼
Refined at Liverpool, ℔ ton.. ....£23
Brimstone—*See Sulphur.*
Bromine—℔ lb..... 37@38
Chalk—℔ ton..... 3.25
Precipitated, ℔ lb. ..... 4½@5
China Clay—English, ℔ ton13.50@18.50
Southern, ℔ ton..... 13.50
Chrome Yellow—℔ lb..... 10@25
Cobalt—Oxide, ℔ lb..... 2·60@2·90
Copper—Sulph. English Wks.,ton.... £26
Precip., Eng. Wks, unit....fluctuating
Copperas—Common, ℔ 100 lbs.52@57½
Best, ℔ 100 lbs..... 75@1.00
Liverpool, ℔ ton, in casks ..... £1 15s.
Cream of Tartar—Am. 99%....24@24¾
Powdered, 99 p c..... 24¾@25½
Emery—Grain, ℔ lb ..... 4½@5
Flour, ℔ lb ..... 2¾@3½
Feldspar—Ground, ℔ ton..... 15.00
Fuller's Earth—Lump, ℔ bbl. .90@95
Powdered, ℔ lb..... 1⅞@2
Gypsum—Calcined, ℔ bbl. 1.25
Iodine—Resublimed..... 3.50
Kainit—℔ ton..... 9.75@10.50
Kaolin—*See China Clay.*
Lead—Red, ℔ lb..... 6¾@7
White, American, in oil, ℔ lb....6¾@7¼
White, English, ℔ lb ..... 8½@8¾
Acetate, or sugar of ..... 12@13
Lime Acetate—Amer. Brown. .95@1.00
" Gray1.75@1.87½
Litharge—Powdered, ℔ lb. .... 6½@6¾
English flake, ℔ lb..... 9@9½
Magnesite—Greek, ℔ ton..... 10.00
Manganese—Crude, per unit ...23@.28
Oxide, ground, per lb..... 2½@6½
Mercuric-Chloride — (*Corrosive Sublimate*) ℔ lb..... ....60@62
Mineral Wool—℔ lb..... 2
Mica—In sheets according to size,
1st quality, ℔ lb..... 25@$6 00
Phosphate Rock—S. Carolina,
per ton, c. o. b. Charleston. 5.00@6.00
Ground, ex vessel New York.10.00@10.50
Canadian Apatite, lump, f. o. b. at
Montreal, ℔ ton 16 00
Phosphorus—℔ lb..... 70@75
Plumbago—Ceylon, ℔ lb. .... 4@5
American, ℔ lb..... 5@7
Potassium—Cyanide, ℔ lb.... .30@40
Bromide, ℔ lb..... 33
Chlorate, ℔ lb..... 13¾@15½
Carb. ℔ lb..... 4.70@5.50
Caustic, ℔ lb..... 7½@8
Iodide..... 2.70@2.75
Muriate, ℔ 100 lbs.... 1.82½@1.90
Nitrate, refined, ℔ lb..... 6@8
Bichromate, ℔ lb ..... 11½@12
Sulphate, ℔ 100 lbs. 2 40
Yellow Prussiate, ℔ lb..... 17½@18
Red Prussiate, ℔ lb..... 42@45
Pumice Stone—Select lumps, lb. 3¼@7
Original cks., ℔ lb..... 1¾
Powdered, pure, ℔ lb..... 2¼@2½
Pyrites—Non-cupreous, p. unit, s. 5d.
Quartz—Ground, ℔ ton..... 16.00
Rotten Stone—Powdered, ℔ lb..3¼@3¼
Lump, ℔ lb..... 6@10
Eng., powdered, ℔ ton..... £4
Lump, ℔ ton..... £5
Salt—Liverpool, ground ℔ sack . 80@85
Turk's Island, ℔ bush ..... 25@27
Salt Cake—℔ lb..... 50@57
Saltpeter—Crude, ℔ lb..... 5@5¾
Refined, ℔ lb..... 6@8
Soda Ash—Carb.,48 % 100 lb...1.92½@1.30
High test..... 1.12½@1.15
Caustic, 48 % ..... 1.23¾@1 30
Soda Caustic, 60%..... 2 40
" " 70%..... 2.15 @2.20
" " 74-6%..... 2.15 @2.20
Sal, English, ℔ 100 lbs.... .90 @1.00
Sal, American, ℔ 100 lbs .. .85
Nitrate, ℔ 100 lbs..... 2.15
Strontium—Nitrate ℔ lb..... 9@9½
Sulphur—Roll, ℔ lb..... .... 1¾
Flour, ℔ lb 2
Crude Brimstone, 2s., ℔ ton.20.00@21.00
Crude Brimstone, 3ds, ℔ ton.19.00@19.50
Talc—Ground French, ℔ lb . ...1¼@1½
Domestic, ℔ lb ..... 1@1½
c. i. f. Liverpool, ℔ ton..... £4 5 0
Vermillion—American, ℔ lb.. .. 61
English, ℔ lb.. ..... 82@85
Vitriol—(Blue), Ordinary, ℔ lb. 6 @6½
Extra, ℔ lb. 7
Zinc Oxide—Am., Dry, ℔ lb. 4½
Antwerp, Red Seal, ℔ lb..... ....6@6½
Paris, Red Seal, ℔ lb. ..... 6½@7
* Spot

BUILDING MATERIAL.

Bricks—Pale, ℔ 1,000 ..... 3.25@3.75
Jerseys, ℔ 1,000..... 6 75@7 50
Up Rivers, ℔ 1000..... 7.50@7.75
Haverstraw seconds, ℔ 1000... 8.00
Haverstraw firsts ℔ 1,000.... 8.00@8.50
Fronts, nominal, ℔ 1000.
Croton..... 14.00@16.00
Wilmington..... 20.00@21.00
Philadelphia..... @28.00
Trenton ..... @28.00
Baltimore.....
Building Stone—Amherst
freestone, ℔ cu. ft... ..... 95@1.00
Brownstone, ℔ cu. ft. ..... 1.00@1.35
Granite, rough, ℔ cu.ft..... 45@1.25
Granite, Scotch ℔ cu ft.. .. 1.00@1.15
Cement—Rosendale, ℔ bbl . .90@1.10
Portland, American, ℔ bbl. . 2 15@2 45
Portland, foreign, ℔ bbl.. .. 2.40
Portland, " special brands.2.45@3.75
Roman, ℔ bbl. ..... 2.65@2.85
Keene's coarse, ℔ bbl..... 4.50@5.50
Keene's fine, ℔ bbl..... 7.00@8.25
Slate—Purple and green roofing, ℔ 100 ft ..... 7.00@7 50
Red roofing, ℔ 100 sq. ft.... .10.00@15.00
Black, roofing, ℔ 100 sq. ft... 4.50@5.25
Lime—Rockland, common ℔ bbl... 1 00
Rockland, finishing, ℔ bbl..... 1.20
St. John, com. and finish, ℔ bbl. .90
Glens Falls, com. and fin., ℔ bbl .80@1.10
Labor—Ordinary, ℔ day..... 1.50@2.00
Masons, ℔ day..... 4.00
Plasterers, ℔ day..... 4.00
Carpenters, ℔ day..... 3.50
Plumbers, ℔ day..... 3.50
Painters, ℔ day..... 2.50@3.50
Stonesetters, ℔ day..... ..3.50@4 00
Tilelayers, ℔ day..... 3.50@4.50
Bricklayers, ℔ day..... 4 00

THE RARER METALS.

Aluminum—(Metallic), per lb...$8.50
Arsenic—Metallic, per lb..... 20
Barium—(Metallic), per lb..... 975.00
Bismuth—(Metallic), per lb..... 2.40
Cadmium—(Metallic), per lb 1.25
Calcium—(Metallic), per oz..... 150.00
Cerium—(Metallic) per oz..... 160.00
Chromium—(Metallic), per lb...200 00
Cobalt—(Metallic), per lb..... 6.00
Didymium—(Metallic), per oz.. .160.00
Erbium—(Metallic), per oz.... ...140.00
Gallium—(Metallic), per oz 3250.00
Glucinum—(Metallic) per oz .. 250.00
Indium—(Metallic), per oz..... 158.00
Iridium—(Metallic), per lb.....650.00
Lanthanum—(Metallic), per oz.175.00
Lithium—(Metallic), per oz.....160.00
Magnesium—Per lb..... .. .. 4.50
Manganese—Metallic, per lb... 1.10
Chem. pure, per oz. 10.00
Molybdenum—(Metallic), per oz 6.00
Niobium—(Metallic), per oz..... 128.00
Osmium—(Metallic), per lb 640.00
Palladium—(Metallic), per lb...400.00
Platinum—(Metallic), per lb. ..140.00
Potassium—Metallic, per lb... 28.00
Rhodium—(Metallic), per lb.....512.00
Ruthenium—(metallic), per oz.112.00
Rubidium—(Metallic), per oz...200.00
Selenium—(Metallic), per oz.. .. 3.00
Sodium—(Metallic) per lb. .. 2.75
Strontium—(Metallic), per oz..128.00
Tantalium—(Metallic) per oz...144.00
Telurium—(Metallic) per oz.... 9.00
Thallium—(Metallic) per oz..... 3.00
Titanium—(Metallic) per oz.....32.00
Thorium—(Metallic) per oz.....272.00
Tungsten—(Metallic) per oz..... 1.25
Vanadium—(Metallic), per oz..320.00
Yttrium—(Metallic), per oz .. .144.00
Zirconium—(Metallic), per oz..240.00

METALS.

Aluminum—
Bronze (10 %), ℔ lb..... 46c.
Copper—
Lake Ingot, Spot, ℔ lb..... 14½c.
Electrolytic, ℔ lb..... 12½c.
Casting Brands, ℔ lb..... ...
Chili Bars, London, ℔ ton £39
Sheet Copper (according to size), ℔ lb..... 25@30c.
G. M. B.—..... £39
Nickel.—
Metallic, per lb..... 60c.
Lead—
Domestic, Common, Spot.... 3·75c.
Foreign..... 4 75c.
Sheet, ℔ lb..... 6¾c.
Pipe, ℔ lb..... 6c.
Tin lined Pipe, ℔ lb..... 15c.
Shot, ℔ 25-lb. bag ..... 1·20c.
Spanish Lead, London.. ..£12 12s. 6d.
Tin—
Tin Plates ..... 13s. 6d.
Tin Spot in London ..... £90 5s.
Pig tin, spot in N. Y., ℔ lb.. 20 30c.
Zinc—
Domestic spelter, ℔ lb..... .. 4·65c.
Foreign spelter, ℔ lb.... .. 5·80c.
Silesian, ton..... £17 10s
Sheet, American, ℔ lb ..... 6¼c.
Antimony—Hallet's, per lb.... 12½c.
Cookson's, per lb..... 14c.
Star Antimony..... £47
Quicksilver—Per lb..... 56@58c.
London, ℔ flask..... £8
(By Cable.) April 11.
Rio Tinto ..... †£11 13-16 £11⅝
* Francs. †Closing.

IRON AND STEEL.
New York Prices.

American Pig-Iron.—At tidewater.
No. 1 X..... $17.00@$18.00
No. 2 X..... 16.00@ 17.00
Forge..... 15.00@ 16.00
Scotch Pig—Coltness .. $20.50@ .....
Clyde ..... 19 75@$ 20.00
Dalmellington..... 19.25@ 19.50
Summerlee .....
Shotts..... 20.50@ 21.00
Langloan ..... 20.00@ .....
By Cable to-day to the Metal Exchange :
Scotch Warrants..... 44s.
Coltness, at Glasgow ..... 55s.
Langloan, at Glasgow..... 54s.
Summerlee, at Glasgow..... 54s.
Gartsherrie, at Glasgow..... 52s. 3d.
Glengarnock, at Ardrossan. ....51s.
Dalmellington, at Ardrossan.....45s. 6d.
Eglinton, at Ardrossan ..... 44s. 9d.
Bessemer Pig—
Foreign, nominally.....
Domestic " ..... 15 50@ 16.50
Spiegeleisen—
German, 20 per cent..... ...
English, 20 " " ..... 28.00@ 28.50
" 30 " " ..... 33 00@ 34.00
Ferro Manganese, 80%..... 57.00@ 57.50
Steel Billets, " 30.00@ 33.00
Steel Nail Slabs, " 28.00@ 28 50
Steel Wire Rods, " 41.00@ 41.25
Steel Rails—
Heavy sections, at mill.... 28.00@ 28.00
Light " " .... 50.00@ 32.00
Structural Iron and Steel—
Bridge Plate, at mill.. .....2·00c@2·1c.
Angles, at mill ..... 1·90@2·00c.
Tees, at mill..... .. .. 2 40@2·50c.
Steel Angles, at mill.... ....2¼ @2½c.
Beams and Channels, on wharf, 2·3c. base
Steel Plates—
Tank and Ship, on wharf..... 2⅜@2½
Shell, on wharf..... .... 2¾@3
Flange, " ..... 3 @3¼
Fire-Box, on wharf..... 3¾@4½
Iron Plates—
Common tank, on wharf....1·9@2·2c.
Refined, on wharf..... .....2·3@2 4c.
Shell, " ....2¼@2 4c.
Flange, " ..... . 3·4@3·5c.
Extra flange..... 3¼@4
Bar Iron—
Refined..... 1·7@2·0c.
Common ..... 1·55@1 65c.
Merchant Steel—
American tool ..... 7½@10c.
Special grades..... 13 @20c.
Crucible machinery ..... 5 @6c
" spring..... 4 @4½c.
Bessemer machinery..... 2·0@2·75c.
" spring..... 2·7@2·9c.
Cast-Iron Pipe—At works:
According to size..... $25 00@$31.00
Wrought Iron Pipe—nominal—
Butt-Welded, Plain and Tarred, 55% disc; Galv., 45% disc.
Lap-Welded, Plain and Tarred, 65% disc.; Galv., 55% disc.
Boiler Tubes—Per cent disc.....62½%
Rail Fastenings—
Spikes..... 2·1@2·15c. delv'd
Angle Fish-bars..... .1 85@2c.
Bolts and Sq Nuts.....2·9 @3c
" Hex. " ....3·1 @
Wrought Scrap—
No. 1 Yard *to vessel*..... 20.50@ 21.50
Cast Scrap .... 15.50@ 16.50
Old Car Wheels..... .. 17.00@ 18.00
Old Rails—Tees .. .... 23.00@ 23.50
—Doubles ....@ 25 00
Nails—In car-load lots. .. $1.80@ $2.00
—From store . ..... 1.85@ 2.00
Nails ..... $1.90 usual discount
Steel Nails..... $1 90
Wire Nails..... 2.55
Two per cent off for cash. * At works

Louisville Prices.

Hot Blast Irons—
So. Coke, No. 1..... ....$15.00@$15.50
" " No. 2..... 14 25@ 14 75
" " No. 3..... 13 25@ 13.75
Mahoning Valley (Lake Ore Mixture) ..... 18.00@ 19.00
So. Charcoal, No. 1..... 17.25@ 17.75
" " No. 2 ..... 16.25@ 16.75
Missouri Charcoal No. 1.... 18.00@ 18.50
" " No. 2.... 17.75@ 18.00
Forge Irons—
Neutral Coke..... $13.25@$13.75
Cold Short ..... 13.00@ 13.50
Mottled..... 12.25@ 12.50
Car Wheel and Malleable Irons—
Southern (standard brands).$21.50@$22.00
" (other brands)..... 17.50@ 18.00
Lake Superior..... 22.00@ 22 50

Pittsburg Prices.

Coke or Bituminous Pig—
Foundry No. 1..... $16.25@16.50
Foundry No. 2..... 15.50@.....
Gray Forge No. 3..... 14.25@14.50
" " No. 4..... 14.00@.....
White ..... 14 00@ .....
Mottled..... 14.00@ .....
Silvery ..... 16.00@18.50
Bessemer..... 16.25@16.50
Low Phos..... 20.50@21.00
Charcoal Pig—
Foundry No. 1..... 23.50@24.50
Foundry No. 2..... 22.00@23.50
Cold-Blast..... 25.00@28.00
Warm-Blast..... 24 00@25.00
10 + 12% Spiegel..... .... 37.50
2% Spiegel 31.00
Muck-Bar..... 26.75@27.00
Steel Blooms..... .....@28.00
Steel Slabs ..... 27.00@27.25
Steel Crop Ends..... 18.50@18.75
Steel Bloom Ends..... 18.00@18.25
Ferro Manganese, 80% .... 59.00@60.50
Steel Billets..... 27.50@27.75
Old Iron Rails..... 22.75@23.00
Old Steel Rails..... 17.50@18.00
No. 1 W. Scrap..... 19.00@19.50
No. 2 W. Scrap ..... 18.00@.....
Steel Rails..... 28.00@.....
" light sections... 28.00@31.00
Bar Iron, nominal..... 1.75@ 1.80
Iron Nails..... 1.90
Steel Nails..... 1.90
Wire Nails..... 2.25

Philadelphia Prices.

Foundry No. 1..... ... $17.50@18.00
Foundry No. 2. ..... 16.50@17.00
Gray Forge..... 15.00@15.25
Bessemer Pig..... 20.00@ .....
Steel Rail Blooms..... .....@.....
Foreign Bessemer..... 20.00@ .....
Spiegeleisen..... .....@27.50
Scrap, Selected..... 22.00@.....
No. 1..... ... 21.00@21 50
Cargo Scrap..... ... 20.00@21.00
Muck-Bars..... .....@27.00
Merchant Iron..... .. 1.60@ 1.80
Plate Iron..... ... 1.80@ 2.00
Tank Iron ..... 2.00@ 2.10
Skelp Iron..... 1.70@ 1.85
Angles..... 2.00@.....
Beams and Channels..... .. 2.80@.....
Nails .... 1.60@ 1.90
Steel Rails. ..... 27.00@28.00
Old Rails..... 22.00@23.00

STOCK MARKET QUOTATIONS.

Birmingham, Ala.

COMPANY.	Bid.	Asked.
Ala. R. Mill Co.	....	$60
Ala. Con. C. & C. Co.....	$24@$26	
*Alice Furnace.	$101@$102	....
Bess. Land Co.	$23¾‡	‡$24⅞
Bir. Fur. & Mg.	$17⅛	$17½@$25
Bir. Mg. & Mg.	$100	$145@$150
Broken Arrow.	$2¼	$6
Decat. L. Imp.	....	‡$10¾
DecaturMin. L.	$20@$21	$24@$25
Enterprise Mfg.	....	$50
*Eureka	$101@$103	$107@$108
Hen. S. & M. Co.	$110‡	$115‡
Jagger Towley C. & C.....	....	$11@$11½
Mag-Ellen.....	$96	$100½
*Mary Pratt...	$100	....
†Sloss I. & S....	$94	$95
††Sloss I. & S..	$67@$67½	....
Tenn. C. & I. Co.	$37	..
*Williamson...	$99¾	....
Woodstock I. Co	$54½@$55	$60

Sales during the week ended April 20th.

Bessemer L. Co.....	50 shs.	$24
Decatur L. Imp. ...160 shs.		$10¾@$11½

* Bonds. † First mortgage. †† Second mortgage. ‡ Selling price.

Pittsburg, Pa.

COMPANY.	H.	L.	Closing
Allegheny Gas Co.	36.00	36.00	36.00
Bridgewater GasCo	41.00	40.00	41.00
Chartiers Val. Gas.	54.50	53.00	53.00
La Noria Mining ..	2.00	1.63	1.75
Manufact'rs Gas Co	25.00	25.00	25.00
Nat. Gas Co. of W. Va	62.00	58.00	62.00
New York & C. Gas Coal...	37.00	37.00	37.00
Pennsylvania Gas..	22.00	22.00	22.00
People's N. G. & P. Co.....	18.00	16.50	18.00
Philadelphia Co...	42.00	39 50	39.63
Pine Run Gas.. .	99.00	86.00	86.00
Pittsburg Gas. ..	62.00	62.00	62.00
Silverton Mg. Co..	1.00	1.00	1.00
South Side Gas.. ..	26.00	26.00	26 00
Tuna Oil Co..	67 00	67.00	67.00
Washington Oil Co.	75.00	75.00	75 00
W'house A. B Co..	120.00	115.00	119.00
W'house B. Co. Lm.	64.00	64.00	64.00
W'house E. Light.	59.63	57.50	57.50
Wheeling Gas ...	34.00	32.00	33 38

Sales during the week ending May 2:

Chartiers Val.Gas.	35 shs.	..@$54¼
La Noria Mg. Co..	250 "	@ 1¾
Philadelphia Co..	545 "	39¼@ 42¼
W'house E. Light.	60 "	57¾@ 59
Wheeling Gas	600 "	32½@ 33½

Foreign Quotations.

COMPANY.	London. Highest.	April 20. Lowest
Alturas Gold, Idaho...	4s.	3s.
Arizona Copper, Ariz..	18s. 6d.	18s.
Callao Bis , Venz.....	6s. 6d.	5s. 6d.
Carlisle, N. Mex	5s.	4s. 6d.
Colorado United, Colo..	4s.	3s.
Columbian, S. A.....	£2	£1¾
Comstock, Utah.... ..	£1¼	£1⅛
Cons. Esmeralda, Nev..	6s. 6d.	5s. 6d.
Denver Gold, Colo.. ..	1s. 6d.	1s.
Dickens Custer, Idaho.	2s. 3d.	1s. 9d.
Eberhardt, Nev	1s. 6d.	1s.
El Callao, Venezuela....	£2¼	£2
Elmore, Idaho.....	4s. 6d.	4s.
Empire, Mont	4s. 6d.	3s. 6d.
Flagstaff, Utah.....	1s. 6d.	1s.
Garfield, Nev... ..	8s.	6s.
Hambley Freehold, N.C.	£1½	£¾
Ilex, Cal.....	£⅝	£½
Josephine, Cal	10s.	8s.
Kohinoor, Colo.....	4s.	3s. 6d.
Mason & Barry, Port...	£6¼	£6¼
Montana Lt., Mont	£2 1-16	£1 15-16
New California, Colo...	7s 6d.	7s.
New Consolidated.....	1s. 6d.	1s.
New Emma, S., Utah..	5s. 6d.	5s.
New Hoover Hill.....	2s. 6d.	2s.
New La Plata, Colo...	1s. 6d.	1s.
Old Lout, Colo.....	£1¼	£1
Pittsburg Cons.. Nev...	16s. 3d.	14s. 9d.
Quebrada, Venezuela...	£⅞	£⅝
Richmond Con., Nev...	£1⅛	£1⅛
Ruby & Dunderberg, Nev	1s. 6d.	1s.
Russell Gold, N. C.....	3s.	2s.
Sierra Buttes, Cal....	£13-16	£11-16
Stanly, N. C	5s.	2s. 6d.
United Mex can, Mex...	£3¼	£3
U. S. Placer, Colo.....	2s.	1s.
Viola Lt., Idaho	5s. 6d.	4s. 6d
Paris	*	April 11.
Boleo, Mex	440.00	440.00
East Oregon, Ore.....	45.00	45 00
El Callao, Venezuela..	51.00	51.00
Forest Hill Divide, Cal.	390.00	390.00
Golden River, Cal	390.00	390.00
" " parts.. .	60.00	60 00
Lexington, Mont. ...	115.00	115.00
" parts	4.50	4.50
Tharsis, Spain.. ...	106.25	106.25

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par	Assessments. Total levied.	Date and amount of last			Dividends. Total paid.	Date and amount of last.		
1	Adams, S. L.	Colo.	$1,500,000	150,000	$10	*				$555,000	Jan.	1887	.15
2	Alice, S. C	Mont	10,000,000	400,000	25	*				775,000	Dec.	1888	.06¼
3	Alma Cons., G	Idah.	300,000	30,000	10	*				45,000	Dec.	1888	.50
4	Alturas, G	Idah.	1,500,000	300,000	5					262,500	Jan.	1888	.37½
5	Amy & Silversmith, S.	Mon.		341,419						247,530	Aug.	1887	.12½
6	Atlantic, C	Mich	1,000,000	40,000	25	$280,000	Apl.	1875	$1.00	520,000	Feb.	1889	2.00
7	Argenta, S	Nev.	10,000,000	100,000	100	325,000	July	1885	.10	40,000	Feb.	1880	.20
8	Aspen Mg. & S., S. L.	Colo.	2,000,000	200,000	10	*				240,000	Apl.	1889	.20
9	Aurora, I	Mich	2,000,000	100,000	20					155,000	Oct.	1887	1.87½
10	Bassick, G. S.	Colo.	10,000,000	100,000	100	*				400,000	Mar.	1884	1.00
11	Belle Isle, S	Nev.	10,000,000	100,000	100	155,000	Apl	1889	.10	300,000	[illegible]	[illegible]	.25
12	Belcher, G. S.	Nev.	10,400,000	104,000	100	2,822,000	Feb.	1889	.50	15,397,200	Apl	1876	1.00
13	Bellevue Idaho, S. L.	Idah.	1,250,000	125,000	10	76,250	Nov.	1888	.15	187,500	Jan	1887	10
14	Bodie Con., G. S.	Cal.	10,000,000	100,000	100	550,000	Mar.	1889	.50	1,295,000	Apl.	1885	.50
15	Boston & Mont, G	Mon	2,500,000	250,000	10	*				520,000	Jun.	1886	.5
16	Boston & Mont., C. S.	Mon	2,500,000	100,000	25	*				500,000	Apl.	1889	1.00
17	Breece, S	Colo	,000,000	200,000	25	*				2,000	Feb.	1880	.01
18	Brooklyn Lead, L. S.	Utah	500,000	50,000	10					127,000	July	1887	.05
19	Bulwer, G	Cal.	10,000,000	100,000	10	105,000	Apr.	1889	.5	175,000	Jan.	1884	.10
20	Bunker Hill & Sull.	Idah.	3,000,000	300,000	10	*				150,000	Oct.	1888	.06⅔
21	Caledonia, G	Dak.	10,000,000	100,000	100	505,000	May	1885	.1	88,000	Apl.	1889	.08
22	Calumet & Hecla, C.	Mich	2,500,000	100,000	25	1,200,000				31,850,000	Feb.	1889	5.00
23	Carbonate Hill S. L.	Colo.	1,500,000	200,000	10	*				80,000	Apl.	1884	.05
24	Carlisle, G	N. M.	1,000,000	200,000	5					175,000	Dec.	1888	.12½
25	Castle Creek, G	Idah.	100,000	100,000	1					51,000	Oct.	1888	.03
26	Catalpa, S. L	Colo.	3,000,000	300,000	10	*				270,000	May.	1884	.10
27	Central, C	Mich	500,000	20,000	25	100,000	Sept	1861	.06	1,930,000	Feb.	1889	2.00
28	Chrysolite, S. L.	Colo.	10,000,000	200,000	50	*				1,650,000	Dec.	1884	.25
29	Colorado Central, S. L	Colo.	2,750,000	275,000	10	*				361,750	Feb.	1889	.05
30	Confidence, S. L.	Nev.		24,960		287,440	Apl.	1887	.50	199,680	Apl.	1889	1.00
31	Cons. Cal. & Va., G. S.	Nev.	21,600,000	216,000	100	108,000	Jan.	1885	.20	2,761,800	Apl.	1889	.50
32	Contention, S	Ariz.	12,500,000	250,000	50					†2,587,000	Dec.	1884	.25
33	**Cop. Queen Cons, C.	Ariz	1,400,000	140,000	10					140,000	Oct	1888	.50
34	Crescent, S. L. G.	Utah	15,000,000	600,000	25	*				228,000	Oct.	1888	.03
35	Crown Point, G. S.	Nev.	10,000,000	100,000	100	2,825,000	Oct.	1888	.50	11,588,000	Jan.	1875	2.00
36	Daly, S. L.	Utah	3,000,000	150,000	20					1,012,500	Apr.	1889	.25
37	Deer Creek, S. G.	Idah.	1,000,000	200,000	5	*				10,000	Oct.	1888	.05
38	Deadwood-Terra, G.	Dak.	5,000,000	200,000	25	*				‡1,000,000	Nov.	1887	.10
39	Derbec B. Grav., G. S.	Cal.	10,000,000	100,000	100	90,000	Dec.	1881	.10	180,000	May	1887	.10
40	Dunkin, S. L	Colo.	5,000,000	200,000	25	*				370,000	Apl.	1889	.05
41	Dunstone, G. S. L.	Mont	1,000,000	200,000	5	*				6,000	Nov	1888	.03
42	Eclipse	Colo.	100,000	100,000	1					20,000	Nov.	1887	.10
43	Elkhorn, G. S.	Mont	1,000,000	100,000	10	50,000	July	1883	.50	170,000	July	1887	.05
44	Empire Lt., G	Mont	500,000	100,000	5					70,500	Oct.	1887	.37½
45	Eureka Con., G. S. L.	Nev.	5,000,000	50,000	100	525,000	Mar.	1889	.25	4,955,000	July	1888	.25
46	Evening Star, S. L.	Colo.	500,000	50,000	10	*				1,425,000	Apl.	1889	.25
47	Excelsior, G	Cal.	10,000,000	100,000	100	560,000	Sept	1885	1.00	875,000	Oct.	1880	.25
48	Father de Smet, G.	Dak.	10,000,000	100,000	100	200,000	Nov	1878	1.00	1,125,000	Dec.	1885	.20
49	Franklin, C	Mich	1,000,000	40,000	25	220,000	Jun.	1871		800,000	Dec.	1888	2.00
50	Freeland, G. S. C.	Colo.	5,000,000	200,000	25	*				190,000	July	1886	.10
51	Fresno Enterprise, G	Cal.	5,000,000	100,000	50		Mch	1883	.10	110,000	July	1882	.10
52	Garfield Lt., G. S.	Nev.	500,000	100,000	5					85,000	Apl.	1888	.12½
53	Golconda, G. S.	Idah.	1,000,000	100,000	10					120,000	May	1888	.60
54	Gould & Curry, G. S.	Nev.	10,800,000	108,000	100	4,402,200	May	1889	.30	[illegible],800	Oct.	1870	10.00
55	Grand Central, S.	Ariz.	1,000,000	100,000	10					625,000	Dec	1882	.25
56	Grand Prize, S.	Nev.	10,000,000	100,000	100	625,000	Mar.	1889	.30	[illegible]	Mar.	1884	.25
57	Granite, S. L.	Idah.	500,000	500,000	1	*				10,000	Jun.	1888	.02
58	Granite Mountain, S.	Mont	10,000,000	400,000	25					6,200,000	May	1889	.50
59	Green Mountain, G.	Cal.	1,250,000	125,000	10	*				212,000	Nov.	1881	.07½
60	Hale & Norcross, G. S	Nev.	11,200,000	112,000	100	5,086,000	July	1887	.50	1,822,000	Aug.	1888	.50
61	Hecla Con., S. G. L. C.	Mont	1,500,000	30,000	50					1,272,500	Jan.	1889	.50
62	Hel'a Mg & Red, G. S. L	Mont	3,315,000	663,000	5	*				197,970	July	1888	.06
63	Holmes, S.	Nev.	10,000,000	100,000	100	300,000	Sept	1885	.10	75,000	Apl	1886	.25
64	Holyoke, G	Idah	200,000	200,000	1					27,000	Feb.	1883	.10
65	Homestake, G	Dak.	12,500,000	125,000	100	200,000	July	1878	1.00	4,381,250	Apr.	1889	.10
66	Honorine, S. L	Utah	500,000	250,000	2	37,500	Apl.	1889	.05	125,000	Sept	1887	.05
67	Hope, S.	Mont	1,000,000	100,000	10	*				233,252	Apl.	1888	.25
68	Horn-Silver, S. L.	Utah	10,000,000	400,000	25	*				4,000,000	Nov.	1884	.50
69	Hubert, G	Colo.	500,000	50,000	10	*				239,500	Oct.	1888	.11
70	Idaho, G	Cal.	310,000	3,100	100					5,135,150	Apl.	1889	5.00
71	Ideal, S. L.	Colo.	1,500,000	50,000	10					15,000	Oct.	1886	.05
72	Illinois, S	N.M.	100,000	100,000	1	*				45,000	Apl.	1889	.20
73	Independence, S.	Nev.	10,000,000	100,000	100	340,000	Oct.	1886	.20	225,000	Sept	1879	.25
74	Iron Hill, S.	Dak.	2,500,000	250,000	10	126,500	Jan.	1889	.03	156,250	Nov	1887	.07½
75	Iron-Silver, S. L	Colo.	10,000,000	500,000	20	*				2,500,000	Apl.	1889	.20
76	Jackson, G. S.	Nev.	5,000,000	50,000	100	237,500	Nov	1880	.20	50,000	Oct.	1886	.10
77	Jay Gould	Mont	2,000,000	40,000	5	*				365,000	Apl.	1889	.04
78	Jocuistita, S.	Mex.	2,500,000	250,000	10					1,200,000	Feb.	1888	.50
79	Jumbo, G	Colo.	2,000,000	200,000	10					35,000	Oct.	1887	.02½
80	Kentuck	Nev.	3,000,000	30,000	100	342,000	Nov	1881	.30	1,350,000	Dec.	1886	.10
81	La Plata, S. L.	Colo.	2,000,000	200,000	10	*				610,000	Sept	1882	.30
82	Leadville Cons., S. L. I.	Colo.	4,000,000	400,000	10	*				423,000	Apl.	1887	.05
83	Lexington, G. S.	Mont	4,000,000	40,000	100	*				565,000	Jan.	1885	2.00
84	Little Chief, S. L.	Colo.	10,000,000	200,000	50	*				800,000	July	1888	.10
85	Little Pittsburg, S. L	Colo.	20,000,000	200,000	100	*				1,050,000	Mch.	1880	.50
86	Marion Bullion, G	N.C.	500,000							15,000	Jan.	1886	
87	Martin White, S.	Nev.	10,000,000	100,000	100	1,175,000	Jan.	1889	.25	140,000	Dec.	1886	.25
88	Mary Murphy, G. S.	Colo.	350,000	3,500	100	*				175,000	May	1888	5.00
89	Minnesota, C	Mich	1,000,000	40,000	25	420,000	Apl.	1886	1.00	1,820,000	Mar.	1876	
90	Mono, G	Cal.	5,000,000	50,000	100	65,35	Mar.	1889	.25	12,500	Mar	1886	.25
91	Montana, Lt., G. S.	Mont	3,300,000	660,000	5	*				2,190,285	Jan.	1889	.06¼
92	Morning Star, S. L.	Colo.	1,000,000	100,000	10					775,000	Mar.	1888	.25
93	Moulton, S. G.	Mont	2,000,000	400,000	5	*				380,000	Dec.	1887	.07½
94	Mount Pleasant, G	Cal.	150,000	150,000	1	*				150,000	Feb.	1887	.30
95	Mt. Diablo, S.	Nev.	5,000,000	50,000	100	137,500	Jun.	1880	2.00	140,000	Jan.	1889	.40
96	Napa, Q	Cal.	700,000	100,000	7					290,000	Jan.	1883	.10
97	Navajo, G. S.	Nev.	10,000,000	100,000	100	485,000	Apl.	1888	.30	265,000	Apl.	1889	.10
98	New Guston, S.	Colo.	500,000	100,000	5					100,000	Dec.	1888	.50
99	N. Hoover Hill, G. S.	N. C.	300,000	120,000	2½	*				30,000	Dec.	1885	.06¼
100	Northern Belle, S.	Nev.	5,000,000	50,000	100	425,000	Jan.	1884	8.00	2,400,000	Apl.	1883	.50
101	North Belle Isle, S.	Nev.	10,000,000	100,000	100	350,000	Jan	1889	.50	230,000	May	1888	.50
102	North Star, G	Cal.	1,000,000	100,000	10					150,000	Dec.	1888	.50
103	Ontario, S. L.	Utah	15,000,000	150,000	100					10,925,000	Apr	1889	.50
104	Ophir, G. S.	Nev.	10,000,000	100,000	100	4,109,440	Sept	1888	.50	1,595,800	July	1882	1.00
105	Original, S. C.	Mont	1,500,000	60,000	25	*				123,000	July	1888	.05
106	Osceola, C	Mich	1,250,000	50,000	25	480,000	Apl.	1876	1.60	1,222,500	Mar.	1889	1.00
107	Oxford, G	N. S.	125,000	125,000	1	*				38,500	Oct.	1885	.02
108	Paradise Valley, G. S	Nev.	10,000,000	100,000	100	57,000	Apl.	1888	.15	150,000	Apl.	1887	.10
109	Parrott, C	Mont	1,800,000	180,000	10					354,000	Jan.	1889	.10
110	Peacock, S. G. C.	N.M.	2,000,000	200,000	10	*				60,000	Nov.	1886	
111	Plumas Eureka, G	Cal.	1,406,250	140,625	10					2,495,312	Apl	1889	.50
112	Plutus, G. S. C. L.	Colo.	2,000,000	200,000	10	*				20,000	Feb.	1886	.10
113	Plymouth Con., G	Cal.	5,000,000	100,000	50	*				2,280,000	Feb.	1888	.40
114	Quicksilver, pref., Q.	Cal.	4,300,000	43,000	100					1,599,593	May	1889	1.50
115	" com., Q.	Cal.	5,700,000	57,000	100					643,867	July	1882	.40
116	Quincy, C	Mich	1,000,000	40,000	25	200,000	Dec.	1862		5,170,000	Feb.	1889	5.00
117	Richmond, S. L.	Nev.	1,350,000	54,000	25	*				4,312,587	Jun	1887	1.25
118	Ridge, C	Mich.	500,000	20,000	25	219,938	Mar	1886	.50	99,785	Feb.	1880	.50
119	Robinson Con., S. L.	Colo.	10,000,000	200,000	50	*				585,009	Mar.	1886	.05
120	Robert E. Lee, S. L.	Colo	10,000,000	500,000	20					100,000	Dec	1882	.50
121	Savage, S.	Nev.	11,200,000	112,000	100	6,486,000	Jan.	1889	.50	4,460,000	July	1869	3.00
122	Shoshone, G	Idah.	150,000	150,000	1					7,500	Apl.	1883	.01
123	Sierra Buttes, G	Cal.	2,225,000	122,500	10					1,568,145	Apl.	1888	.12½
124	Sierra Nevada, G. S.	Nev.	10,000,000	100,000	100	6,175,000	Mar.	1889	.25	102,000	Jan.	1871	1.00
125	Sierra Nevada, S. L.	Idaho	1,000,000	¶	1	*				20,000	June	1888	.01
126	Silver Cord, G. S. L.	Colo.	5,000,000	500,000	10					275,000	Apl.	1889	.10
127	Silver King, S.	Ariz.	10,000,000	100,000	100	50,000	Jun.	1888	.50	1,950,000	July	1887	.25
128	Silver Mg. of L. V.	N. M.	500,000	500,000	1					25,000	June	1888	.05
129	Silverton, G. S. L.	Colo.	2,000,000	200,000	10	*				80,000	Nov	1886	.02
130	Small Hopes Cons., S.	Colo.	5,000,000	250,000	20	*				3,112,500	Dec.	1887	.20
131	Smuggler, S. L.	Colo.	600,000	60,000	10					66,700	Aug.	1883	.25
132	Spring Valley, G	Cal.	200,000	200,000	1	50,000	Oct.	1886	.25	50,000	Jan	1881	.25
133	Standard, G. S.	Cal.	10,000,000	100,000	100	25,000	Oct.	1884	.25	3,595,000	Jun.	1888	.05
134	Stormont, S	Utah	500,000	500,000	1	*				155,000	Nov	1881	.05
135	St. Joseph, L	Mo.	1,500,000	150,000	10	*				844,000	Dec.	1887	.20
136	Surinam, G	D. G.	3,000,000	600,000	5					105,000	Nov.	1887	.05
137	Swansea, G	Colo.	600,000	60,000	10	*				9,000	Apl.	1888	.02½
138	Syndicate, G	Cal.	10,000,000	100,000	100	38,729	July	1882	.15	48,308	Sept	1885	.10
139	Tamarack, C	Mich.	1,000,000	40,000	25	520,000	Apl.	1885	3.00	840,000	Apl.	1889	5.00
140	Tip Top, S	Ariz.	10,000,000	100,000	100	250,000	Sept	1883	.25	100,000	Nov	1881	.20
141	Tombstone, G. S. L.	Ariz.	12,500,000	500,000	25	*				1,250,000	Apl.	1882	.10
142	United Verde, C	Ariz.	3,000,000	300,000	10	*				97,500	Feb.	1884	.20
143	Valencia, M	N. H.	150,000	1,500	100	*				37,500	Apl	1886	2.50
144	Viola Lt., S. L.	Idah.	750,000	150,000	5	*				272,500	Oct.	1888	.37½
145	Ward Cons., S. L.	Colo.	2,000,000	200,000	10					10,000	Apl.	1889	.05
146	Yankee Girl	Colo	2,500,000	250,000	10					1,275,000	July	1887	.10
147	Yellow Jacket, G. S.	Nev.	12,000,000	120,000	100	5,508,000	Mar	1889	.50	2,184,000	Aug	1871	1.50
148	Webb City, L. Z.	Mo.	55,000	11,000	5					2,200	Apl	1889	.10

NON-DIVIDEND-PAYING MINES

	Name and Location of Company.		Capital Stock.	Shares. No.	Par Value	Assessments. Total levied.	Date & am't of last.		
1	Agassiz Cons., S. L.	Colo.	$2,500,000	50,000	$50	*			
2	Allouez, C	Mich	2,000,000	80,000	25	$697,000	Mar.	1889	.50
3	Alpha Con., G. S.	Nev.	3,000,000	30,000	100	562,500	Nov.	1888	87½
4	Alta, S.	Nev.	10,080,000	100,800	100	2,248,800	Sept	1888	.50
5	Amador, G	Cal.	400,000	200,000	2	*			
6	American Flag, S.	Colo.	1,250,000	125,000	10	300,000	Jun	1877	.5
7	Anglo-Montana, Lt.	Mon.	600,000	120,000	5				
8	Appalachian, Lt., G.	N. C.	1,500,000	300,000	5				
9	Astoria, G	Cal.	200,000	100,000	2				
10	Barcelona, G	Nev.	5,000,000	200,000	25	*			
11	Bechtel Con., G	Cal.	10,000,000	100,000	100	173,500	Jan.	1883	.10
12	Belmont, S	Nev.	5,000,000	50,000	100	735,000	Apl.	1886	.10
13	Best & Belcher, G. S	Nev.	10,080,000	100,800	100	2,104,990	Jan.	1889	.25
14	Big Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*			
15	Bi-Metallic, S	Mon.	5,000,000	200,000	25	*			
16	Black Oak, G	Cal.	3,000,000	300,000	10	*			
17	Boston Con., G	Cal.	10,000,000	100,000	100	170,000	Nov	1883	.25
18	Bremen, S.	N. M	5,000,000	500,000	10	*			
19	Brunswick, G	Cal.	2,000,000	400,000	5	*			
20	Bullion, G. S.	Nev.	10,000,00	100,000	100	4,007,00	Aug.	1888	.50
21	Calaveras, G.	Cal.	500,000	500,000	1	*			
22	Carisa, G	Wy.	500,000	100,000	5	*			
23	Carupano, G. S. L. C.	Ven.	200,000	100,000	2	*			
24	Cashier, G. S.	Colo.	500,000	250,000	2	*			
25	Cen. Contin'l, G. S. L.	C. & A	2,000,000	200,000	10	*			
26	Charles Dickens, G. S.	Idah.	1,250,000	250,000	5	*			
27	Cherokee, G	Cal	1,500,000	150,000	10				
28	Chollar, S	Nev.	11,200,000	112,000	100	1,428,000	Oct.	1888	.50
29	Cleveland, T	Dak.	1,000,000	500,000	2	*			
30	Colchis	N.M.	500,000	50,000	1				
31	Commonwealth, S.	Nev.	10,000,000	100,000	100	170,000	Nov	1888	.50
32	Comstock, G. S.	Nev.	10,000,000	100,000	100	30,000	Mar.	1887	.15
33	Con. Imperial, G. S.	Nev.	5,000,000	50,000	100	1,800,000	Nov.	1888	.05
34	Con. Pacific, G	Cal.	6,000,000	60,000	100	183,000	Feb.	1889	.15
35	Cons Silver, S	Mo.	2,500,000	250,000	10				
36	Courtlandt	Colo.	500,000	50,000	10				
37	Crescent, S. L	Colo.	3,000,000	300,000	10	*			
38	Crocker, S	Ariz.	10,000,000	100,000	100	115,000	Feb.	1889	.10
39	Crowell, G	N. C	500,000	500,000	1				
40	Dahlonega, G	Ga.	250,000	250,000	1	*			
41	Dandy, S	Colo.	5,000,000	500,000	10				
42	Dardanelles, G	Cal.	1,000,000	100,000	10				
43	Decatur, S	Colo.	1,500,000	300,000	5	*			
44	Denver City, S. L	Colo.	5,000,000	500,000	10	*			
45	Denver Gold, G	Colo.	300,000	60,000	5				
46	Durango, G	Colo.	500,000	500,000	1	*			
47	Eastern Dev. Co., Lt.	N. S.	1,500,000	150,000	10	990,000	Mar.	1886	1.00
48	El Cristo, G. S.	U.S.C	1,000,000	500,000	2				
49	El Dorado, G	Cal.	1,000,000	250,000	4	*			
50	El Talento, G	U.S.C	1,000,000	500,000	2				
51	Empire, S	Utah	10,000,000	100,000	100				
52	Eureka Tunnel, S. L.	Nev.	10,000,000	100,000	100	*			
53	Exchequer	Nev.	10,000,000	100,000	100	815,000	Apl.	1889	.25
54	Found Treasure, G. S.	Nev.	10,000,000	100,000	100	39,500	Apl	1889	12½
55	Gogebic I. Syn., I	Wis.	5,600,000	200,000	25				
56	Gold Cup, S	Colo.	500,000	500,000	1	*			
57	Golden Era, S	Mon.	2,000,000	200,000	10	*			
58	Gold Placer, G	Colo.	5,000,000	200,000	25	229,314	Dec.	1885	.25
59	Gold Rock, G	Cal.	1,000,000	500,000	2	*			
60	Goodshaw, G	Cal.	10,000,000	100,000	100	*			
61	Grand Belt, C	Tex.	12,000,000	120,000	100				
62	Grand Duke	Colo.	800,000	80,000	10				
63	Great Remance, G	U.S.C	1,000,000	500,000	2	*			
64	Gregory-Bobtail, G.	Colo.	550,000	550,000	1	*			
65	Gregory Con., G	Mon.	3,000,000	300,000	10				
66	Harlem M. & M. Co, G.	Cal.	1,000,00	200,000	5				
67	Head Cent. & Tr. S. G	Ariz.	10,000,000	100,000	100				
68	Hector, G	Cal.	1,500,000	300,000	5	45,000	Jan.	1889	.15
69	Highland, C	Mich	500,000	25,000	20				
70	Hollywood	Cal.	200,000	100,000	2				
71	Hortense, S	Colo.	2,000,00	200,000	10				
72	Huron, C	Mich	1,000,000	40,000	25	280,000	May	1887	3.00
73	Iron Gold & Silver, S	N. M.	2,000,000	200,000	10	*			
74	Ironton, I	Wis.	1,000,000	40,000	25				
75	Iroquois, C	Mich	1,250,000	50,000	25				
76	J. D. Reymert	Ariz	10,000,000	100,000	100	*			
77	Julia Cons., G. S.	Nev.	11,000,000	110,000	100	1,660,000	Jan.	1889	.10
78	Kearsarge, C	Mich	1,250,000	50,000	25	190,000	Oct.	1887	1.00
79	Lacrosse, G	Colo.	1,000,000	100,000	10	*			
80	Lee Basin, S. L.	Colo.	5,000,000	500,000	10	*			
81	Mammoth Bar., G.	Cal.	10,000,000	100,000	100	50,000	Dec.	1881	
82	May Belle, G	Cal.	10,000,000	100,000	100	84,000	Mar.	1884	.15
83	Mayflower Gravel	Cal.	1,000,000	100,000	10	485,000	Jan	1889	.50
84	Medora, G	Dak.	250,000	250,000	1				
85	Mexican, G. S	Nev.	10,000,000	100,000	100	2,750,760	Mar	1889	.25
86	Middle Bar G	Cal.	400,000	200,000	2	*			
87	Mike & Starr, S. L.	Colo	1,000,000	200,000	5	*			
88	Monitor, G.	Colo.	100,000	100,000	1	*			
89	Moose Silver, S	Colo.	3,000,000	300,000	10	*			
90	Mutual Mg. & Sm.	W'sh	100,000	100,000	1	*			
91	Native, C	Mich	1,000,000	40,000	25				
92	Neath, G	Colo	1,000,000	100,000	10				
93	Nevada Queen, S	Nev	10,000,000	100,000	100	180,000	Dec.	1888	.50
94	New Germany, G	N. S.	100,000	100,000	1	*			
95	New Pittsburg, S L	Colo	2,000,000	200,000	10	*			
96	N. Commonw'h, S.	Nev.	10,000,000	100,000	100	30,000	Oct	1888	.30
97	North Standard, G.	Cal.	10,000,000	100,000	100	20,000	Nov		
98	Noonday	Cal.	600,000	60,000	10	208,000	Dec.	1881	.10
99	Oneida Chief, G	Cal.	500,000	125,000	100	*			
100	Oriental & Miller, S	Nev.	10,000,000	400,000	25				
101	Osceola, G	Nev.	5,000,000	50,000	100	*			
102	Overman, G. S.	Nev.	11,520,000	115,200	100	3,765,800	Jan.	1889	.25
103	Park, S.	Utah	2,000,000	200,000	10				
104	Peer, S	Ariz.	10,000,000	100,000	100	145,000	Jan.	1889	.10
105	Peerless, S	Ariz.	10,000,000	100,000	100	370,000	Mar	1889	.25
106	Phœnix	Ariz	500,000	500,000	100				
107	Phœnix, G. S.	Ark.	5,000,000	200,000	250	*			
108	Phœnix Lead, S. L.	Colo.	100,000	100,000	1	*			
109	Pilgrim, G	Cal.	600,000	300,000	2	*			
110	Potosi, S	Nev.	11,200,000	112,000	100	1,405,600	Apl.	1889	.50
111	Proustite, S	Idah	250,000	250,000	1	*			
112	Puritan S. G	Colo	1,500,000	150,000	10	*			
113	Quincy	Colo.	3,000,000	300,000	10				
114	Rappahannock, G. S	Va.	250,000	250,000	1	*			
115	Red Elephant, S.	Colo	500,000	500,000	1	*			
116	Ropes, G. S.	Mich	2,000,000	80,000	25	103,200	July	1887	.50
117	Russell, G	N. C.	1,500,000	300,000	5				
118	Sampson, G. S. L.	Utah	10,000,000	100,000	100	288,157	July	1888	1.00
119	San Sebastian, G.	San S	1,600,000	320,000	5	*			
120	Santa Fe, C	N. M.	5,000,000	500,000	10				
121	Santiago, G	U.S.C	400,000	200,000	2	*			
122	Security, S	Colo.	10,000,000	1,000,000	10				
123	Sheridan	N. M.	2,000,000	200,000	10				
124	Silver Queen, C	Ariz.	5,000,000	200,000	25	*			
125	South Bulwer, G	Cal.	10,000,000	100,000	100	100,000	May	1881	.25
126	South Hite	Cal.	10,000,000	100,000	100	195,000	Jan.	1883	.05
127	South Pacific	Cal.	500,000	100,000	5				
128	Stanislaus, G	Cal.	2,000,000	200,000	10				
129	State Line, S	Nev.	250,000	250,000	1				
130	St. Kevin, G. S.	Colo.	100,000	100,000	1	*			
131	St. Louis & Mex., S.	Mex.	5,000,000	500,000	10	*			
132	St. Louis & St. Elmo	Colo.	2,000,000	200,000	10				
133	St. L. & St. Felipe, G. S.	Mex.	1,500,000	150,000	10				
134	St. L. & Sonora, G. S.	Mex.	1,500,000	150,000	10				
135	St. Louis-Yavapai	Ariz.	3,000,000	300,000	10	*			
136	Sunday Lake, I	Mich	1,250,000	50,000	25				
137	Sullivan Cons G.	Dak	600,000	200,000	3	*			
138	Sutter Creek, G	Cal.	500,000	100,000	5				
139	Sutro Tunnel	Nev.	20,000,000	2,000,000	10				
140	Sylvanite, S	Colo.	5,000,000	500,000	10				
141	Taylor-Plumas, G	Cal.	1,000,000	200,000	5	10,000	Feb	1888	.03
142	Tioga Cons., G	Cal.	10,000,000	100,000	10	295,000	May	1888	.10
143	Tornado Cons. G S.	Nev.	100,000	100,000	1	*			
144	Tortilita, G. S.	Ariz.	1,000,000	100,000	10	*			
145	Tuscarora, S	Nev.	10,000,000	500,000	2	110,00	Oct.	1881	.15
146	Union Con., G. S.	Nev.	10,000,000	100,000	100	3,210,000	Jan	1889	.25
147	Utah, S	Nev.	10,000,000	100,000	100	145,000	Mar	1889	.25
148	Washington, C	Mich	1,000,000	40,000	25				
149	West Granite Mt., S.	Mon	5,000,000	500,000	10	*			
150	Zelaya, G. S	C. A.	600,000	300,000	2	*			

G. Gold. S. Silver. L. Lead. C. Copper. * Non-assessable. † This company, as the Western, up to Dec. 10th, 1881, paid $1,400,000. ‡ Non-assessable for three years. ‡ The Deadwood previously paid $275,000 in eleven dividends, and the Terra $75,000. Previous to the consolidation in Aug., 1884, the California had paid $31,320,000 in dividends, and the Con. Virginia, $42,390,000. ** Previous to the consolidation of the Copper Queen with the Atlanta, Aug., 1885, the Copper Queen had paid $1,350,000 in dividends. ¶ 1,000,000.

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES

NAME AND LOCATION OF COMPANY.	April 27.		April 29.§		April 30.§		May 1.§		May 2.		May 3.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Adams, Colo.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Alice, Mont	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Argenta, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Aspen Mg. & S., Colo.	11 00	.....	....	....	....	....	....	....	11 00	....	11.00	....	400
Belcher, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Belle Isle, Nev.	25	.....	....	....	....	....	....	....	....	....	....	....	500
Bodie Cons., Cal.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Breece, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Bulwer, Cal	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Caledonia, Dak	....	.....	....	....	....	....	....	....	3 10	3 00	....	....	500
Calmet & Hecla	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Challar, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Chrysolite, Colo.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Colorado Cent'l, Colo.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Cons. Cal. & Va., Nev.	....	.....	....	....	....	....	....	....	8.38	....	....	....	100
Crown Point, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Deadwood, Dak	....	.....	....	....	....	....	....	....	1.50	....	....	....	100
Dunkin, Colo.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Eureka Cons., Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Father de Smet, Dak	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Gould & Curry, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Grand Prize, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Hale & Norcross, Nev	4 60	....	....	....	....	....	....	....	....	....	4.60	....	200
Holyoke, Idaho	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Homestake, Dak.	....	.....	....	....	....	....	....	....	....	....	7 50	....	100
Horn-Silver, Ut.	1.15	.....	....	....	....	....	....	....	....	....	1.15	....	300
Iron Hill, Dak.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Iron Silver, Colo.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Leadville C., Colo.	....	.....	....	....	....	....	....	....	....	....	.14	....	100
Little Chief, Colo.	.24	.....	....	....	....	....	....	....	.26	.25	.26	....	1,600
Little Pittsburg, Colo	.06	.....	....	....	....	....	....	....	.05	....	.06	....	1,800
Martin White, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Mono, Cal	1.75	.....	....	....	....	....	....	....	....	....	....	....	200
Moulton, Mont.	....	.....	....	....	....	....	....	....	....	....	.27	....	100
Mount Diablo, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Navajo, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
North Belle Isle, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
North Star, Cal.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Ontario, Ut.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Ophir, Nev.	....	.....	....	....	....	....	....	....	....	....	5 50	....	100
Plutus, Colo.	.95	.....	....	....	....	....	....	....	1.00	....	1.00	....	1,000
Plymouth, Cal.	10.00	.....	....	....	....	....	....	....	....	....	....	....	200
Quicksilver Pref., Cal	....	.....	....	....	....	....	....	....	....	....	38.00	37 75	300
" Com., Cal	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Robinson Cons. Colo.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Savage, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Sierra Nevada, Nev.	....	.....	....	....	....	....	....	....	3.55	....	....	....	00
Silver King, Ariz.	....	.....	....	....	....	....	....	....	.85	.83	....	....	100
Silver Mg. of L. V.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Small Hopes, Colo.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Stanca d. Cal.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Stormont, Utah	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Standard, Cal.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Yellow Jacket	....	.....	....	....	....	....	....	....	4 25	....	....	....	200

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	April 27.		April 29.§		April 30.§		May 1.§		May 2.		May 3.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alta, Nev	2.20	....	....	....	....	....	....	....	2.15	....	2. 0	....	300
Amador, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
American Flag, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Astoria, Cal.	.20	....	....	....	....	....	....	....	....	....	.20	....	1,300
Barcelona, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Best & Belcher, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Brunswick, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Buffalo Iron Min'g.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Bullion, Nev.	1 15	....	....	....	....	....	....	....	1.25	....	1.30	....	700
Cashier, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Castle Creek, Id.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Colchis, N. M.	4.25	....	....	....	....	....	....	....	....	....	....	....	200
Commonw'th, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Con. Imperial, Nev	.70	....	....	....	....	....	....	....	....	....	....	....	1,000
Con. Pacific	....	....	....	....	....	....	....	....	....	....	....	....	.....
Denver City, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Eastern Oregon	....	....	....	....	....	....	....	....	....	....	....	....	.....
El Cristo, U. S. Col.	1.60	....	....	....	....	....	....	....	1.65	....	....	....	200
Excelsior, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Exchequer Nev.	1 00	....	....	....	....	....	....	....	1.15	....	....	....	500
Hector, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hollywood, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Julia, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Kingst'n & Pemb'ke	....	....	....	....	....	....	....	....	1.13	....	1.25	1 13	1,400
Kossuth, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Lacrosse, Colo	.09	....	....	....	....	....	....	....	.10	.09	.10	.09	10,500
Lee Basin, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mexican Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Middle Bar, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Monitor, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mutual Sm. & M. Co	1.45	....	....	....	....	....	....	....	1.45	....	1 45	....	1,600
NevadaQueen, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
N Commonw., Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Oriental & Mil., Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Phœnix Lead	....	....	....	....	....	....	....	....	....	....	....	....	.....
Potosi, Nev	....	....	....	....	....	....	....	....	....	....	2.25	....	100
Proustite, Idaho	....	....	....	....	....	....	....	....	....	....	....	....	.....
Rappanann'k, Va	....	....	....	....	....	....	....	....	....	....	....	....	.....
Santiago U. S. C.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Scorpion, Ariz	....	....	....	....	....	....	....	....	.20	....	....	....	200
Shoshone, Idaho	.08	....	....	....	....	....	....	....	....	....	.08	....	1,200
Silver Cliff, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver Cord, Colo.	....	....	....	....	....	....	....	....	.80	....	....	....	50
Silver Hill, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver Queen	....	....	....	....	....	....	....	....	....	....	....	....	.....
State Line, 2&3, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sullivan Con	1.25	....	....	....	....	....	....	....	1 30	....	1.30	1.25	1,200
Sutro Tunnel, Nev.	....	....	....	....	....	....	....	....	....	....	.10	....	1,400
" Trust Cert.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Tornado, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Union Cons., Nev.	....	....	....	....	....	....	....	....	4.30	....	....	....	100
United Copper	1.05	1.00	....	....	....	....	....	....	1.15	....	1.20	....	700
Utah, Nev.	1 45	....	....	....	....	....	....	....	....	....	....	....	100

*Ex dividend. †Dealt in at the New York Stock Ex.. Unlisted securities. ‡Assessment unpaid. Dividend shares sold, 8,600. Non-dividend shares sold, 22,750. Total New York, 31,350.
§ Holidays.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	Apr. 26.	Apr. 27.	Apr. 29.*	Apr. 30.*	May. 1.	May. 2.	SALES.
Atlantic, Mich.	9.63	....	....	....	....	....	20
Bodie, Cal.	....	....	....	....	....	....	.....
Bonanza Developm't	....	77⅜	....	....	77½	....	500
Bost. & Mont., Copper	30.50	29.75	31.00	29.75	....	....	1,574
Breece, Colo.	....	....	....	....	30.25	29.5	.....
Calumet & Hecla.	209¼	....	208	....	208	207¾	39
Catalpa, Colo.	....	....	....	....	....	....	.....
Central, Mich.	....	....	....	....	....	....	.....
Chrysolite, Colo	....	....	....	....	....	....	.....
Con. Cal. & Va., Nev.	....	....	....	....	....	....	.....
Dunkin, Colo.	....	....	....	....	.95	....	700
Enterprise	....	....	....	....	....	....	.....
Franklin, Mich.	9.00	....	9.00	....	....	....	150
Hale & Norcross, Nev.	....	....	....	....	....	....	.....
Honorine, Utah	....	....	....	....	....	....	.....
Little Chief, Colo.	....	....	....	....	....	....	.....
Little Pittsburg, Colo.	....	....	....	....	....	....	.....
Martin White, Nev.	....	....	....	....	....	....	.....
Mono, Cal.	....	....	....	....	....	....	.....
Napa, Cal.	....	....	....	....	....	....	.....
Ontario	....	....	....	....	....	....	.....
Osceola, Mich.	9.63	....	....	....	10.00	....	110
Pewabic, Mich.	....	....	....	....	....	....	.....
Quincy, Mich.	....	....	....	....	....	....	.....
Ridge, Mich.	....	....	....	....	....	....	.....
Sierra Nev., Nev.	....	....	....	....	....	....	.....
Silver King, Ariz.	....	....	....	....	....	....	.....
Standard, Cal.	....	....	....	....	....	....	.....
Tamarack, Mich.	108	107	105½	....	....	....	32

NAME OF COMPANY.	Apr 26.	Apr. 27.	Apr. 29.*	Apr. 30.*	May. 1.	May 2.	SALES
Allouez, Mich.	....	....	....	....	....	....	.....
Arnold, Mich.	....	....	....	....	....	....	.....
Aztec, Mich.	....	....	....	....	....	....	.....
Brunswick, Cal.	....	....	....	....	....	....	.....
Butte & Boston	....	....	....	....	....	....	.....
Canada	....	....	....	....	....	....	.....
Cashier, Colo	....	....	....	....	....	....	.....
Crescent, Colo.	....	....	....	....	....	....	.....
Cusi, N. Mex.	....	....	....	....	....	....	.....
Denver City, Colo.	....	....	....	....	....	....	.....
El Cristo, W. S. C.	....	....	....	....	....	....	.....
Everett	....	....	....	....	....	....	.....
Hanover, Mich.	....	....	....	....	....	....	.....
Humboldt, Mich.	....	....	....	....	....	....	.....
Hungarian	....	....	....	....	....	....	.....
Huron, Mich.	....	....	....	....	....	....	.....
Kearsarge, Mich.	....	....	....	....	....	....	.....
Mesnard, Mich.	....	....	....	....	....	....	.....
National, Mich.	1.75	....	....	....	....	....	200
Native, Mich.	....	....	....	....	....	....	.....
Pontiac	....	....	....	....	....	....	.....
Rappahannock, Va.	....	....	....	....	....	....	.....
Rockland	....	....	....	....	....	....	.....
Santa Fe, N. Mex.	.62½	....	....	....	.62½	....	2,050
Security, Colo	....	....	....	....	....	....	.....
Shoshone Idaho	....	....	....	....	....	....	.....
South Side, Mich.	....	....	....	....	....	....	.....
St. Louis Cop.	....	....	....	....	....	....	.....
Sullivan, Dak.	....	....	....	....	....	....	.....

* Centennial Holidays. Boston: Dividend shares sold, 3,125. Non-dividend shares sold, 2,250. Total Boston, 5,375.

COAL STOCKS.

NAME OF COMPANY.	Par val. of sh'rs.	April 27.		†April 29.		†April 30.		†May 1.		May 2.		May 3.		Sales.
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
American Coal.	....	.....		....	....	....	....	....	....	....	....	....	....	.....
Buck Mountain Coal.	....	.....		....	....	....	....	....	....	....	....	....	....	.....
Cameron Coal & Iron Co	....	34⅜	34¼	....	....	....	....	....	....	34⅜	....	34½	....	400
Ches. & O. RR.	100	.....		....	....	....	....	....	....	....	....	17¾	17⅝	1,417
Chic. & Ind. Coal RR.	100	.....		....	....	....	....	....	....	....	....	....	....	.....
Do. pref.	100	.....		....	....	....	....	....	....	....	....	....	....	.....
Col. & Hocking Coal	100	.....		....	....	....	....	....	....	....	....	18¼	18	350
Col., C. & I	100	24¾	24½	....	....	....	....	....	....	25¼	....	25⅜	25	430
Consol. Coal	100	.....		....	....	....	....	....	....	....	....	....	....	.....
Del. & H. C.	100	136⅝	....	....	....	....	....	....	....	137⅜	136	137¼	....	2,455
D., L. & W. RR.	50	137½	137¼	....	....	....	....	....	....	138½	137	139	138⅜	38,300
Hocking Valley	100	.....		....	....	....	....	....	....	19½	19⅛	19⅛	....	500
Hunt. & Broad Top	....	.....		....	....	....	....	....	....	....	....	....	....	.....
Do. pref.	....	46		....	....	....	....	....	....	46½	....	46⅛	....	370
Lehigh C. & N.	50	51⅞	....	52	....	....	....	....	....	52	....	52⅛	52	419
Lehigh & W. B. Coal	....	.....		....	....	....	....	....	....	....	....	....	....	.....
Lehigh Valley RR.	50	53⅜	53⅛	53¾	53⅝	....	....	54	53¾	54	53¾	....	....	647
Marshall Con. Coal	100	.....		....	....	....	....	....	....	....	....	....	....	.....
Mahoning Coal	....	.....		....	....	....	....	....	....	....	....	....	....	.....
Maryland Coal.	100	.....		....	....	....	....	....	....	....	....	....	....	.....
Morris & Essex	100	.....		....	....	....	....	....	....	....	....	....	....	.....
New Central Coal	100	.....		....	....	....	....	....	....	....	....	....	....	.....
N. J. C. RR.	50	.....		....	....	....	....	....	....	96⅞	96¾	96¾	96⅝	925
N. Y. & S. Coal	100	.....		....	....	....	....	....	....	....	....	....	....	.....
N. Y., Susq. & Western	100	8	....	....	....	....	....	....	....	....	....	....	....	50
Do. pref.	100	.....		....	....	....	....	....	....	33	32¾	33¼	3	650
N. Y. & Perry C. & I.	100	.....		....	....	....	....	....	....	....	....	....	....	.....
Norfolk & Western R.R.	100	.....		....	....	....	....	....	....	....	....	....	....	.....
Do. pref.	50	53⅛	52⅞	....	....	....	....	....	....	53⅛	53⅛	53½	53¼	6,185
Penn. Coal	50	.....		....	....	....	....	....	....	....	....	....	....	.....
Penn. RR.	50	55¼	55	55⅛	55	....	....	55⅛	*53¾	53¾	53⅝	....	....	4,283
Ph. & R. RR.**	50	45⅛	44⅝	....	....	....	....	....	....	45⅜	44⅝	45⅝	44¾	62,646
Sunday Creek Coal	....	.....		....	....	....	....	....	....	....	....	....	....	.....
Do. pref.	....	.....		....	....	....	....	....	....	....	....	....	....	.....
Tennessee C. & I. Co.	100	40	....	....	....	....	....	....	....	40¼	40	40⅝	40⅛	1,680
Do. pref.	....	103	....	....	....	....	....	....	....	102	....	....	....	210
Westmoreland Coal	100	.....		....	....	....	....	....	....	70	....	....	....	30
Wyoming Valley Coal	....	.....		....	....	....	....	....	....	....	....	....	....	.....

*Ex-dividend. †Centennial Holidays.
**Of the sales of this stock, 14,099 were in Philadelphia, and 48,547 in New York. Total sales, 121,947.

San Francisco Mining Stock Quotations.

COMPANY.	CLOSING QUOTATIONS. April 26.	April 27.	April 29.	April 30.*	May 1.	May 2.
Alpha	.....	.....	.....	.....	.....	.....
Alta	2.10	2.05	2.00	....	2.05	1.95
Belcher	.....	.....	.....	.....	.....	.....
Belle Isle	.....	.25	.20	.....	2.85	.....
Best & Bel.	4.15	4.20	4.05	.....	3.95	4.10
Bodie	1.50	1.65	1.80	.....	1.85	1.75
Bulwer	.35	.35	.35	.....	.....	.30
Challar	2.80	2.85	2.70	.....	2.70	2.75
C'm'weal'h	.....	.....	.....	.....	5.50	5.38
Con. C. & V	8.13	8.00	8.00	.....	8.25	8.38
Con. Pac.	.....	.....	.....	.....	.....	.....
Crown Pt.	4.15	4.20	4.15	....	4.25	4.80
Eureka C.	2.50	2.60	2.50	.....	.....	.....
Gould & C.	2.80	2.85	.....	.....	2.55	2.60
Grd. Prize.	.....	.....	.....	.....	.....	.....
Hale & N.	4.55	4.40	4.15	....	4.95	4.80
M. White.	.....	.....	.....	.....	.....	.....
Mexican	5.00	4.80	4.15	.....	4.65	4.55
Mono	1.65	1.70	1.60	.....	1.75	1.75
Mt. Diablo	.....	.....	.....	.....	.....	.....
Navajo	.80	.85	.....	.....	.....	.85
Nev. Queen	2.05	2.10	1.85	.....	1.75	1.75
N. Belle I.	.....	.....	1.80	.....	.....	1.75
Ophir	5.50	5.25	5.12	.....	5.38	5.50
Potosi	.....	2 05	2.10	.....	2.10	2.20
Savage	3.00	3.00	3 00	....	2.90	3.00
Sierra Nev	3.95	.....	3.85	....	3.75	3.70
Tip Top	.....	.....	.....	.....	.....	.....
Union Con.	5.13	5.00	4.75	.....	4.50	4.40
Utah	1.40	1.45	1.35	.....	1.40	1.45
Yellow Jkt.	3.35	3.00	1.00	.....	4.05	4.60

* Centennial holiday.

unfavorable character takes place in the meantime. This feeling is so general that the present condition of things is accepted as a matter of course and as a necessary preliminary to ultimate improvement. For standard grades holders are holding out for quoted rates, or pile up the iron until the demand improves. There are several projects negotiating which, if consummated, will require a good deal of iron, for instance, an order was placed this week with one of the city pipe works for 130 miles, of 8 and 10-inch pipe; this will require about 13,000 tons sheared skelp iron. The contract was made by Ohio parties from Sandusky, Ohio. Others even still larger are expected to be closed in the near future; unless all signs fail an improvement in the price of raw iron is not far off. Stocks in the hands of consumers are being daily reduced.

Coal and Coke Smelted Lake Ore.

2000 Tons Bessemer	16.25 cash.
2000 Tons Gray Forge	14.00 cash.
1000 Tons No. 1 Foundry	16.80 cash.
1000 Tons Gray Forge	14.00 cash.
1000 Tons No. 1 Mill Iron	14.50 cash.
750 Tons Gray Forge	14.00 cash.
500 Tons Gray Forge	14.00 cash.
1000 Tons Bessemer	16.25 cash.
1500 Tons Bessemer May and June	16.15 cash.
125 Tons No. 2 Foundry	15.50 cash.
100 Tons No. 1 Foundry	16.25 cash.

Charcoal.

75 Tons Cold Blast	27.75 cash.
50 Tons No. 2 Foundry	22.00 cash.
50 Tons No. 1 Foundry	23.00 cash.

Muck Bar.

1000 Tons Neutral, May	27.00 cash.
500 Tons Neutral	26.50 cash.
500 Tons Neutral	26.75 cash.

Steel Slabs and Billets.

700 Tons Steel Billets	27.75 cash.
500 Tons Steel Billets	28.00 cash.
500 Tons Steel Slabs	27.00 cash.

Bloom Ends.

500 Tons Bloom Ends	17.75 cash.
500 Tons Bloom Ends	18.00 cash.

Ferro-Manganese.

50 Tons 80 per cent	59.50 cash.
50 Tons 80 per cent	59.00 cash.

Spiegel.

50 Tons 20 per cent	31.00 cash.
25 Tons 10 and 12 per cent	31.50 cash.

Skelp Iron

500 Tons Narrow Grooved, per 100	1.62½ 4 mo.
300 Tons Sheared, per 100	1.90 4 mo.
500 Tons Wide Grooved	1.67½ 4 mo.

Scrap Material.

200 Tons No. 1 Wrought Scrap	Net 19.00 cash.
200 Tons No. 2 Wrought Scrap	Net 18.00 cash.
200 Tons Cast Scrap	Gross 15.00 cash.
200 Tons Wrought Iron Turnings	Net 14.00 cash.
200 Tons Cast Borings	Gross 12.00 cash.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, May 3.

Heavy Chemicals. We have practically had but two days of business this week and transactions consequently have been very light. Prices have about held their own at previous figures and the situation is virtually unchanged. The news from Liverpool is meager and unimportant. The caustic soda makers have apparently given up in despair their attempts to form a combination.

Caustic soda is still quoted at 2·15@2·20c. for 70 and 74 per cent. These prices, of course, are for round lots. For 60 per cent, we get quotations uniformly at 2·40c.

Bleaching powder is quiet. Whether the bottom in prices has at last been reached or whether the quiet of the moment is simply a lull preceding another storm of heavy arrivals and rate cutting, is a matter for conjecture which is agitating the trade at present. We hear of no important sales for the week. Ruling quotations are 1·60@1 65c. in a large way.

Carbonated soda ash, 48 per cent, is steady at 1·25 @1·27c. for round lots. The demand for immediate consumption has not yet relaxed, and a free movement of all receipts is reported.

Caustic soda ash, 48 per cent, is suffering from a want of buyers. Lots of not under 25 tons can be bought at 1·17½c., ex ship; lots of 5 tons or over at 1·20c., and smaller quantities at 1·23¾c.

Hyposulphite of soda is offering at 1·45@1·60c., according to quantity.

Sal soda is in a little better demand at ·90@1c. for English makes, according to quantity.

Acids.—In this, as in all other departments of trade, there has been an interruption of trade by the events of the past week in New York, which has been felt, not only during the three days of the celebration, but for some time before and after. There is still quite a demand in a jobbing way for the principal descriptions. Nitric and muriatic are moving in fair quantities at 4@5½c. per pound for 36° nitric, and 1·10 @1·20c. for 18° muriatic. Sulphuric is in good demand at ·95@1c. for 66 degrees. Acetic is dull. Oxalic is also rather slow of sale, but the "combination" seems to enable importers to maintain prices at the offical figures.

Fertilizing Chemicals.—The market continues dull, and the business stirring is very light. It now appears that fertilizer manufacturers are rather overstocked. A few months ago they were exceedingly sanguine, and looked for a great increase in consumption, particularly in the South. Naturally, importers of crude material shared in these hopes, which amounted really to beliefs, and thus there was a general feeling that a prosperous and busy season was at hand. Unfortunately, the failure of their plans seems to have been as uniform as were their opinions; the agricultural community both North and South have apparently bought only their usual spring supply, and manufacturers of fertilizers who have contracted ahead for crude material are consequently in an unenviable condition. In some cases they have even begun to re-sell crude supplies, and importers have therefore suffered. At the moment, however, we hear of little re-selling or underselling, and prices may fairly be called steady.

We quote: Azotine, $2.55; dried blood (city), low grade, $2.45@$2.50 per unit; Western, high grade, $2.50@$2.55 per unit for ground material; tankage, high grade, $25@$26 per ton; low grade, $23 per ton, as to quality. Fish scrap, $25@$26 per ton f.o.b. factory. Sulphate of ammonia, $3.25@$3.32½ per cwt.

Refuse bone-black, guaranteed 70 per cent phosphate, $19.50 per ton. Dissolved bone-black is 95c.@ $1 per unit for available phosphoric acid, and acid phosphate 80@85c. per unit for available phosphoric acid.

Steamed bones, unground, $20; ground, $25@$26.

Charleston rock, undried, $5@$5.25 per ton; kiln dried, $6@$6 25 per ton, both f.o.b. vessels at the mines. Charlestou rock, ground, $10.50 ex steamer at New York.

Muriate of Potash.—Two hundred tons arrived on the S. S. California this week. The New York agents of the syndicate say that this was all on contract, so the market is not further depressed. The official spot price is still 1·80c. We learn of a lot of 50 tons in second hands which is being offered at 1·82½c.

Double manure salts, basis 48 per cent, is moving slowly at 1·20c. spot and 1·15c. for shipment. High grade sulphate of potash, basis 90 per cent, is dull at 2·40c.

Kainit.—There have been no arrivals of kainit this week, and there is none on the way. The arrivals since January 1st, as prepared for us by the syndicate's sales agent in this city, aggregate 7847 tons, which, according to the same authority, is at least 3000 tons more than the amount received during the corresponding period in 1888. The demand, on the other hand, has not increased as much as was expected, and the market at present is rather depressed on account of the oversupply. The official prices continue at $10.50 per ton, ex store, and $9.75 for shipment.

Brimstone is dull at $20@$20.25 for best unmixed seconds on the spot, and $19.50@$19.75 for thirds.

Nitrate of Soda.—Sales of 5000 bags are reported. It is estimated that the stock on the spot amounts to 50,000 bags. The spot quotation is 2·15c., while arrivals may be had at 2@2·10c., according to quantity and location. A well-known importer says that lower prices are expected.

Our special correspondence from London on the fertilizer market of the United Kingdom will be of interest to the American fertilizing trade. It is printed below. Canadian phosphates are evidently attracting a great deal of attention on the other side. The development of the Canadian phosphate industry, to which the ENGINEERING AND MINING JOURNAL has frequently referred, is undoubtedly a subject which deserves the constant attention of all sellers and consumers of fertilizers.

London. April 18.

[Special Report by Messrs. COUPER, MILLAR & Co.]

Fertilizers.—About this time last year we had to report that ammoniacal materials were "booming"and phosphates depressed. The position this year is for the moment reversed, principally through the recent fluctuations in the nitrate market. The scarcity of organic ammonia, however, must before long effect an upward influence in prices for this class of material, while phosphates of every description, but in particular those of high test are likely to touch much higher prices owing to the unprecedented lowness of stocks and the comparatively small quantity available at the moment.

Mineral Phosphates.—Canadian, 80 per cent., has been sold at 1s. ¼d., with ½d. rise, English terms, while 10½d. and 11½d. are asked for 70 and 75 per cent. qualities, respectively. South Carolina has been sold lately at 9¼d., and there are numerous inquiries from both home and continental buyers; but this figure does not tempt shippers, the United States demand being very active. Somme has been largely dealt in this year and the prices of all qualities are very materially increased, as the end of the supply of the higher grades is within measurable distance. We quote, for 70 per cent., 12d. per unit. Belgian must advance in harmony with other phosphates, but at the moment it is cheap and therefore well worth attention. Cambridge coprolites offer in such small lots as to be hardly worth mentioning, but business has been done lately at 45s. f.o.r. Bedfords are not offering.

Bone Ash, Bones and Meal.—No sales afloat reported, and no inquiry for River Plate cargoes. Bone meal has been firmer, owing to absence of arrivals, and recent sales of Bombay have been made at £5 to £5 2s. 6d.

Nitrate of Soda.—Operators have had a hard time of it lately, and the future is difficult to forecast. At the moment price is a shade firmer, and quotation is 10s. to 10s. 6d.

Sulphate of Ammonia was depressed in harmony with nitrate, but is now firmer, at £11 17s. 6d. to £12 per ton.

Ammoniacal Materials remain about the same. Dried blood is inquired for, but little offers. Fish guano may be contracted for, also grounds, hoofs and horns, present and forward delivery.

Muriate of Potash is quoted at 87 5s. on 80 per cent; kainit, at 24s. in bulk; 27s. in bags, and kieserit, at 17s. 6d., all f.o.b., Hamburgh, subject to open river navigation. Net cash. Strassfust weights and sampling.

Liverpool. April 18.

Chemicals.—Our regular letter from J. P. Brunner & Co. has not been received up to the hour of going to press. George G. Blackwell writes that chemicals continue to rule quiet. Soda ash is dearer, 1d. and up. Caustic soda: 60 per cent white, £5 17s. 6d ; 60 per cent cream, £5 15s.; 70 per cent white, £6 15s.; 74 per cent £8; and 76 per cent, £8 5s. to £8 7s. 6d. Bicarbonate, £5. Nitrate of soda somewhat easier, 10s. to 10d. Soda crystals, £2 12s. 6d. Silicate of soda: Brown lump, £6 15s.; green lump, £5 7s. 6d.; 100 deg. solution, £4 17s. 6d.; and 75 deg. solution, £3 12s. 6d. Bleaching powder, £7 15s. for hardwood, and £7 5s. softwood. Saltcake, 21s. Bichromate of potash, 4¾d. Bichromate of soda, 3½d. Carbonate of potash, £18 to £20. Chlorate of potash, 5½d.

Minerals.—George G. Blackwell writes as follows: The improvement reported in our last has not only been maintained, but a further advance has taken place in some minerals. Manganese: Arrivals are still small, and scarcely keep pace with the consumption, and prices have, therefore, advanced considerably. Magnesite: Raw lump unaltered; stocks nil; raw ground £6 10s., and calcined ground £10 to £11. Dolomite, 7s. 6d. per ton at mines. French Chalk: Arrivals have improved, but prices continue stronger, with a good demand, especially for the G. G. B. "Angel-White" brand; 95s. medium, 100@105s. best G. G. B. Sulphate of Barytes in demand; best lump, 35s. 6d.; good medium, 30s.; medium, 25s. 6d.@27s. 6d.; common, 18s. 6d.@20s.; ground, best white, G. G. B. brand, 60s.; common, 45s.; gray, 32s. 6d.@40s. Pumicestone easier, ground being quoted at £10, and specially selected lump, finest quality, £13. Emerystone in strong demand; No. 1 lump, £5 10s., and smalls, £5. Fullers' earth steady; 45@50s. for best blue and yellow; fine impalpable ground, £7. Antimony ore continues firm; £16 to £18 for fair quality. Asbestos: Best rock £17 to £18; brown grades, £14@£15 Plumbago: Best Ceylon lump, £25 to £35; good, £20 to £21; chips, £8 to £16; best ground, £20, £25, and £30; Italian and Bohemian, £4 to £12 per ton. Ferro-manganese, 70 per cent, £10. Ground mica, £50. China Clay: Fair business doing—common, 18s. 6d.; good medium, 22s. 6d. to 25s.; best, 30s. to 35s. (at Runcorn).

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