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IS IT A STANDARD-OIL-PIG-IRON-WARRANT-TRUST?

The Scotch warrants which represent pig-iron stored in Connel's Stores in Glasgow (now amounting to more than 1,000,000 tons) have long been looked upon as a model for imitation in this country, and several efforts have been made, with unvarying non-success, to establish in New York or Philadelphia a warrant storage yard where any one could stock his pig-iron and get certificates for it, which, it was hoped, would become popular for investment or for speculation. For reasons which it is not now necessary to enumerate, the public would have none of these certificates, and the project has always fallen flat.

A new attempt is being made to revive this scheme on a much grander basis and with modifications which the promoters hope will bring success.

The American Pig-Iron Storage Warrant Company has been organized with a capital of $2,000,000, and it is said the stock has been subscribed. The president of the new company is Mr. GEO. H. HULL, who has, in fact, been the active spirit in the enterprise.

Many respectable names are cited as the officers of the company; but the importance attached to the movement is not due altogether to these, but to the fact, if fact it be, that the whole scheme is but an offshoot of the Standard Oil Trust, and the machinery of that autocratic organization, it is said, will be used to float the new pig-iron certificates and to make them as popular a medium for speculation or gambling as is petroleum under the designation of "pipe-line certificates."

The scheme, as described in the newspapers, is in a somewhat immature condition, but the hand of the Standard Oil Trust organizers is evident throughout. The object is to get the entire stock of pig-iron—and probably, later on, all the producers of pig-iron, if not the entire iron industry of the country—under the control of the Storage Warrant Company, just as the production and markets for petroleum are under that of the Standard Oil Trust.

The success of the scheme would at once relieve financially weak furnaces by finding an immediate market for their iron, and it would naturally lead to the blowing in of every furnace in the country that could make a profit at the quotation of warrants. We have now in this country the dangerously low stock representing only a three weeks supply, and the new scheme contemplates carrying one or two years supply. It can easily be seen that if the warrants are allowed to advance much above the present prices for iron of the same grade it would create a great activity in the manufacture of iron.

The manipulation of the warrants would no doubt be completely in the control of the managers, let us say the Standard Oil Trust, and the working of the petroleum market is therefore the best guide as to what may be expected in this far-reaching scheme, which apparently aims at controlling and monopolizing the iron business of this country in precisely the same way the petroleum business is now monopolized. It may ultimately become as difficult for an independent iron or steel works to exist as for an independent oil refinery.

THE NITRATE INDUSTRY OF CHILI.

The enormous development of this industry in the past few years, and the strides that it has taken in the past year toward further increase by the liberal investment of English capital, prepared to work it "for all that it is worth," may induce some of our enterprising countrymen to enter the field. In the search after precious metals we are never behindhand in the race, and there are many Americans now engaged in mining in every country in the world. To say nothing of Australia, some of the foremost adventurers in the more recently discovered gold-fields in the Transvaal are Americans, and we can think of one in particular who, six years ago, was convinced of the resources of that region, when most people in London would not listen to him, and who has had his pluck and determination rewarded by a large fortune. Why then should there have been an overlooking of the resources of Chili or a hesitation to embark in the nitrate business there? It is not because the value of nitrate is better understood in Europe than here, for our imports of the article are large and steadily and rapidly increasing, the past year figuring for 498,562 bags, against 398,293 bags in 1886. And indeed it requires but little investigation into the matter to ascertain that a good nitrate deposit, with capital to work it and to make the necessary communications for shipment, is a far better investment than nineteen out of twenty gold or silver mines.

We have some hopes, however, that American enterprise will take more kindly to the Republic of Chili now than formerly, as it is scarcely possible that the carrying out of so large a railroad contract as has been lately entered into by the government of that Republic with an American company can fail to make the resources of the country better known and appreciated here, and some of the many Americans who will be attracted thither in connection with that work will probably be shrewd enough to see what opportunities still remain and to take advantage of them.

The first English joint stock company to exploit this industry was established in 1883, and this investment has returned $126 for every $100 paid in, including the venders shares, representing part of the value of the property purchased. Since then there have been started ten companies, and they are still being formed to work new nitrate deposits or to purchase those which are already being worked, and indeed the success that has attended the operations of those that have had time to show results justifies this activity. One that commenced work in April of last year has already distributed 10 per cent to its fortunate stockholders, and it is stated that the profits of this company for the first twelve months of its active life will not fall short of 100 per cent, while other two have distributed 25 and 38 per cent respectively. The total capital engaged by the eleven companies referred to amounts to $10,550,000, of which far the largest portion went to promoters and the owners of the properties, representing the prices paid, but in addition to these ten millions and a half of dollars there has been a large amount invested in the construction of railways to bring the product to the shipping ports, and these have already for the most part given very profitable returns, and a bank has been established in connection with this special industry which is expected to prove equally remunerative.

The prices of the share of the companies range from 30 per cent premium for the newest born up to 650 premium for the shares of one of the oldest companies, which is considered to have the best prospects.

The shares of the Nitrate Railways Company, which is the principal one serving the nitrate districts, with a share capital of $6,000,000 and a bonded debt of $10,000,000, stand at a premium of 200 per cent in the market.

Taken altogether, the showing is one which makes it a matter of surprise that some of the surplus capital of this country did not find its way into this field for investment. Most, if not all of the unworked nitrate deposits belong to the Government, and are put up for sale from time to time, at public auction. It might be still worth while to ascertain whether purchases can yet be made on a remunerative basis.

EXPORT MARKETS.

The export markets of Mexico, Central and South America and the Australian Colonies are the natural outlets for the overproduction which from time to time threatens our manufacturers, who as a rule have never looked beyond the home market for the sale of their goods. To take advantage of these markets several things are necessary. In the first place, there is a sad lack of geographical knowledge among those who should make it part of their business to be well informed. This study of geography should be followed up by a careful consideration of the statistics of the several countries, and this we are convinced will lead many manufacturers who are simply trusting to the expansion of

home demand, and blindly hoping for "better times," to the conclusion that the wisest thing they can do is to cultivate the foreign markets, and thus secure an outlet for their surplus make.

As striking instances of the correctness of these views, we can refer to many leading makers of mining machinery, electric plant, railway, agricultural and other goods, who have been alive to the situation and have successfully opened up a large foreign outlet for their wares; with such success indeed that in every market in which they have obtained a footing they are now the leaders in their respective branches of trade and are reaping the benefit of their foresight. What has been done in these cases with such brilliant success and in so short a space of time, in spite of competitors who had long had the field to themselves, can be done again in many other lines of goods, and it only requires the energy, shrewdness and aptitude for adapting themselves to new conditions, for which our people are celebrated, to enable our manufacturers to increase their business to a very great extent.

With regard to obtaining the necessary statistics as to trade, amounts of annual imports and exports etc. We have for some years furnished much of this information concerning the mineral industries, as it has been published officially; we shall now devote more space than before to the subject, giving full information upon various other branches of trade, and the exports and imports of the various countries. In addition to the knowledge to be acquired through our columns, there are always the consular reports which can be obtained on application to the State Department in Washington. Some of these contain valuable information, though many of them are unreliable, chiefly from the bad system in practice of appointing consuls without reference to their fitness for the duties that may be required of them.

There is also a sad lack of proper editing in the department, the information being given frequently in a nearly useless shape. Information, and occasionally very valuable "pointers," can sometimes be derived from the foreign consuls in our seaport cities, or from the legations of their respective countries in Washington.

After the manufacturer has satisfied himself that the trade is worth looking after, he should ascertain before shipment what kind of handling his goods are to be subjected to before arriving at their destination, and he should pack accordingly. We may cite a case in point in which several pianos were shipped from Europe to a Mexican port on the Pacific, and were carried by porters over the Sierra Madre and sold in one of the cities in the interior of Mexico at prices which would make a New York piano-forte manufacturer envious, even after paying all the enormous expense of transport.

Packages should be adjusted to the requirements of transportation, and though security is the first consideration, any thing approaching unnecessary weight should be avoided.

The customs of the countries must be studied and complied with. The merchants and consumers of these countries can not be expected to change their ways and methods of doing business to conform to our ideas. The importance of this is well illustrated by the footing that the English, and especially the Germans, have obtained in foreign markets ahead of us by conforming to the customs and prejudices of the foreign consumer.

TRUSTS AND THEIR TENDENCIES.

We are only repeating what every one says and knows, that the present universal creation of trusts, in one form or another, marks a revolution in the world of trade, as radical as any ever effected, and one which, like all great commotions, will surely produce results, indirect and perhaps remote, which the revolutionists themselves do not contemplate.

Combination means the failure of competition, or, at any rate, disapproval of its effects by the competitors themselves. World-wide competition is the result of such world-wide intercourse and interchange of products as steam and electricity make possible. Whether Mr. WELLS is right in attributing the late depression in trade exclusively to these facilities for cheap production and rapid transportation, and is correct in predicting that the same causes will produce the same effect in even aggravated degree, we do not now discuss. But no one disputes that the supplanting of hand labor by machinery, the obliteration of distance by railroads and steamboats, and the extinction of time by telegraph and telephone, have cheapened every article of commerce by bringing the producer, no matter where he raises his commodity, into more direct intercourse with the consumer, no matter where he lives. And this cheapening process, under the facilities which science has given competitive commerce and trade, has gone on till the producer, manufacturer and carrier, in order to increase their profits, and, in some instances, save themselves from ruin, have combined—the producer and manufacturer to restrict production and to regulate sales, and the carriers so to distribute freight that the less favored shall receive their full share of traffic, and are thus restrained from bidding for public support by offering to transport at unremunerative rates.

Combinations, by whatever name they may be called, be it trusts, pools or syndicates, have the same object, by whatever class of business men they are organized, be it among producers of raw material, manufacturers or transporters, namely, to strangle competition and increase price.

Public indignation is freely expressed against combinations through the press and in the legislative halls of both continents. Laws are made to punish it, and every political party professes to abominate it and promises to abolish it; but still trusts accumulate in numbers and increase in influence. There are so few men, in fact, of wealth who do not profit by trusts that a numerous army of the disinterested cannot be found to attack them, unless it be recruited from the laboring classes. And even here in all the technical trades the workman has protected himself against competition in labor by methods allied to those of the trusts, by unions and leagues, so arbitrary in their operation and so tyrannical in their penalties that the arguments of the skilled workman against monopolists and trusts are neutralized by arguments as cogent against his trade union.

No inconsistency will influence his vote, but it necessarily influences the freedom of action of the representatives he sends to Congress and to the State Legislature.

There assuredly is peril to the public weal in unrestricted combination—the peril which is inseparable from the possession by any man or set of men of the absolute power to oppress his fellows for his own benefit. But be its origin what it may, it is an expression of the growing tendency towards socialism and consolidation as opposed to individualism and competition.

It becomes then a matter of great, of vital importance, to all our industries to study carefully the working of trade combinations, and guided by the lessons of experience, to forecast as far as possible the results which this all but universal movement may bring about, and to devise and apply proper and wise restraints to the abuse of the unlimited power these combinations will or do possess.

The question is one not to be hastily decided by simply enunciating the general natural law of the survival of the fittest in the struggle for existence. There are advantages as well as dangers in both combination and unrestricted competition. Under the reign of the Darwinian law whole species have been exterminated, and their places have been taken by those possessing elements better adapted to the environment. The extinction of the weak, who are weak through no fault of their own, may be looked upon as a cruel injustice; but it cannot be denied that the general action of the law has resulted in progress and improvement.

It is true that this progress in the case of man has led to the provision of such conditions as will extend the survival of the weak. Civilization has not decreed their extinction, but has sought rather to so ameliorate the conditions of the struggle for existence that even the less fit may survive.

Men band together for mutual protection, and civilization follows the assurance of safety from the attacks of enemies. But the very essence of civilization is respect for the rights of others; without this sense of justice controlling the actions of men, whether as individuals, as combinations or unions, as communities, or as nations, there can be no permanency in the reign of order.

The absolute ruler may become a tyrant who, in his unrestricted power, may appropriate without remuneration the possessions of his subjects, or even take their lives for his personal gratification or benefit. The government of a nation, even though it be an elective one, may appropriate the hard earnings of the people and distribute them to its members or to favored classes as rewards for special personal services. The laborers' "union" may practically confiscate the property of the employer, and may take the bread from the fellow workman, who anxious to labor on such terms as he can secure in open competition, is yet unwilling to enter the labor "trust;" the employers of labor may combine to grind down their workmen's wages to the starvation point in order to swell their own profits, or they may combine to control or monopolize some article of commerce and to make the consumers thereof pay exorbitant prices for it. All these forms of tyranny are the offspring of a common parent, and though they all commence with some innocent or laudable object avowed, the different degrees of oppression at which they arrive are limited only by the ability to oppress. The enslavement of his fellows has been prohibited to civilized man by a decent regard for the opinions of mankind, but the spirit that would make slaves still exists.

The latest phase of the combination or "trust" movement is towards the "cornering" of the products of industry—not that this feature is new, nor is its operation now more successful than in some historic cases. The most brilliantly successful scheme of this kind of which we have any record was the "grain corner" which JOSEPH and PHAROAH engineered in Egypt, as recorded in the "good book," and in contemporaneous literature. The price of food was there so advanced by a more or less artificially produced famine that almost the entire population sold itself into slavery, and assigned its land to the "corner" in exchange for food.

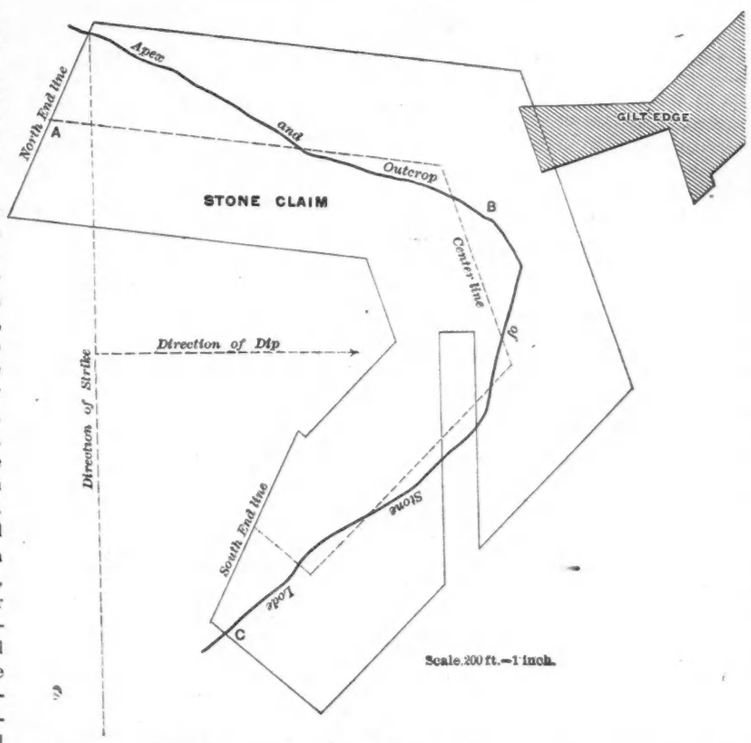
It is impossible that such a complete success should crown any

modern PHAROAH, but the tendency of all trusts and combinations is in the same general direction, though increased respect for the rights of his neighbor keeps many of JOSEPH'S imitators within very modest and harmless bounds.

It cannot be denied that the inability of the weak to maintain the struggle for existence has led to their union to increase their strength. Workmen are unable to secure from employers a fair recognition of their rights except by uniting and being thus able to enforce them. When they possess this power they are apt, like the despots of old, to become tyrants, and exact more than justice; they would take from their employer and the independent fellow-workman the rights they claim for themselves. They would require such a rate of wages as would enable even the most incompetent workman to live in comfort, and limit the productive capacity of the skilled and intelligent to enable the unskillful or unfitted to survive. This is also precisely what trade combinations and "trusts" do. They combine to secure from consumers such prices for their products that even the weak and incompetent can live, and they compensate the strong and skillful for the loss which these restrictions would occasion them by increasing the profit on their smaller output.

When they get the product so completely cornered that they can dictate prices to the consumer they usually become tyrannous, and if they do not follow their Egyptian prototype to the limit of enslaving a nation, it is in some cases only because the corner is not on food, and the advance in civilization would not permit a modern Pharoah to go that far.

Labor and capital, producers and consumers, have each rights that should be guarded, and though much that is paraded as modern wisdom is in reality but long forgotten folly, yet the modern conditions, the increase in intelligence, more general information, greater respect for the rights of others, in a word, higher civilization, of which the newspaper is the exponent, will limit the reign of tyranny in every direction. We doubt not the solution will come in the enactment of such laws as will prevent excesses, while allowing conditions fair for all in the struggle for existence. It is not to be expected or desired that the whole country should be taxed to enrich the few, or that the industrious, intelligent and skillful should be obliged to provide a sinking fund for ignorance, incapacity and indolence. The solution of the problem affects every interest and merits the best thought of every intelligent man; when it receives this, the solution will be found.



MAP OF STONE AND GILT-EDGE CLAIMS, LEADVILLE, COLO.

THE SUPREME COURT AND THE END-LINES.

Judge DE WOLFE of Montana, in the decision which we reviewed last week, mentions, without naming, certain decisions of the U. S. Supreme Court, as having been urged in opposition to his view, and as being, in his judgment, not inconsistent with it. For lack of time, his reasoning on this point is not given in the decision.

We cannot but presume the cases thus indicated to have been the *Flagstaff* and the *Elgin* cases, since in these the opinions of the Supreme Court as to end-lines and side-lines have been chiefly, if not exclusively, made known. The *Elgin* decision (delivered by Justice FIELD, April 26th, 1886, in *The Iron Silver Mining Co.* vs. *The Elgin Mining and Smelting Co.*) particularly deserves to be recalled in this connection.

To make it perfectly clear, we introduce a diagram of the ground in dispute.

The Iron Silver Mining Co., owning by prior title the Stone claim, asserted an extra-lateral right to the Gilt-Edge, on the dip of that lode. The other side denied that any such right could exist under the circumstances:

1. Because the Stone claim had not two parallel end-lines, as the law requires.

2. Because, if its two nominal end-lines could be accepted as valid (*i.e.* if *C.* were assumed to be on the so-called "south end-line") vertical planes drawn through them would not include the Gilt-Edge claim.

Chief Justice WAITE and Justice BRADLEY, in a dissenting opinion, observed:

"The end lines of a mining location are to be projected parallel to each other and cross-wise of the general course of the vein within the surface limits of the location; and whenever the top or apex of the vein is found within the surface-lines extended vertically downwards, the vein may be followed outside of the vertical side-lines. The end-lines are not necessarily those which are marked on the map as such, but they may be projected at the extreme points where the apex leaves the location as marked on the surface."

As we remarked at the time, this opinion apparently implies the propriety of rectifying all end-lines. We decidedly prefer in that respect the opinion of Justice FIELD, representing the majority of the Court, as to the controlling force of end-lines once established, in accordance with the statute. The following passage from that opinion is admirably clear and forcible:

"With all the care possible, the end-lines marked on the surface will often vary greatly from a right angle to the true course of the vein. But whatever inconvenience or hardship may thus happen, it is better that the boundary-planes should be definitely determined by the lines of the surface-location, than that they should be subject to perpetual readjustment according to subterranean developments made by mine-workings."

On this basis, the Court says it will not permit the actual end-lines (*i. e.* the two crossing the apex) to be altered; and because they are not parallel, it denies to the Stone claim all extra-lateral rights.

It thus appears that, concerning valid end-lines for lode-claims, the essential requirements of the statute, as expounded by the Supreme Court, are two: 1. According to the *Flagstaff* decision, they must be "cross-wise of the general course of the vein on the surface" (not necessarily of its true course). 2. According to the *Elgin* decision, they must be parallel. Both these conditions are held essential to the acquirement by the locator of an extra-lateral lode-right, between vertical planes drawn through his surveyed end-lines. But the effect of the non-fulfillment of the first condition is curiously different, according to the *Elgin* decision, from the effect of a non-fulfillment of the second.

In the *Flagstaff* case, the end-lines were parallel, but they were not "cross-wise of the general course of the vein on the surface"; or, to use language more generally applicable, and conveying what we conceive to be the exact meaning of the Court (since most veins do not literally reach the surface, and the apex is "the edge nearest the surface"), the apex did not pass under these end-lines, but passed under two parallel side-lines instead. In the *Flagstaff* case, the Court declared these side-lines to be the true end-lines, and gave the locator the extra-lateral right bounded by vertical planes drawn through them. His error (if it was an error; there is some reason in history for suspecting it to have been intentional) was punished by giving him a lode-claim as complete in all respects, except that of length, as if the location had been correctly made.

In the *Elgin* case, on the other hand, the end-lines (that is, the located north line, and the line, not located as an end-line, at the other extremity of the claim, under which the apex actually passed) were not parallel. Here the far severer penalty of a total loss of all extra-lateral lode-rights was inflicted. Yet the defect in the location had resulted from an attempt to carry out the principles of the *Flagstaff* decision, and make the location follow the surface-course of the vein, which, by the erosion of a ravine across it, had been made to appear bent like a horse-shoe, though the true course was quite uniform. The vein lay like a slice of ham in an inclined sandwich of country-rock: the ravine had bitten out a semi-circle; the *Flagstaff* decision required the location to follow, not the course of the original edge of the ham, but the edge of the ham as left after the bite; and having got, by this circuitous route, around to the other side of the bite from where he began, the locator tried to meet, as best he could, the second condition, namely, that of parallelism in the

end-lines. In his attempt to do this, he missed, by a few feet, the first condition. The apex had been supposed to cross the "south end-line," but, in fact, passed out of the claim at *C*. If it had crossed the end-line, the location would have been perfect, with two parallel end-lines, both "cross-wise" of the apex. But these lines, continued northeast, would not enclose any part of the Gilt-Edge claim, which was the ground in dispute; and hence the Court did not consider as seriously as it might have done the propriety of condoning the small error by which *C* had failed to fall on the south end-line, and of declaring that end-line valid. This would have been in the spirit of a passage in the *Flagstaff* decision which speaks of "slight deviations of the outcropping lode from the location" as "probably" not affecting the locator's rights—although that passage does not literally apply to this case. But as the Stone locator was bound to be beaten "in either view" of his south end-line, the Court did not pause to do more than recognize, in passing, the possibility of the view which would admit the validity of that line. The line did not comply with the law, strictly construed; and a liberal construction on that point would have done nobody any good. Yet, as we have formerly said, we think the Court might have adopted that construction with propriety. It would not have affected the result to the litigants; but the precedent, being founded on the extremely peculiar circumstances of this particular case, would not have bothered the Court subsequently, as its actual decision is likely to do.

All the judges agreeing that the south end-line was not valid, the minority said that both end-lines ought to be rectified by substituting lines drawn through the points *A* and *C*, "cross-wise of the general course of the vein within the surface-limits of the location." If this curious phrase means *at right angles with the true course of the vein*, the rectified end-lines would be drawn through *A* and *C*, parallel to the "direction of dip" shown on the diagram. If it means *at right-angles with the course of the apex within the location*, then these lines would be drawn, we suppose, perpendicular to a line joining *A* and *C*. But "cross-wise" does not necessarily mean at right-angles. The majority decision explicitly so declares; and the adoption in the dissenting opinion, immediately thereafter, of the ambiguous term *cross-wise*, instead of the precise term *at right-angles*, seems to be significant. Hence the north end-line is already "cross-wise" of the apex and of the vein, on any hypothesis as to the course of either, and, under the language of the dissenting opinion, it would not be really necessary to rectify that line at all, but only to draw a new south end-line parallel to it at *C*. This is what we suggested ("Lode-Locations,"* *Trans.* A. I. M. E. xv., 303) as a fair application of the statute to such cases, in the following words:

> "When one end-line crosses the apex of the located lode, and the other does not, but the apex departs from the claim across a side-line, not parallel with the valid end-line, and the deviation is too great to be looked upon as unimportant, then the boundaries of the extra-lateral right shall be a vertical plane drawn through the valid end-lines, and a vertical plane, parallel thereto, drawn through the point where the apex of the lode passes under and across the side-line of the claim."

But the majority decision, starting from the invalidity of the south end-line, and considering the line crossed by the apex at *C* to be the real end-line of the location, says the two end-lines "are not and cannot be made parallel," and on this remarkable statement bases its startling conclusion that the location and patent carry no rights whatever, either to the mining ground in dispute or to any other ground outside of the surface-location. We have formerly pointed out the unfortunate effects of this decision, if it should be followed as a general precedent. We wish now to call attention to the peculiar statement which constitutes its foundation. That the two lines to which it refers are not parallel, is clear enough, even to a layman; but what does the Court mean by saying they "cannot be made so"? Does it mean that, to a location of this shape, following the apex around a curve of some 135 degrees, it is impossible to draw two parallel end-lines, cross-wise of the course of the apex? That is true only if the lines must cross the apex *at the same angle*. Otherwise, it is not true at all. The Court has declared that "cross-wise" does not necessarily mean at right-angles. Why should it then mean any particular angle for both lines, or for either? Or, does the Court say that these lines cannot be made parallel, because the law will not permit any change to be made in their direction, after they have once been established? That would be more comprehensible; but it is not indicated by the context. The declaration has the air of the statement of a physical fact, rather than a legal principle. It occurs in the presentation of the facts of the particular case, after an exhaustive discussion of the principles upon which they are to be adjudicated.

On the whole, we find ourselves driven to the hypothesis that the declaration that these lines not only "are not," but "cannot be made parallel," has only a rhetorical significance. It is merely an emphatic expletive, as who should say, "Them lines ain't parallel, and you can't make nothin' else out of it!" or "There ain't no end at all, and there's an end on't!" Such asseverations consort better, it is true, with the vigor of the street than with the dignity of the bench. And perhaps there is a quiet, implied rebuke in the dissenting opinion, which says in substance, "They are not parallel, but they can be, and ought to be, made so."

Judge DE WOLFE'S decision, as we explained it last week, seems to us to apply the principle of the dissenting opinion in the *Elgin* case. That the majority opinion in that peculiar case may be much modified by the Supreme Court itself in application to other conditions, is certainly not impossible, perhaps not unlikely; but that such modifications will ever go so far as to permit the "projection" of new boundary-planes, instead of planes through such surveyed location-lines as actually cross the apex, seems to us improbable in a high degree. Still more improbable would be the alteration of a boundary once fixed by an original, valid end-line. In other words, if, of a rectangular claim, one surveyed end-line duly crosses the apex, and the other does not, but a side-line does, the Supreme Court may hold, as it has held in the *Elgin* case, that there is no extra-lateral right; or it may consent to a boundary-plane through the intersection of the apex and the side-line, drawn parallel to the valid end-line; but we do not think it will consent in such a case to two new boundary-planes.

Was the case decided by Judge DE WOLFE such a case? As we showed last week, the Court did not know, but said that made no difference. Whether the lode crossed two side-lines, or one side-line and one end-line, there must be two new boundary-planes, placed at right-angles across the apex.

But we think it makes a great difference which of these two statements represents the facts, although, on either hypothesis, the Supreme Court may easily find reason to reverse the Montana ruling. For if the apex crosses two parallel side-lines, then these are (by the *Flagstaff* decision) true end-lines, and the boundary-planes must be drawn through them. On that hypothesis, Judge DE WOLFE would have had before him, apparently, the precise *Flagstaff* case, and decided it on a principle opposed to the *Flagstaff* decision. On the other hypothesis—of an apex crossing a side-line and an end-line, not parallel,—his decision runs against the *Elgin* majority opinion, the principles of which will not be easily so far modified as to include this variation.

* ENGINEERING AND MINING JOURNAL,

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.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: As a stanch friend of THE ENGINEERING AND MINING JOURNAL, I cannot forbear congratulating you on the extraordinary success of your attempt to show the exact statistical condition of the important metals.

Such an idea has at times occurred to me; but I have dismissed it at once as being beyond the limits of possibility; especially in this country, where returns are not obligatory.

I very much doubt, if, with all their facilities, any European journal has ever succeeded in collating and publishing such a mass of valuable statistics in regard to the useful metals.

Wishing you the success that such enterprise and ability deserves.

SUDBURY, ONTARIO. EDW. D. PETERS, JR.

Electrolysis of Fused Chloride of Sodium.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I notice in a recent number of your journal a paragraph derived from the *Moniteur Industriel*, to the effect that Mr. N. N. Beketov, a Russian chemist, has made a communication to the Technical Society of St. Petersburg, on the subject of a "*new system* of decomposition of chloride of sodium." It is stated that Mr. Beketov made his first experiments in 1885, according to the Hefler process, but, the results not being satisfactory, "he has now treated electrolytically the salt in a state of fusion." With your permission I will endeavor to prove, beyond the possibility of doubt, that the so-called "new system" of decomposition of common salt is nothing more than the reproduction of a process invented and patented by my brother, Mr. Charles Watt, on September 25th, 1851. In order that there should be no question as to the true origin of this method of treating chloride of sodium, I quote the following passages from my brother's patent: "The second part of my invention consists in a mode of preparing or obtaining the metals of the alkalies and alkaline earths by the united action of electricity and heat." The specification then goes on to describe the vessel in which the operation is conducted, "which is of iron, or other suitable material capable of bearing a full red heat. * * * The vessel is filled with dry saline matter, so that when it is in a state of fusion it shall reach the dotted line (indicated in the drawings which accompany the specification) the partition (also shown) keeps the eliminated substances from reacting upon each other, and also excludes the air from the compartment in which the metal is eliminated, the access of which would cause the metals to be oxidized. The vessel is placed in a furnace where it can be subjected to the action of a full red heat, and when the saline matter is in a state of fusion, contact is made between the decomposing vessel and the apparatus supplying the electric current. * * * The fused salt is maintained at that temperature which will insure the instantaneous volatilization of the metal. * * * The salts which I usually employ are the chlorides, iodides or bromides of the metals of the alkalies or alkaline earths."

It will be obvious, from a perusal of the few passages quoted, that Mr. Beketov's "new system" is really an old one after all, and I may say that this is not the first occasion on which I have had to call atten-

tion in the columns of your valuable journal to the reproduction of my brother's patent, which has been the subject of a host of subsequent patents for so-called inventions. I think it but right that the public should know that the decomposition of chloride of sodium by the aid of electricity and heat is no novelty, and it seems somewhat strange that the members of the Technical Society of St. Petersburg were not acquainted with that fact.

ALEXANDER WATT.

BALHAM, SURREY, ENGLAND, Jan. 19, 1889.

MINES AND MINING IN THE ARGENTINE REPUBLIC.

Written for the Engineering and Mining Journal by A. Hausmann.

Although mining is one of the oldest industries in that part of South America comprised within the boundaries of the Argentine Republic, and was probably followed by the natives before the arrival of the Spanish conquerors, it has always remained of subordinate importance in the economy of the country, and has only from time to time enjoyed brief periods of prosperity, interrupted by long intervals of inactivity and paralysis. Since ten years it has been in a dormant state, and only recently has the voice of advancing civilization, the shrill whistle of the locomotive, aroused it from its death-like torpor, inspiring new life and energy. The mines of Argentina begin again to attract the attention of capital in Europe and the United States, and to this circumstance the writer owes the opportunity of visiting some of the old famous mines of the province of San Juan.

Considering the configuration of the Argentine Republic traversed in its entire length, from the 22d degree, south latitude, to the 51st degree by the grand mountain chain of the Andes, it becomes obvious that great possibilities exist for the presence of minerals, and an immense territory is offered for exploration. Only that part of the Cordillera lying north of the 35th degree, begining with the province of Mendoza, embracing the highest points of the chain, the peaks Aconcagua, Mercedario, Tupungato, etc., has been prospected to a small extent, while the entire southern portion, which nowhere attains an elevation of more than 13,000 feet, is "terra incognita" as regards its geological and mineralogical condition. It does not appear probable that this vast expanse of mountains should be entirely devoid of valuable mineral, and the discovery of gold placers near "Cabo de las Virgenes," at the eastern entrance of the Straits of Magellan, speaks in favor of the existence of gold bearing veins in the range, which at this point is not so very far from the eastern coast.

These placers were discovered in 1885, but with this exception placers are almost unknown, and nowhere worked on a large scale.

With a few exceptions in the isolated, independent mountain ranges of Cordoba, San Luis and the Huerta, all the mines are located in the Cordillera* or the numerous parallel chains which constitute the great system of the Andes Mountains, distributed over the provinces Jujuy, Salta, Tucuman, Catamarca, Mendoza, Rioja and San Juan. Only in the last two, however, has mining attained some importance.

As remarked above, the mining industry in this country has always been of an erratic—so to speak, "spasmodic"—character, sudden, short periods of enthusiasm alternating with long intervals of stagnation and lethargic repose, and from such an attack of prostration it is slowly recovering at the present moment. The era of prosperity preceding the collapse commenced in 1860, when the government for the first time sent a scientist, Mr. A. Bravard, who perished in the earthquake at Mendoza, March 20th, 1861, to examine the mines. His glowing reports, together with the exertions of the intelligent and energetic Governor of San Juan, D. F. Sarmiento, resulted in reviving the interest for mining and metallurgy. Several companies organized at home and abroad expended large sums in the development of mines and the erection of suitable works for the treatment of the ores. But success was wanting, and one after another, without exception, they were compelled to suspend operations and finally abandon their mines and works. The last one to succumb to its inevitable fate was the great Anglo-Argentine Company, at Gualilan, which shut down finally in 1877. Ruin and desolation have since reigned over the abandoned camps.

At the present moment the "status quo" of mining, milling and smelting is about as follows: there are no reduction works in operation (a small, primitive smelter at Chilesito, Province of Rioja, hardly deserves the name), and ores demanding smelting have to be sent to Europe. There are no stamp mills or concentrating works in the state, the only machines employed for the amalgamation of gold ores being the primitive "Maray" (a big stone with handle moving on a flat one), and the Chilenean "trapiche," a very effective mill, consisting of two huge revolving stone wheels with iron tires. Work has been resumed in several mines with moderate forces, but there are no steam engines for pumping or hoisting. However, they are in the hands of energetic men or companies, the railroad has arrived at San Juan, new lines are projected across the Andes, passing the mineral districts, and a new era of activity may be expected.

Before entering into the details of the several mining districts, I believe it advantageous for the better understanding of the situation, to mention the principal provisions of the mining laws, which are, to a great extent, responsible for the total abandonment and the frequent change of owners of so many mines. The State never confers a perfect title to a mining property, which is not regarded as common real estate, and can be held only conditionally. A mining title is acquired by applying first for a permit to prospect in a certain locality for lodes, placers, or other mineral deposits. The State grants the permission within an area fixed by the law for the term of one year—this is called a "concession." After the expiration of this time the applicant has a right to locate a certain number of "pertenencias," or claims, each one three hundred meters long by two hundred wide on any lodes he may have discovered. They are measured by a State surveyor, approved by the government, and recorded. After this the proprietor enjoys all rights and privileges of full ownership as long as he complies with the law ordaining that each claim shall be worked by four men during two hundred and thirty days every year. Failure to fulfill these conditions entails loss of the ground, with everything on it, as soon as someone else takes it up as abandoned, by applying for a new concession. By this simple arrangement such conflicts as we have in the United States are entirely avoided, all disputes or adverse claims being adjusted before the measurements are made. For the poor prospector, however, these conditions are very exacting and severe, and I have been assured by reliable persons that several rich mines are carefully concealed, because the owners are unable to comply with the law, and do not want to run the risk of having them taken away from them.

A little over 100 miles (36 leguas) east of the capital, San Juan, is situated the Sierra "Huerta," with numerous mines, in a formation of granite, gneiss, mica schists, etc., the mineral consisting of copper, lead, silver, gold, and having a very high average of several hundred ounces silver per ton. The camp was discovered in 1860, and at one time had three establishments for smelting and amalgamation. The last one was closed in 1870. The principal mine is the San Domingo.

The Tontal district lies west of San Juan, in the range of the same name, attaining a height of nearly 14,000 feet above sea level, slates and granite being the principal formation. Chloride of silver is predominant in the ore, but galena occurs likewise. The mines were discovered in 1860, and soon after an English company erected the most complete and perfect works the Republic ever possessed. "Hilario," situated on the southern branch of the San Juan River—Rio de los Patos—a little over 50 miles in direct line from the town, San Juan, but over 200 miles by wagon road. The establishment was provided with reverberatory, smelting and refining furnaces, pans and Freiberg barrels for amalgamation, assay office, and laboratory. A large turbine furnished 95 horse-power for all the machinery. Notwithstanding this splendid equipment the career of the company was a short one, and it suspended business in 1867. Scarcity of ore was the principal cause.

Further west, on the north fork of the San Juan River, Rio Castaño, is located a mineral district of the same name, with veins carrying chloride of silver, galenas and some free gold. Between this camp and Hilario existed at that period four other works for amalgamation, roasting and smelting, of which nothing but the ruins are left. At the present moment an English company is engaged in building a stamp-mill at Castaño.

Of the mining districts which I visited, by far the most interesting was "Gualilan," an old and famous "mineral," accidentally discovered in 1751 by a Chilenian cattle herder.

About 75 miles north and a little west of the capital, San Juan, at a short distance from the foot of the Tontal range (also called here "Sierra Tigre"), rises abruptly from the plains a low mountain range, running north and south, composed of a number of long hills, either connected or entirely separated by a gap, reaching a height of about 500 to 600 feet. They are formed of layers of lime-rock, dipping west at an angle of about 45 degrees, and breaking off abruptly on the eastern declivity, being penetrated in places by igneous rock, a coarse grained quartz porphyry, known as elvanite. Concerning its age, the formation is described as carboniferous in some reports; but the most reliable authorities count it among the Silurian. Fossils are very scarce. From the few I have seen (a gastropod, which I take to be Ophileta compacta, and a piece of a trilobite) I believe this latter opinion the correct one.

Three of these hills are traversed in nearly their entire length, a distance of more than 10,000 feet, by an immense mineral-bearing vein, attaining a width, in places, of thirty feet and more. Being in conformity with the stratification, this ore deposit would be called an "*imbedded vein*," differing from the Leadville contact veins in dip and simplicity of structure, both walls being formed of the same rock. The vein is frequently intersected by small veins, and in a few places invaded by intrusive masses of the igneous rock mentioned above.

The material contained in this wide fissure shows a great variety of minerals. Quartz occurs in crystalline chunks and in the shape of sinter, often colored by copper, iron and probably manganese. Gypsum is very common in all parts of the vein. I have seen beautiful crystals together with crystals of silica lining the cavities of quartz geodes and also specimens of rich ore, showing free gold, consisting of a conglomerate of gypsum, quartz and iron. Lime spar is scarcer in the vein, but found in abundance on the surface in its out crop, which can be easily traced about the middle of the hills. Hornblende in its fibrous, radiating variety, known as acktinolith, is another common mineral. Of iron are found the oxidized ores in the upper portion of the vein, the pyrites in the lower part, extending below the water level. Copper is present in many forms, native, cuprite, malachite, azurite, bornite, chalcopyrite, probably atacamite, and as the most interesting, in beautiful blue crystals of sulphate. The presence of the sulphides in the lower parts of the vein, accounts easily for the occurrence of the sulphates and other oxidized salts in the upper parts, as the products of their decomposition. Lead occurs as galena, rarely as carbonate. Silver, probably as chloride and sulphide, and gold native. Besides there is arsenic and perhaps many other metals.

The vein has been opened in many places by inclines, shafts, tunnels, cuts, etc., mostly located without any plan or system, by various owners at various times. The tunnel which mainly served the English company for the extraction of ores is situated on the claim "Sentazon," opposite the works, and runs on a level with the plain. It leads into vast chambers, "casarones," over one hundred feet high and often fifty wide below, reaching daylight in some places and having drifts above in others. A large mass of loose rock slid down in one of these excavations, from which the claim derived its name, "Sentazon," or slide. A very irregular incline follows the vein about 200 feet below the level of the plain, and connects with a shaft sunk on the plain. Similar works, even more extensive, are encountered in the hill furthest to the north, about half a mile from the establishment. In some places the vein has been worked from its apex, like a quarry, to a depth of about 100 feet.

At the line of contact between the porphyry dike and the lime is found a small vein of iron-stained quartz, which has been extensively worked years ago. Tradition has it that it was fabulously rich in gold.

The establishment, or rather the ruins that are left, deserves some special attention. It was built by the Anglo-Argentine Company, commenced in 1869 and closed in 1877. The ore was treated by amalgamation. It was crushed first with old-fashioned Cornish stamps, freed

* The two principal western chains are called Cordillera, the others are Sierras, with different names; all together form the Andes.

from some of the gangue matter by washing, roasted in a large iron cylinder and then conveyed to the amalgamating mills, of which there were ten. These machines represent a kind of improved arrastra, each one having four stones for grinding, suspended from a large horizontal wheel and moving in a circular vat or trough of granite rock, composed of nine pieces of uniform size.

The shaft was supplied with a large pump and hoisting gear; a powerful steam engine furnished the motive power for all the machinery. The northern shaft had its own engine for hoisting and pumping.

It is a pity to see the ruthless destruction that has gone on since the works were closed. Every part of the machinery, not too heavy for transport, has been carried off by people passing that way; the arrastras have been torn asunder and many of the stones broken in search of amalgam in the joints and crevices; doors and windows of the residences and offices were taken away or shattered.

What was the cause of the failure of the company I cannot tell. As usual in such cases, many persons attribute it to incapacity and dishonesty of management, which of course is possible, but other causes may exist, and if the reader takes into consideration the circumstances under which the company built and operated the works, he will readily see that even with rich ore and the strictest economy it was no easy matter to make the enterprise profitable. All the machinery was brought from England to Rosario and hauled by wagon to Gualilan. What such a transport must have cost it is difficult to imagine,—the freight from Gualilan to San Juan alone is $16 per ton to-day. The heavy timbers for posts, frames, etc., came from Mendoza; provisions from San Juan; wood for fuel had to be carried a good many miles, and water had to be brought from the mountains in a canal over four miles long. At the beginning the company counted on large quantities of high grade ore for treatment. The value of the ore is exceedingly variable and changing, and it is impossible to ascertain the average in a few days. Over a dozen samples gave from a trace to fourteen ounces gold and some silver. Much of the ore has to be roasted previous to amalgamating, and the presence of so much lime cannot but have an injurious effect upon this process, increasing the costs.

From Gualilan I went to "Rayado," a mineral district of very little importance, situated about one hundred miles further north at the foot of the first Cordillera. The formation is all granite here, the veins are small and unreliable with the exception of one large quartzite dyke, which, however, runs but a few ounces in silver.

Five miles south from here we come to a far better camp, "Salado." The formation is mainly the same, but the veins are quite different. The principal lode, the "Desengaña," is from 3 to 4 feet wide on an average, its eastern wall being granite, separated from the vein proper by a few feet of porphyritic rock. A dyke of fine grained, greenish rock, which I believe belongs to the trap or green stones, forms the western wall. Perhaps the eastern wall is of the same kind, metamorphosed by the contact with granite. The vein contains quartz, decomposed porphyry, iron, fine grained galena, with considerable heavy spar. A small stream cuts the vein in two, dividing it into a southern and northern portion. Considerable work has been done in each of them, but the deeper workings, extending about 50 feet below the level of the gulch, were inaccessible on account of the water. There are half a dozen more, within a little over a mile, more or less developed. The assays ranged from 6 to 121 ounces silver and a little gold, the average of 17 being 36½ ounces silver. Salado has been known since 1845.

A little over fifty miles east from Salado, separated from the Cordillera by the valley of the Jachal River, is found another old, historical mining camp Huachi, situated in the range of the same name, which attains an elevation of about 12,000 feet. How long this district has been known is uncertain. Some people claim that it was one of the sources of gold at the time of the Incas, but it seems hardly possible that the ancients should have obtained the metal from veins instead of from placers.

The mines are located on a high and very steep mountain, whose geological structure is quite a puzzle. Syenyte, gneiss, hornblende, quartz and a variety of eruptive porphyritic rocks seem to be mingled in a perfect chaos, crossed in all directions by small veins, whose lively brown, red and yellow colors, in contrast with the dark, somber rocks, impart a mottled, animated aspect to the slopes. The main lode is located near the summit, runs east and west, and is formed by the junction of two veins, named the "Potro" and "Riesgo," which again are composed of several smaller ones. This, however, cannot be seen to-day; all that is visible is a large hole, about 500 feet long by 15 to 20 feet deep, and 30 to 60 feet wide, caused by a cave, a sentazon, some thirty-five years ago. The only living eye-witness of the catastrophe was on the ground, and stated that over twenty men were employed in the mine at the time of its occurrence; but strange to say, not a single one was hurt. They all happened to be on top at dinner-time, when their attention was attracted by a rumbling noise, the whole surface of the vein had disappeared, and all their workings were completely buried. They made no attempt to recover them, but abandoned the mine. According to the story of the old man, the ore was very rich at the time of the accident, from 12 to 16 ounces gold per ton, but how far this is true I do not know. At present it is impossible to obtain reliable figures in regard to the average value without considerable time, labor and expense. All the samples I took contained a little gold. One vein at the foot of the mountain, in the deep and narrow gulch, contains zinc blende with pyrites, a little galena and some native silver, assaying over 800 ounces of silver. In an official report to the government, made in 1869, the average for Huachi is given as a little over one ounce of gold per ton.

Mining in this place is carried on under great disadvantages; it is accessible only by an exceedingly rough trail; wood is wanting, and the water in the main gulch so impregnated with mineral salts as to make it unfit for the use of men or beasts. To build a wagon road from the foot of the range, about twelve miles distant, would cost a large sum.

In the northern part of the province of San Juan are three mining districts of later date deserving mention. "Fierro," "Lagunita" and "Quebrada de las Breas." The two first named have silver mines, galena, with argentite and chloride. The last one copper mines, whose average is said to exceed 25 per cent.

There can be no doubt that many thousand tons of good ore are still left in these old mines, and only a small fraction of the mineral deposits in the Andes have been discovered. A large field is open here for the prospector, and as inducements: are offered security of title, high-grade ore and easy discovery of lodes, owing to the denudation of the rocks of drift or alluvial wash and the absence of vegetation. On the other hand, the difficulties he has to contend with are not to be overlooked: exacting conditions of the law to hold mining property; want of facilities for transport and communication; want of an ore market, scarcity of fuel, water and experienced labor.

The severe provisions of the law have been referred to above.

The settlements are few and far apart, separated by veritable deserts, "travesias." After leaving the San Juan River, about five miles from town, the road passes for 40 miles through a sandy desert without shade or water, and six miles from Gualilan touches a ranch, the only human habitation within the whole distance of over seventy miles. We reach the next inhabited valley, with the settlements of Iglesia, Rodeo and Colola, after traversing another desert of over forty miles. At the place named last the wagon road comes to an end, and all the mines north can be reached only on horseback.

Wood is so scarce that during the whole of my trip, which lasted over three weeks, I have not seen a forest, not even a copse, but only isolated single trees. The high Cordillera is desolate and barren in the extreme, and almost entirely devoid of vegetation.

Labor is cheap enough, but in mining the cheapest labor is not always the most profitable. Opportunity for educating skillful miners has been lacking in the Argentine Republic for many years, and the neighboring Republic of Chili furnishes most of the men employed at the mines. Facilities for assaying are very limited, and work in the mines is guided mostly by the deceptive results of the poruña, a section of a cow's horn which takes the place of the gold pan.

From reliable figures, I have calculated the costs of extracting a ton of ore and shipping it to Europe at a little over fifty dollars. The price of coal at San Juan is twenty dollars, for coke forty dollars per ton. With such rates it is easy to comprehend that for the profitable working, on a large scale, of the majority of these mines, the procurement of cheaper fuel and transportation is the vital question. Coal has been discovered not far from the town of San Juan, in the "Dehesa" range, and a railway is projected from the same place to Copiapo, Chili. When the coal-fields are developed and the railroad completed, a new era of prosperity will be inaugurated in the mining industry of the Argentine Republic.

THE EIFFEL TOWER.

We reproduce from our contemporary, the London *Engineer*, an illustration of the famous Eiffel Tower as it appeared on the 3d of January, having attained the height of 703 feet. When completed it will have a height of 984 feet, nearly double that of the Washington monument. The tower is really a private speculation of M. Eiffel, and in spite of most strenuous opposition to it on the part of some of the most distinguished men in Paris, in art and literature, the project was approved by the Commissioners of the Exhibition representing the State, and by the municipal authorities. A subvention of $300,000 was granted to M. Eiffel with the right of "running" the tower for his own benefit during the exhibition, and at its close the State will hand it over to the City of Paris, which will allow the promoter further twenty years in which to make a profit from it if he can. The structure is entirely of iron lattice work, and judging from the illustration it is not devoid of grace, in spite of the predictions and still expressed opinion of the artistic world in Paris that it will be a hideous monstrosity. The sides of the square comprised in the area of the base are 375 feet each, and the four legs, from which the tower proper springs, meet at a point 480 feet above the ground. The total weight of the structure will be 6875 tons. The form of construction required considerable ingenuity in the matter of elevators, as up to what is called the middle landing, where the elevator guides could be placed perpendicularly, the ascent is made at a varying angle of from 54½ degrees near the ground to 78½ degrees. The conditions called for a capacity to accommodate 50 persons, and a speed of 250 feet a minute, and it is with satisfaction that we note that the contract for these elevators (two) was given to Otis Brothers & Company, of New York.

Recently there has been a rumor, and a great sensation in consequence in Paris, that the Tower had settled and was out of the perpendicular. So great was the scare, indeed, that the Exhibition Commissioners sent their own engineers to ascertain whether this was the fact or not, but, apparently, it was groundless, having originated in an optical delusion which strikes many people when viewing the structure from certain points.

But that such a contingency has been deemed possible by M. Eiffel, is certain, as he has provided means in the shape of powerful hydraulic presses to rectify it, if such a thing be practicable.

Whatever may be the ultimate verdict as to its beauty, there can be no doubt that it is a fine specimen of engineering skill in iron work.

HOW AN AXE IS MADE.

The largest axe factory in the world is in operation in Pittsburg, and is capable of turning out 3000 or more axes a day. The following description of how an axe is made we condense from the Pittsburg *Times:*

Entering the main workshop, the first step in the operation which is seen is the formation of the axe-head without the blade.

The glowing flat iron bars are withdrawn from the furnace and are taken to a powerful and somewhat complicated machine which performs upon them four distinct operations—shaping the metal to form the upper and lower part of the axe, then the eye, and finally doubling the piece over so that the whole can be welded together. A workman stands by, seizing the partially-fashioned pieces one after another with a pair of tongs and hammering the lower edges together. Next the iron is put in a powerful natural gas furnace and heated to a white heat. Taken out, it goes under a tilt hammer and is welded together in a second. This

CONDITION OF THE EIFFEL TOWER, JANUARY 3d, 1889 (703 FEET HIGH.)

done, one blow from the "drop" and the poll of the axe is completed and firmly welded. Two crews of men are doing this class of work, and each crew can make 1500 axes per day.

When the axe leaves the drop there is some superfluous metal still adhering to the edges and forming what is technically known as a "fin." To get rid of this fin the axe is again heated in afurnace and then taken in hand by a sawyer who trims the end and edges. The operative has a glass in front of him to protect his eyes from the sparks, which fly off by hundreds as the hot metal is pressed against the rapidly revolving saw. The iron part of the axe is now complete.

The steel for the blade, after being heated, is cut by machinery, and shaped with a die. It is then ready for the welding department. A groove is cut in the edge of the iron, the steel for the blade inserted, and the whole firmly welded by machine hammers. Next comes the operation of tempering. The steel portion of the axe is heated by being inserted in pots of molten lead, the blade only being immersed. It is

then cooled by dipping in water, and goes to the hands of the inspector. An axe is subjected to rigid tests before it is pronounced perfect. The steel must be of the required temper, the weight of all axes of the same size must be uniform; all must be ground alike, and in various other ways conform to an established standard. The inspector who tests the quality of the steel does so by hammering the blade and striking the edge to ascertain whether it be too brittle or not. An axe that breaks during the test is thrown aside to be made over.

Before the material of an axe is in the proper shape it has been heated five times, including the tempering process, and the axe when finished has passed through the hands of about 40 workmen, each of whom has done something toward perfecting it. After passing inspection the axe goes to the grinding department, and from that to the polishers, who finish them upon emery wheels.

THE MINERAL PRODUCTIONS IN 1888.

Though in doing so we repeat some things said in our issue of January 12th, we refer again to this subject for the benefit of our very large list of foreign readers. The past year has been an eventful as well as a prosperous one to the mineral industries of the United States. The value, as shown in our statistical issue of January 12th, reached in 1887 the enormous total of $542,284,225, and was further increased in almost every item in 1888, when it is expected to have exceeded $560,000,000, or more than the aggregate value of the mineral products of all European countries.

PRODUCTION.

Coal, anthracite (tons of 2240 pounds)	40,400,000
" bituminous " "	80,000,000
Iron ore (tons of 2240 pounds)	12,000,000
Pig-iron " "	6,500,000
Steel rails " "	1,350,000
Copper, pounds	236,000,000
Lead (tons of 2000 pounds)	189,000
Zinc " "	57,000
Silver, Troy ounces	43,000,000
Coining value, $1.29 per ounce	$55,470,000
Gold, Troy ounces	1,650,000
Coining value, $20.67 per ounce	$34,105,500

The item of greatest value is the product of coal, the output of which has increased enormously. At the same time prices have been very satisfactory and remunerative. The production of pig-iron is even larger than in 1887.

The production of copper in this country has increased 27½ per cent over 1887. Arizona having increased her output nearly 50 per cent. The *Société des Metaux*, which has practically had the copper market in its grasp since late in 1887, has kept prices at most remunerative figures to producers, and copper shares have been in great demand. The effect of these satisfactory prices has been to stimulate the development of new mines and the resuscitation of old ones, the productions of which have gone to swell the output.

The lead market has been subject to violent fluctuations, due more to the manipulation of a ring, who commenced operations with the idea that they could handle the lead production of this country and ended in utter collapse. The outlook is rather discouraging, prices being rather unremunerative, the depression being added to by the very low price silver, which metal accompanies lead in most of the ores mined.

The output of minerals in the United States during 1888 not only exceeded that of any other country of the world, but it exceeded in value *the combined mineral output of the whole of Europe*. From the position of a heavy importer of foreign material which we occupied only a few years ago we have transformed ourselves into a producing power not only fully prepared to supply our own markets but to contest for supremacy in the markets of the world. And how has this marvelous change been effected?

By the untiring energy and unexampled ability displayed in overcoming difficulties in engineering. In labor-saving machinery, especially as applied to the mining and reduction of the precious metals, we stand unrivaled, and Australia, New Zealand, Africa, in fact all producers of minerals and metals, come to us with an abiding faith that they will be supplied with the latest successful creation from the brains of our ever active engineers and experts.

The vast amount of territory, the varied physical and geological features of this country, gives a breadth of experience for our engineers that no other country affords. Not only have they the necessary education in the theory of their profession, but their practical experience in the exercise of duties of their calling has been so great and varied, and the difficulties they have had to surmount so great and unique that by very force of the circumstances the American engineer is bound to take precedence, and this can be said without at all detracting from the well-earned reputation of many eminent foreign engineers.

The mineral production of this country for 1888 is a grand tribute to the enterprise of our people and to the skill of American engineers.

JAMES LEWIS & SON'S REPORT ON COPPER FOR THE YEAR 1888.

During the past year the copper trade has been practically controlled by the French syndicate, which was formed in the month of October, 1887, to force up the price of copper, in order to enhance the value of the large quantity of shares of the Spanish copper mining companies held in Paris. Encouraged by the success of their first operations, and the facility with which they were enabled, by the purchase of some 30,000 tons of Chili bars for immediate and forward delivery—the whole stock on the 31st December being only 31,500 tons—to raise their value from £40 to £85 per ton, and that of the shares of the Spanish companies nearly 150 per cent, the syndicate determined to try and maintain values at the level to which they had raised them.

With this object in view, they entered into negotiations with the directors and managers of the leading copper producing companies for the purchase of their total output for a period of three years, at a fixed price in some cases, and at a fixed price with a division of any excess realized in others; and, ultimately, contracts were concluded with the principal American companies, the three Spanish companies, the two Cape companies, and several of the smaller producers elsewhere. The price to be paid by the syndicate appears from the annual reports of the companies interested, and other sources of information, to be:

Thirteen cents per pound (£61 10s. per ton, less 2½ per cent discount), with one half of any excess realized, to the Lake Superior companies, the Parrott company, of Montana, and the Arizona companies.

Twelve cents per pound of copper in the matte, equal to thirteen cents per pound of refined copper, to the Boston-Montana company, for 45,000 tons of copper, deliverable over three years.

Twelve cents per pound of copper in the matte to the Anaconda company for their first six months' production and 15 cents per pound for the second six months, an average of 13½ cents per pound, or 14½ cents per pound—equal to £68 10s. per ton, with 2½ per cent discount per ton—of refined copper.

Thirteen shillings per unit for precipitate and 12s. 9d. for ore, or the equivalent of £70 per ton for best selected copper, to the Rio Tinto, Tharsis, Mason & Barry, Quebrada, Cape, Namaqua and other companies.

The production of some mines is limited, that of others is allowed an annual increase, and on others no limit is placed.

The quantity of copper contracted for and received by the syndicate during the past year we estimate at about 160,000 tons, out of a total world's production of 260,000 tons. In addition to this they have taken over from the Société des Métaux and purchased in the open market, at an average cost of about £72 per ton, 60,000 tons of Chili, in addition to about 12,000 tons of other copper; the result being that they now find themselves with a stock on hand of fully 145,000 tons, the stock of copper in the United States being estimated at nearly 35,000 tons by the New York ENGINEERING AND MINING JOURNAL, against 12,000 tons on the 1st January, 1888.

The total purchases and sales of the syndicate for the year 1888, we estimate, approximately, as follows:

PURCHASES.

56,000 tons	Lake, Montana and Arizona Copper, at £61 10s. per ton, and half the excess realized	£3,444,000
9,000 "	Boston-Montana matte, at £61 10s. per ton	553,500
28,000 "	Anaconda Co.'s matte, at £68 10s. per ton of refined copper	1,918,000
67,000 "	Spanish, Cape, Australian, Quebrada, Newfoundland, Panuncillo (Chili), Norwegian, Italian, Mexican, Japan and other copper, at £70 per ton of refined copper	4,690,000
60,000 "	Chili bars, at £72 per ton (exclusive of interest, etc)	4,320,000
12,000 "	good merchantable copper, at £77 per ton	924,000
232,000 tons, costing		£15,849,500
	Add interest, commission, brokerages, etc	500,000
		£16,349,500

SALES.

38,000 tons	Lake, Arizona and Parrott copper, at £70 per ton (say 16½ cents, less half the excess over 13 cents).	£2,660,000
7,000 "	Anaconda Co.'s matte sold in England at average of 15s. per unit, or £80 for B.S. (11,000 tons remaining in stock 31st December)	560,000
10,000 "	Anaconda Co.'s matte sold in United States at 15½ cents, or £73 5s. per ton	732,500
32,000 "	other copper, at £80 per ton, average of best selected	2,560,000
87,000 tons sold for		£6,512,500
145,000 tons remaining on hand, costing £67 16s. 10d. per ton, or		£9,837,000

Attracted by the high prices, copper has come to England and France in greatly increased quantities compared with last year, the excess in England amounting to 32,381 tons and in France to 10,600 tons, while in the United States production has been stimulated to the extent of 24,000 tons. The total increase in the production of the world we now estimate to be what we anticipated it would be in our last annual report, viz., 35,000 tons, our estimate of a United States production of 105,000 tons also proving correct. This is 32,000 tons less than the increased arrivals in England and France and in the production of the United States, copper having come here which in 1887 was shipped direct from Australia and Japan to India, while about 5000 tons more of old copper in various forms have been imported into England and 1000 tons into France, and the United States consumption has decreased 14,000 tons.

This increased production cannot be considered excessive considering the high price of copper; but what has surprised the trade is the great falling off in the deliveries of copper, pointing to a diminished consumption of 37,478 tons in England and France. These reduced deliveries are, however, misleading, and do not represent the actual consumption, as a considerable quantity of old copper lying in England and France has been worked up during the year—probably 5000 tons; and it must also be borne in mind that smelters and consumers bought largely during the rise toward the close of 1887 and so commenced the year 1888 with considerable stocks, while at present they are holding as little as they possibly can. This difference we estimate at about 15,000 tons. The actual consumption has therefore probably been 20,000 tons more than the apparent consumption, making the falling off only 17,478 tons. One of the disadvantages the syndicate labor under is, that they have to carry the stock of copper usually held by the trade.

The export of copper shows a notable falling off, India having taken 13,400 tons less of English copper than last year, and the total export of foreign copper shows a falling off of 5166 tons, taking into consideration that 22,557 tons of Chili bars have been transferred from Liverpool to France, and stored there in bond by the French Syndicate for financial reasons.

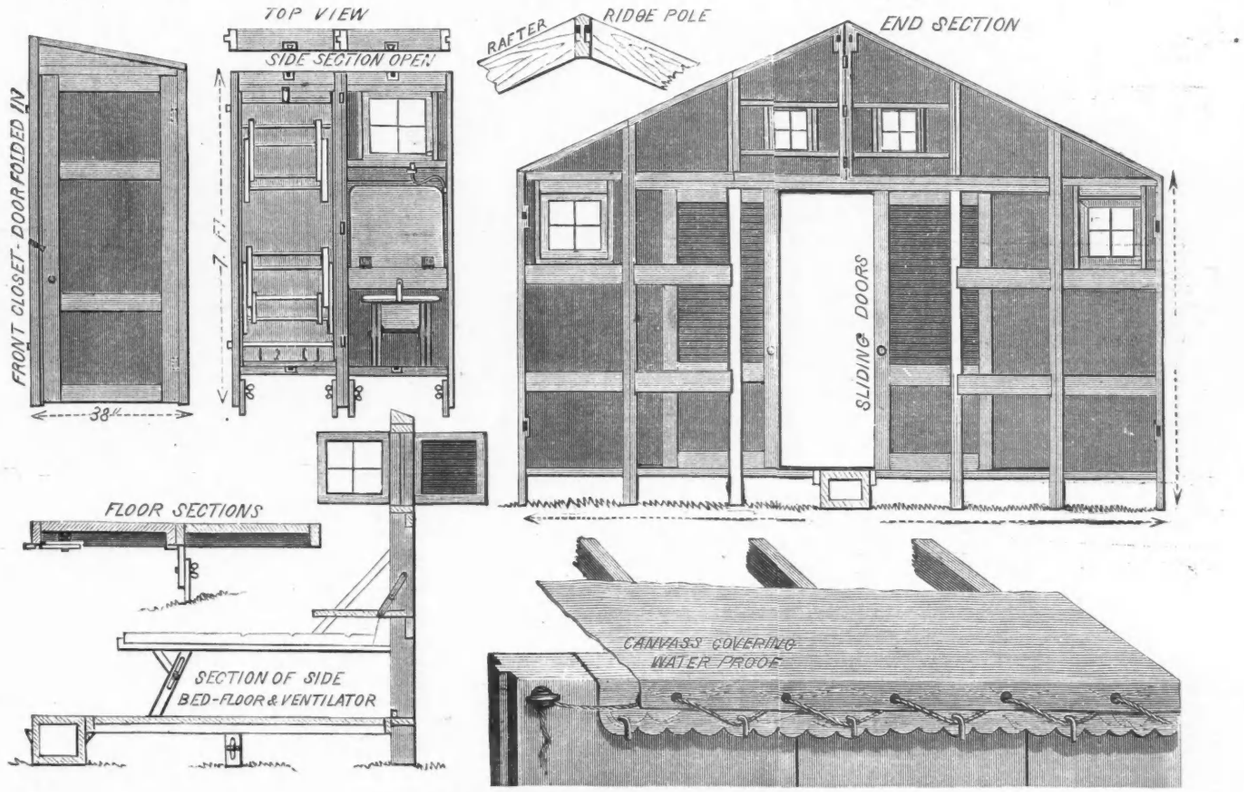
The success of the syndicate operations will mainly depend upon the extent of supply and demand during the present year. Unless some steps are taken to further restrict the output of those companies that have already contracted with the syndicate, there seems every probability of a further increase in the production of the world of 40,000 tons, bringing up the total for 1889 to 300,000 tons. On the other hand, there is little doubt that the consumption of imported copper will be considerably greater than during the past year, and will probably exceed that of 1888 to an equal extent, the supplies of old copper on hand being now exhausted; the tonnage of steamships in course of construction being 85 per cent more than twelve months ago, trade generally having improved, and the use of electricity promising to be greatly extended; while India and other consuming countries will erelong require to replenish their stocks. Even with this, however, and in view of the extensive substitution of

other metals for copper, in consequence of its greatly enhanced cost, there promises to be an increase in the stocks held by the syndicate in England, France and the United States during 1889, equal to that of 1888, or of nearly 100,000 tons, making the total about 245,000 tons. Whether the syndicate will succeed in obtaining a diminution of production, which it would appear to be the interest of the large producing companies to agree to, or will be able to bear the severe financial strain entailed by the carrying of so large a quantity and value of copper, remains to be seen. Much will probably depend upon what takes place financially and politically in France during the year.

DUCKER PORTABLE HOUSE COMPANY.

This invention, which we illustrate, although recent, has already obtained ample recognition both in Europe and this country. It was first introduced at an exhibition held at Antwerp under the auspices of the Red Cross Society in September, 1885, in a competition for portable field hospitals, etc., and the inventor, Mr. William M. Ducker, received a special medal offered by the Empress of Germany. The houses are made either of leather-board (a combination of jute and leather) or indurated fiber, a new material the excellence of which is being widely recognized for many purposes, and they have the advantages of being extremely light, strong, fireproof and waterproof, while the materials used, being non-conductors of heat and cold, adapt them equally for hot and cold climates.

They are built in sections (which open and close) for facility of transportation, and are put up without the use of nails, screws or any external appliance whatever. People can erect these houses for themselves by following the simple instructions provided, no skilled labor being required. Two men can erect the building on ordinary ground in two hours. All the parts lock into each other, and all are interchangeable.



DUCKER PORTABLE HOUSES.

The sides are composed of double sections and are made of strong, light framework of wood hinged together, and covered with an indurated fibre specially prepared for these buildings—a material never affected by atmospheric changes—and thoroughly weather and water proof.

To each double section there is attached a bed, a table and a chair, while in the panel over the table there is a glass window sash opening inwardly and a slatted shutter opening outwardly. During transportation the hinged section is shut together, inclosing several articles and protecting them from damage.

The ends of the building are also made in sections, and the gable part, with the windows, shutters and ventilators, shut up in the same manner as the side sections.

The ridgepole is divided into parts, and is provided with suitable slots, into which the rafters are keyed.

The floor is also made in sections, which key into the sides of the building and into a central longitudinal shaft.

The central longitudinal shaft is provided with registers, and may be used for either hot or cold air, or for disinfecting purposes.

The floor is eight inches above the ground, and dampness is thereby avoided.

The roof is also made in sections and is covered with an improved patent roofing, rendering it perfectly fire and water proof.

There are ventilators in each section, two in each gable and also in each shaft, and one through which the warm air from the heating annex enters the building.

They seem to be particularly well adapted for mining camps, surveying, prospecting and exploring parties, and for such enterprises as the Panama and Nicaragua canals should be of enormous service in housing the army of laborers in a clean and sanitary manner.

Speed of Torpedo Boats.—The speed attained by the U. S. dynamite cruiser Vesuvius, 21 knots, has only been exceeded by the following small vessels: A twin-screw torpedo boat, built for the Italian Government by Yarrow & Co., with a displacement of only 100 tons; length, 140 feet; beam, 14 feet, with which a trial speed of 25 knots was attained (the developed horse-power not being given). The Courier, a French torpedo boat, built by Thornycroft, of about 150 tons displacement: Length, 147½ feet; beam, 14½ feet; draught, 5 feet, which in a trial trip developed 1550 I. H. P., or 10 horse-power to a ton of displacement, attained a speed of 26 knots per hour. Also a small torpedo boat for the Dutch Government, for which a speed of 27 knots per hour is claimed.

A New Steel-Making Process.—A new method of treating steel, according to *Kuhlows*, has been patented in Germany, and is expected to effect a revolution in the iron and steel trades. It is affirmed that by this process steel of greatly increased ductility and tensile strength can be produced more cheaply than by the processes now in use; that the new steel is hardly, if at all, subject to rust; and that bronze, bell metal, and other compounds can be made at a fabulously lower price than they cost now. It is said that a famous North of England firm has already offered a large lump sum for permission to use the process at a reduced royalty, and that from the reduced royalty alone there would be a revenue of £50,000 a year. The process, it is curious to know, is the invention of the French chemist who "discovered" margarine.

Logging by Steam Power.—We learn from an exchange of an entirely new departure in Lewis County, N. Y., viz., logging by steam power. The cost of an outfit is about $8000, which it is said will be saved in a comparatively short time by the doing away with a large number of men and teams. Forest Commissioner Theodore B. Basselin is the first to embark in the enterprise. The apparatus is a steam sleigh of enormous size, resembling somewhat a box car. The sleigh is eight feet high, and the bobs six feet wide. The motive power is supplied by a boiler which stands seven feet high, and weighs 8000 pounds, and two high-pressure engines weighing 5500 pounds. There are four drive wheels which weigh 4000 pounds, and are driven by an endless chain from the engine. The sleigh is steered somewhat after the manner of a steamboat. The drive wheels are covered for about three-fourths of their circumference by a steam-box into which the steam exhausts; the water falling into the track of the sleigh, freezes, and thus makes a road of solid ice. To prevent the drive wheels from slipping, these are supplied with spurs, three inches deep and ten inches long. The sleigh is capable of carrying 15,000 feet of logs at one time, which is equivalent to the amount that would ordinarily be drawn by fifteen teams of horses. The sleigh was first put in use the past week, and thus far it works quite satisfactorily. It is at present used in drawing logs from the woods to the banking ground.

THE POUGHKEEPSIE CANTILEVER BRIDGE.

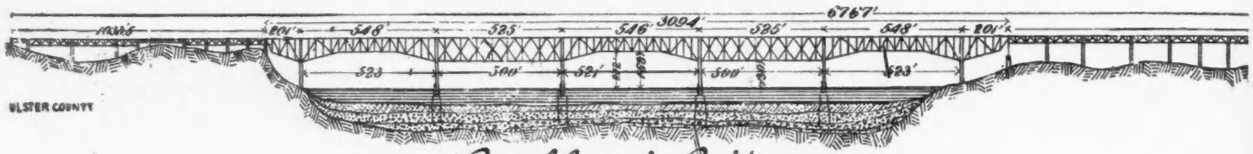
[WITH ILLUSTRATED SUPPLEMENT.]

The great bridge across the Hudson River at Poughkeepsie, New York, was originally promoted by the Pennsylvania Railroad. At least, the earliest substantial backing that the undertaking received was from that corporation, which subscribed in 1873 $1,100,000 out of its capital stock of $2,000,000; but beyond laying the foundation stone of the eastern shore pier little was done, and, with the death of Mr. J. Edgar Thomson, then president of the railroad, the project was abandoned by the railroad company. In 1876 the scheme was revived and a contract was entered into with the American Bridge Company of Chicago, and the actual work of building began. The first river pier from the west shore was built to a height of 20 feet above water; the crib of the next pier sunk through 55 feet of water and 40 feet of river bed, with its top 1 foot above high water, and a third crib built, 36 courses high, but not placed, when the company suspended work in 1878.

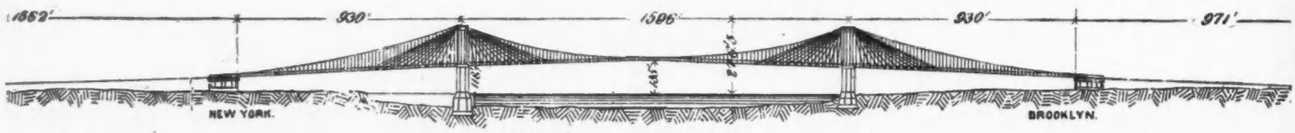
In September, 1886, work was resumed by the Manhattan Bridge Building Company, who made a contract with the Union Bridge Company of New York. A line, practically the same as the old one, was adopted, surveys and borings were made, and a profile obtained, from which the location of the piers was determined.

The former design was for rectangular trusses of equal lengths. The location of the second span of the new design was fixed by the existing pier, and its length of 525 feet by the legislative requirement of 500 feet of clear span.

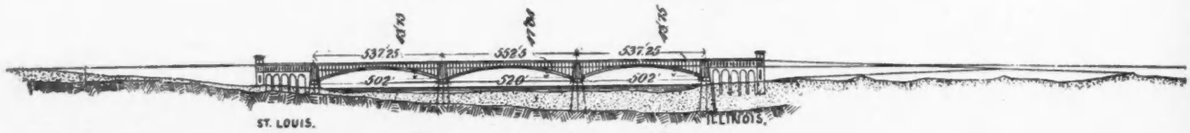
Forth Bridge.



Poughkeepsie Bridge.



New York and Brooklyn Bridge.



Illinois and St. Louis Bridge.

The most available site for the western shore pier was on the bluffs west of the highway, and this was selected. By this time a cantilever design had been decided on, and the 530 feet center to center of end pins necessary to reach these bluffs was made common for all three cantilever spans. This clear span, with the half-widths of towers added, made the spans next the shores 548 feet and the center span 546 feet, which with the two connecting ones of 525 feet, center to center of piers, located Pier 6 in the face of the rock on the east shore. The total length between anchorages was thus established at 3093 feet 9 inches, the total length, including viaducts, 6767 feet 3 inches.

The charter fixed the bottom of trusses at 130 feet above high water; so the height of trusses proportionate to the spans required the adoption of 212 feet above high water as the grade of base of rail. The west approach has a rise of 66 feet per mile westward out of the valley of the Hudson, and the same grade was adopted on the viaducts, since it did not further limit the size of trains.

All shore work is first-class bridge masonry, the hearting being generally concrete. Built in each anchorage pier are four iron girders, underneath which are cross-girders, connected with eye-bars to the pedestals of the shore arms. The piers are heavier than is necessary to resist any possible effort of the cantilever spans to lift them.

The borings show the river bottom to be composed, for more than 100 feet below high water, of various combinations of mud, clay, and fine sand, too soft for building upon. Underlying this pasty stuff is a very firm and hard stratum of rather coarse sand, beneath which is gravel, and about 140 feet down, solid rock extending from shore to shore.

The general design of the river piers is a crib and grillage, extending from the gravel to 10 feet below high water; on this is the masonry to 30 feet above high water, upon which is a steel tower 100 feet high to pedestals of trusses.

The exact measurements and method of contruction of one crib, as representative of all, are as follows: Base 60 × 100 feet, height 104 feet; built of 12 × 12 inch white hemlock, except the bottom course, which is white oak. The lower part or shoe is composed of five prisms of solid timber, 20 feet high, the cross sections of which are triangular with the bases on top, the vertices lying in the five cutting edges which divide the bottom into two rectangles each, 30 × 100. The top surface of this shoe is 10 feet wide at the sides, 9 feet at the ends and 16 feet in the middle. These prisms enclose two truncated pyramidal spaces, the tops of which are 12 × 82 feet. These spaces are divided into fourteen smaller ones, by six bulkheads of timber, 2 feet thick, that are built into the solid cribbing from the cutting edges up. These subdivisions are called the dredging chambers, and are 10 × 12 feet on top. Upon the shoe rests the weighting pockets. The walls of these are of 12 × 12 timber, 2 feet thick, and built along on the edges of the top surface of the shoe, and on the bulkheads of the dredging chambers.

Cribs may be built for some height on ways and launched, or they may be built on the ice about three courses high and cut in. Building is continued alongside a wharf until the draft is nearly the depth of the river, when it is taken to the pier site, anchored, set, the weighting pockets loaded with gravel to keep the top at a convenient distance above the water, and built upon until it is imbedded in the mud. Weighting, building and dredging are then carried on with more or less continuity until the crib has reached its final resting place.

When dredging began there was no side friction, as the material was soft, and the crib followed the dredging, easily and evenly. Gradually, however, the sand and clay became harder, and the movement was intermittent, sometimes dropping as much as 10 feet at once, the motion, however, being gentle, the crib coming to rest without a jar.

Upright timbers, about thirty feet long, were fastened to the inner sides of alternate pockets to indicate to the dredge runner their position when under water, and clusters of piles were driven around the crib for the dredge to lie against when the former was below the surface of the water.

It was found that when out of level in hard material the crib righted itself if the dredge left the material highest on the high side; and in soft stuff, by keeping the bottom low under the high side, the level was recovered.

When the crib had finally settled to the desired depth, all loose material was dredged out and the pockets and dredging chambers were filled with concrete. By the aid of mechanical mixing on board a scow specially fitted up, concrete, at the rate of 400 cubic yards per ten hours, was put in place by two outfits.

Domestic cement was used in the concrete for the cribs and Alsen's Portland cement in the masonry. The latter was also used in the specially difficult concrete work of enlarging, under water, Pier 2, which had been previously built by the American Bridge Company.

When the crib was filled with concrete to within 2 feet of the top of pockets, the remaining part was filled with broken stone and leveled by pivers. The surface being from 10 to 20 feet below high-water mark, the next operation was to place and anchor the caisson, in which the masonry had to be commenced.

From this point on the work was ordinary building until the masonry was completed and ready for the steel tower. The ashlar was in courses varying in thickness from 2 feet 9 inches to 1 foot 10 inches. The use of concrete backing, with large stones imbedded in it, enabled about 125 cubic yards per day to be laid, and gives a pier which is practically a monolith.

The four anchors used were simply cribs measuring on the inside 6 × 6 × 6 feet, containing 8 cubic yards of broken stone. They are built of 8 × 8 inch hemlock planks 10 feet long. When ready for filling these cribs are placed on greased ways on a scow, usually one on each corner, and fastened with rope to the deck.

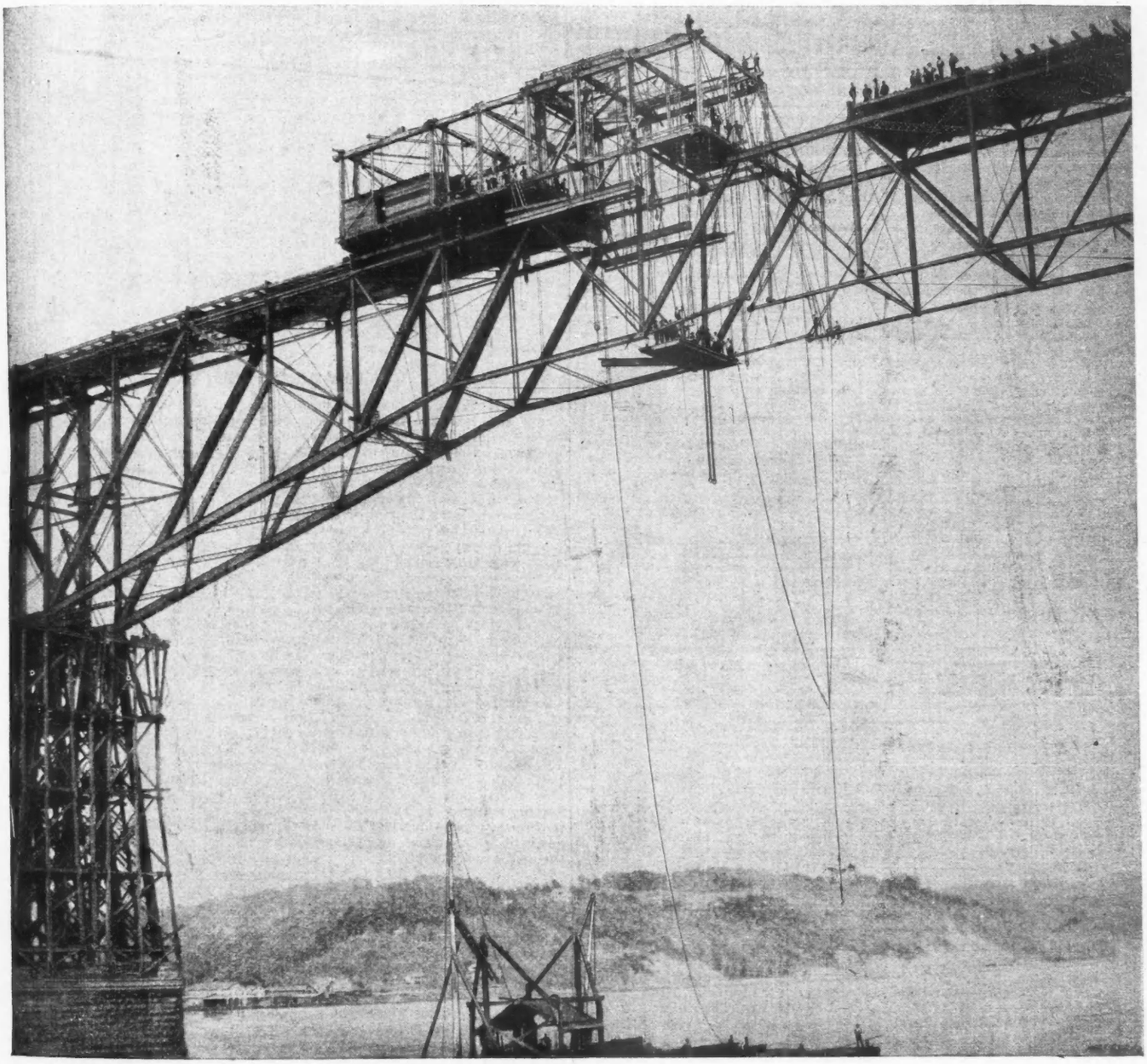
The mode of placing is to tow the scow out to a range line marked on the nearest shore and shift about on that until signaled by a transitman, when the rope attaching the anchor to the deck is cut, allowing it to slide overboard.

Many were the struggles gone through in placing the cribs, and anchoring them securely. Their huge weight and surface exposed to the strong current increased by freshet and tide made this a difficult matter. Steamers and anchors were carried away before it. On one occasion three steamboats and one anchor were dragged three miles. Before Crib 4 could be securely fastened in its position twenty anchors had to be used, representing a working strength of the cables of nearly 1000 tons, and an aggregate length of cable of about three miles.

When the tide was strongest, the end of the crib opposed sank two feet deeper than in still water, the other end rising about six inches. The displacement was 2000 cubic feet, or about 60 tons. Length of cable is to depth of water as eight to one, which would give, approximately, 320 tons as total stress in cables at north end, of which, perhaps, 240 tons went to the eight up-stream cables, the remainder to those side ones which were a little up-stream. The dredging proceeded very evenly, when the cribs were once placed, and the daily progress at each, including everything, was about one foot, which it is believed could have been doubled by building during the day and dredging and weighting during the night.

With regard to the superstructure, there were four sets of false-work for the main bridge, two sets for the shore arms, and two for the connecting spans. The former extend to the bottom of the upper chord.

For the connecting spans the depth of the water and the character of the river bed required the use of compound piles 130 feet long. They were made of two yellow-pine piles, with the butts dressed for a distance of 10 feet to an octagonal cross section of 12 inches' diameter. These were spliced with eight pieces of spruce 4 × 5 inches × 20 feet long, fastened flatwise with $\frac{7}{8}$-inch boat spikes, 8 inches long, driven 1 foot apart.



CANTILEVER SPAN IN PROGRESS OF ERECTION.

There were 528 piles for a span, arranged in sets of three under each post, firmly braced above low water, fastened to the masonry at each end, and the load on each pile was about 5 tons.

The caps of piling were 12 feet above high water, and from them the trestle work extended to the bottom chord, an elevation of 130 feet.

The deck of the false-work was occupied by four tracks. The two outer tracks were of 8-foot gauge, and upon these ran the large traveler for the erection of the span, which extended entirely across the space between these two outer tracks. The two rails next inside of these outer tracks were occupied by a hydraulic riveting apparatus.

Some of the pieces handled weighed more than 20 tons.

The towers at the ends of the spans were first erected; next commencing at the fixed end the bottom chord was laid along in place on camber blocks. Then commencing from the middle the traveler erected

the span. From the shore arms and connecting spans 160 foot cantilevers were erected by means of projecting travelers, composed of two trusses 118 feet long, with chords and vertical posts of wood and iron ties and splice-plates.

The 212-foot spans suspended from the ends of the cantilever arms were designed to be erected from the ends of the latter, and connected when they met at the center. Stiff bottom chords, except in the middle three panels, enabled each panel, when finished, to support the traveler during the erection of the next beyond. When the travelers met, the remaining three panels were completed.

We are indebted to a paper read before the American Society of Civil Engineers, by Mr. John F. O'Rourke, one of the engineers of the bridge, for the foregoing data, and to the courtesy of the Society for the use of the plates of the several illustrations. The bridge was opened for traffic on the 1st of February, and it reduces the distance between the anthracite fields of Pennsylvania and points east of the Hudson from thirty-five to one hundred and sixteen miles.

CALIFORNIA STATE DEBRIS COMMISSION.

We give below the text of a bill which, it is stated, will be introduced during the present session of the legislature in California, with a view, we suppose, to supplement any shortcomings of the National Commission appointed by the Secretary of State for War. The object of the bill, as stated in the text, is defined in nearly the same words as in the bill passed by Congress last session, and under which the Government Commission is now acting.

We would suggest that the commission would be more likely to lead to practical and satisfactory conclusions if the technical element were strengthened, and if an experienced lawyer were added, making it, let us say, two mining engineers, a lawyer, a miner, and a farmer.

The following is the text of the bill as proposed :

An Act to create a commission to examine and investigate the conflict between the mining and farming interests and to report thereon.

The people of the State of California, represented in Senate and Assembly, do enact as follows:

SECTION 1. The Governor of the State of California is hereby authorized and directed to appoint a commission for the purpose of making a thorough examination and investigation of the mining-débris question in the State of California for the purpose of ascertaining whether some plan can be devised whereby the present conflict between the mining and farming interests can be adjusted and the mining industry rehabilitated, and for the complete examination of the non-navigable water-courses of the State, affected by débris, with a view of determining what, if anything, can be done to protect such streams and the arable lands adjacent thereto from injury from mining débris without interfering with the business of mining.

SEC. 2. That commission shall consist of five members, two of whom shall be representative farmers, two shall be representative miners, and the fifth member shall be a competent civil engineer.

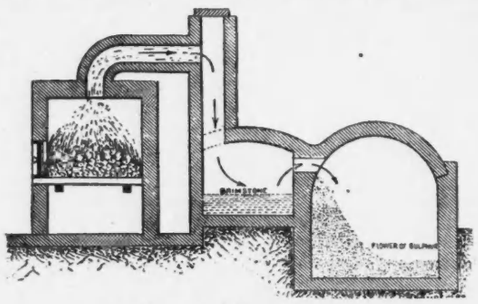
SEC. 3. Said commission shall, upon the completion of its work, and before the first day of November, 1890, make a full report of its examination and investigation, and of the results thereof and its conclusions thereon to the Governor of the State of California, and shall, as part of such report, make such recommendations upon the subject of such examination and investigation as said commission shall deem proper.

SEC. 4. Said commission shall have power to appoint a secretary, who shall receive a salary of one hundred and fifty dollars per month during the time that such commission desires his services. The engineer appointed upon such commission, as above provided, shall receive a salary of three hundred dollars per month. The salaries of the secretary and of said engineer, together with the actual expenses of the commission, shall be paid by the State out of the general fund.

SEC. 5. This act shall take effect from and after the day after its passage.

THE CLAUS SULPHUR KILN.

We condense the following description from our contemporary *Industries*, of Mr. Claus's latest improvements in the recovery of sulphur from alkali waste, which have now been in successful operation at Messrs. Chance Brothers' works, at Oldbury, England, for some time past. A short description of the Claus kiln, in which the sulphureted hydrogen is burnt directly to sulphur and water, will be of interest. The experiments of the Ammonia Gas Purifying and Alkali Company, with the sulphur of coal gas at Birmingham, and more recently in Belfast, are such as to indicate that this process is one which is likely to prove economical to the manufacturers of coal gas. Mr. Claus's first patent for obtaining sulphur from hydrogen sulphide dates from 1882, and in it is claimed the use of heated anhydrous oxide of iron for the absorption of sulphureted hydrogen and the admixture of cold or heated air in regulated quantities with the sulphureted hydrogen before it is passed through the anhydrous oxide of iron, for the purpose of obtaining free sulphur in a continuous stream. The maintenance of the necessary temperature for causing the anhydrous oxide of iron to absorb the sulphureted hydrogen is insured by the admixture of the air with the gases, and the consequent carrying forward of the liberated sulphur. The process, as thus patented, is a continuous one for obtaining sulphur from sulphureted hydrogen by means of anhydrous oxide of iron, and the conditions for success depend on the regulation of the quantity of air admitted to the kiln. The heat generated by the reaction itself maintains the oxide of iron at a dull red heat, and causes the sulphur to pass off in the free state, mixed with vapor of water, to the cooler parts of the kiln, where it is deposited partly in the form of brimstone and partly in a finely divided state in the depositing chambers. Subsequently further patents were taken out by Mr. Claus to cover the use of various other oxides as substitutes for the oxide of iron used in the earlier work. It also appeared, from the investigations which were conducted at Oldbury, that many other contact substances effected this limited oxidation of the sulphureted hydrogen, and patents were taken out to include the use of a bed or layer of fragments of any solid material, such as broken fire-brick or other chemically inactive substance. In using these inert materials it is, of course, necessary that the kiln should be in some cases maintained at a suitable temperature by the aid of extraneous heat, as the heat of the reaction may, when these other materials are employed, be not so limited in area, and thus prevent the rapid and continuous removal of the sulphur formed, as when oxide of iron is the material employed. The regular and constant adjustment of the amount of oxygen necessary to convert the hydrogen of the sulphureted hydrogen into water, and at the same time to leave the sulphur unoxidized, was a matter which required a great amount of care and ingenuity, since by an excessive supply of air some sulphurous acid would be formed, and when the air was deficient in amount sulphureted hydrogen passed through the furnace unconsumed. The sketch below shows the form of kiln in use at Messrs. Chance's works. The Belfast gas works will be the first to employ this method of gas purifying on a large scale, although the Claus kiln has been in use at several places in connection with the manufacture of sulphate of ammonia. The process has been in use on a limited scale at the South Metropolitan Gas Works in London, but has been attended from time to time with explosions, which have interfered with the working. When used for sulphur recovery in connection with the purification of coal gas, ammonia liquor is used to absorb the sulphureted hydrogen present in the gas, and the liquor from the scrubbers, when sufficiently charged, is decomposed by the addition of a stronger alkali, soda or lime being those which have been tried. At Belfast it is proposed to use lime, and two kilns have been erected in order to allow of the process being a continuous one. Before entering the kiln, the gases

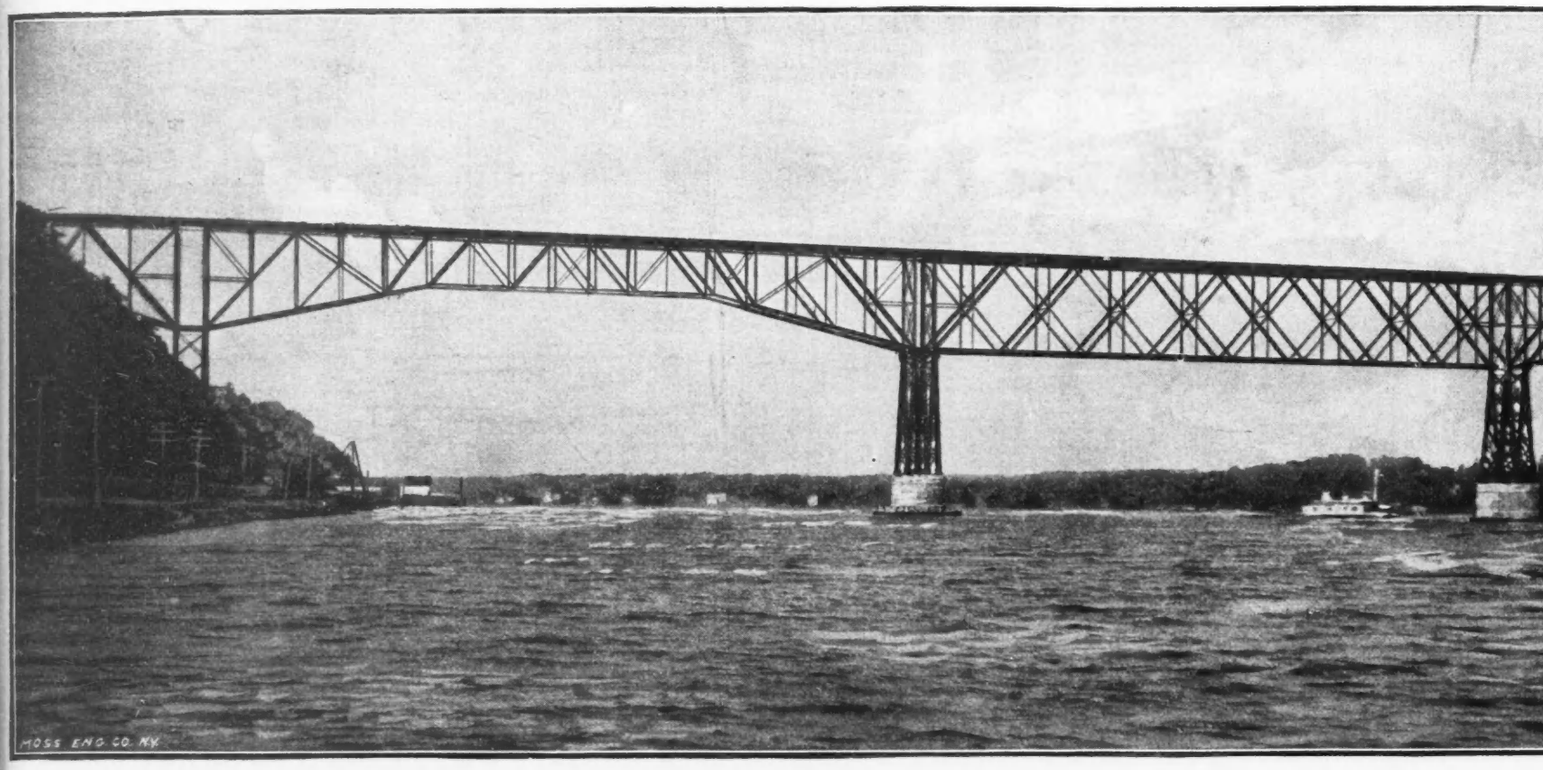


Claus Sulphur Kiln.

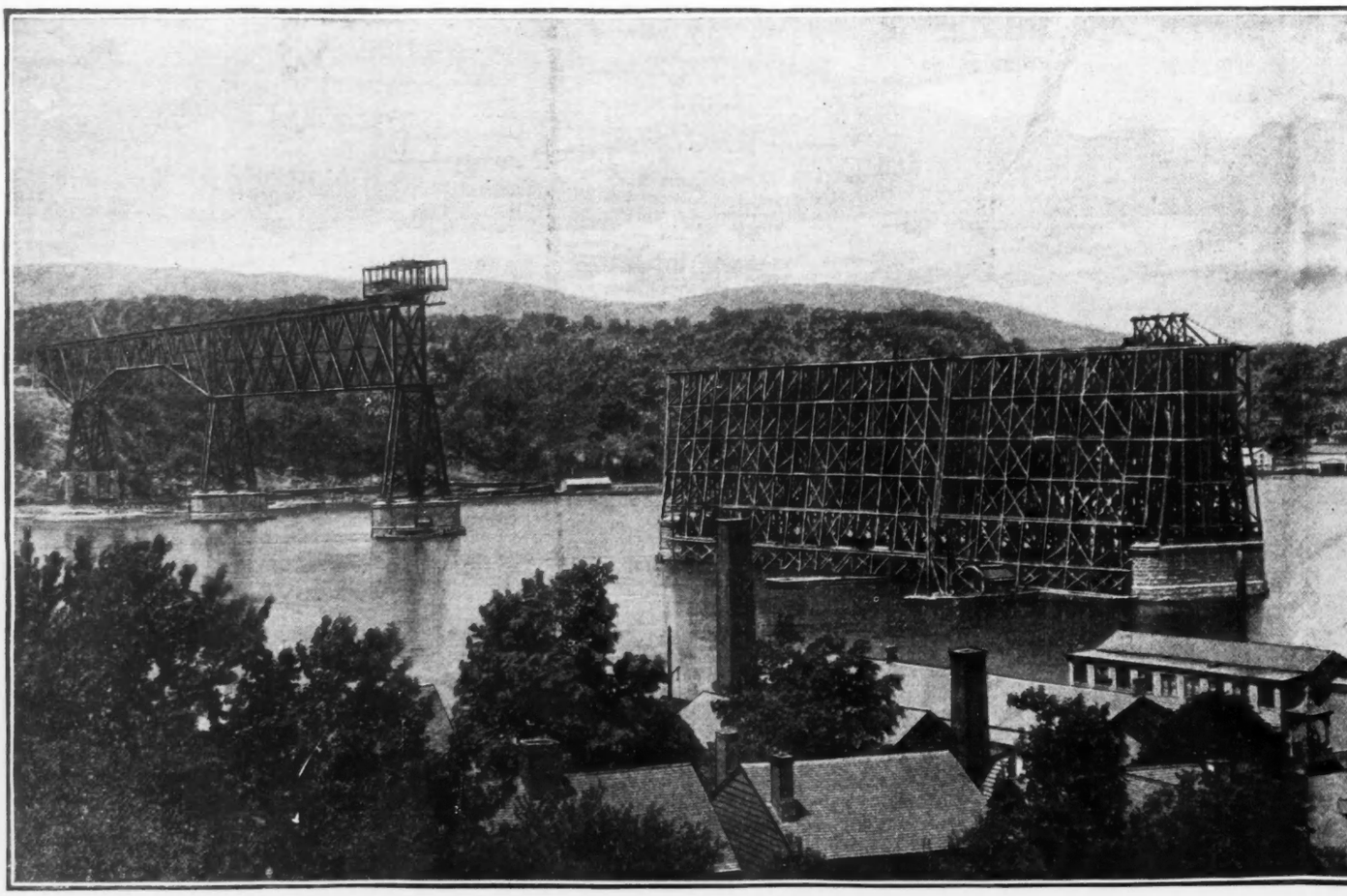
evolved from the ammoniacal liquors are mixed with a quantity of air equal to about 2½ times the volume of the sulphureted hydrogen, and by means of taps the supply can be regulated from time to time. The hydrated oxide of iron employed to effect the decomposition is obtained in large quantities in the North of Ireland, in a form which is suitable for immediate use. To prevent the escape of any unburnt sulphureted hydrogen, a small tower, filled with pebbles, and supplied with water, is connected with the end of the depositing chambers, and in addition a small open oxide purifier is used, to prevent any traces of foul gas from passing into the air. The sulphur obtained is nearly 90 per cent. of the theoretical quantity, and is of a pure quality, with the exception of a small percentage of carbonaceous matter deposited from naphthalene and other hydrocarbons which exist in the gases which pass through the kiln. The marketable form in which the sulphur is recovered will form an important adjunct to the valuable waste products of the gas works, and may cause the adoption of coals comparatively rich in sulphur by companies working the new process. In using ammonia for the purification of coal gas, carbonic acid as well as sulphureted hydrogen is removed, and by allowing a polysulphide to be present in the scrubbers, carbon bisulphide is also removed. A new by-product, ammonia thiocyanate, is found in the spent ammoniacal liquors, and is formed from the ammonium cyanide produced from the small quantity of hydrocyanic gas existing in the foul gas, reacting with the ammonium polysulphide. The amount of thiocyanate formed is considerable, amounting to 2.3 pounds of sodium thiocyanate per ton of coal carbonized. Various successful attempts have been made to utilize this new by-product by converting it into cuprous thiocyanate (sub-sulphocyanide of copper) and sodium ferrocyanide. By the new process the illuminating power of the gas is not diminished, and the possibility of any nuisance arising from the opening of the purifiers is obviated.

French Walnut.—French walnut is said to be the costliest of all cabinet woods. It does not come from France at all, but grows in Persia, Circassia and Asia Minor. To work the logs into veneers, they first steam them until they are almost as soft as butter; then fasten them to an iron beam, which revolves around a finely tempered knife with a razor-like edge of the same length as the log. Every time this beam turns around, it moves a fraction of an inch nearer to the knife, and a thin sheet of wood is shaved off smoothly and laid on a pile on the floor. These sheets are $\frac{1}{120}$ of an inch in thickness, but frequently veneers are made as thin as 175 to the inch. The veneers used on furniture are somewhat thicker, the thinner ones being used on picture frames. They are backed up with paper before being glued on. The latter are also used to some extent for covering walls.

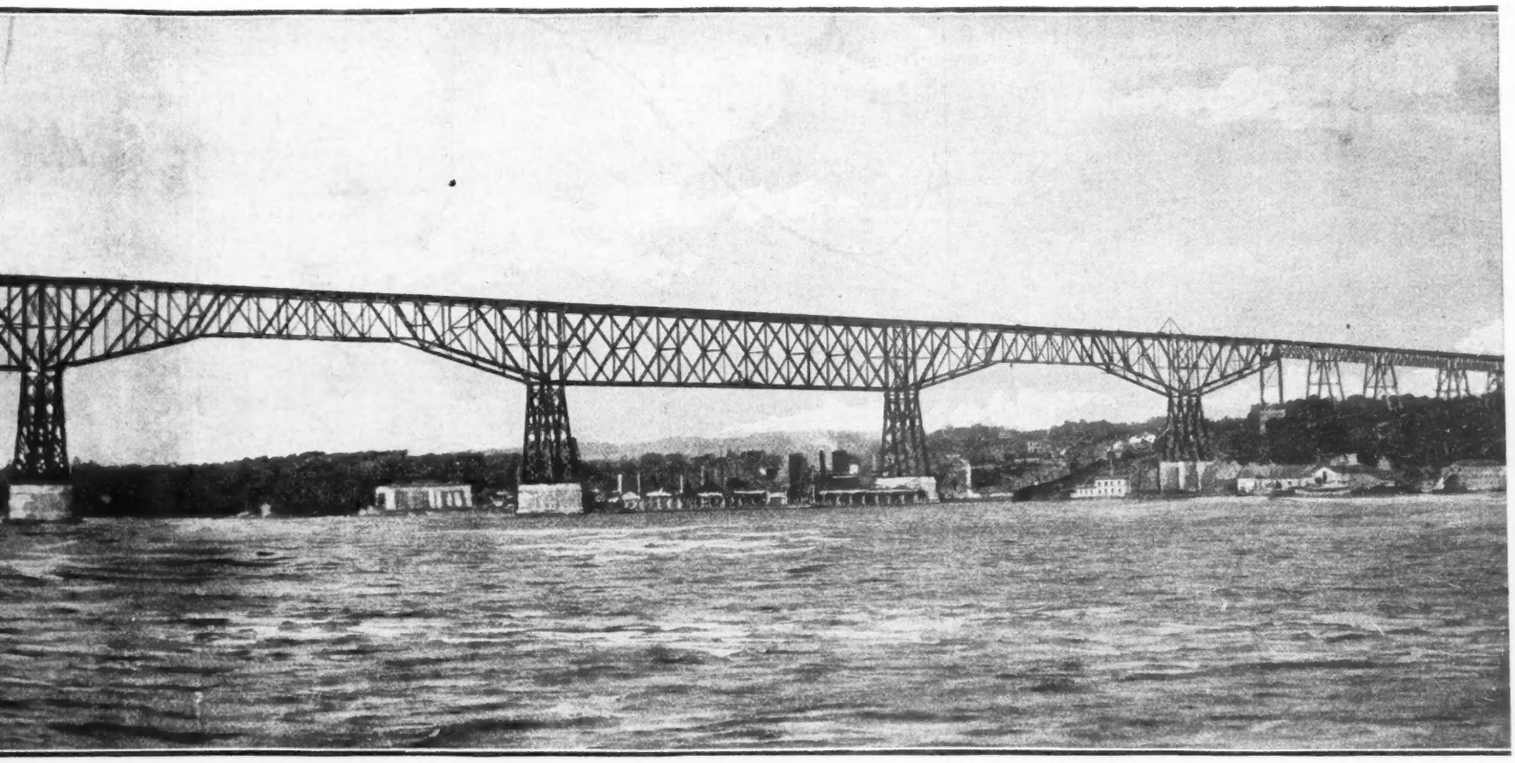
Italian Imports of Pieces of Machinery.—The Italian Customs Department, seeing that single pieces or detached parts of machinery are frequently presented for clearance which, with other parts to be sent from abroad by subsequent consignments, are intended to make up complete machines, authorizes the officials in such cases to suspend the classification of the goods until the other supplementary pieces, intended to complete the machines, are produced for clearance as a last consignment. This facility is granted, however, on condition that the importer shall, at the time of presenting the declaration relative to the parts of machinery received by the first consignment, deposit at the custom-house the designs of the machines, showing the single parts to be received by each consignment, and that he shall also deposit the duty of 11 lire the quintal as chargeable on "detached parts of machines." The custom-houses are authorized to let such parts of machinery pass, by issuing bonds to be thereafter exchanged for a final bill of payment, when, with the last consignment, the machines shall have been completed. In case of controversy as to the use of the machines, the question is to be raised after the arrival of the last consignment and before the final bill of payment is issued.



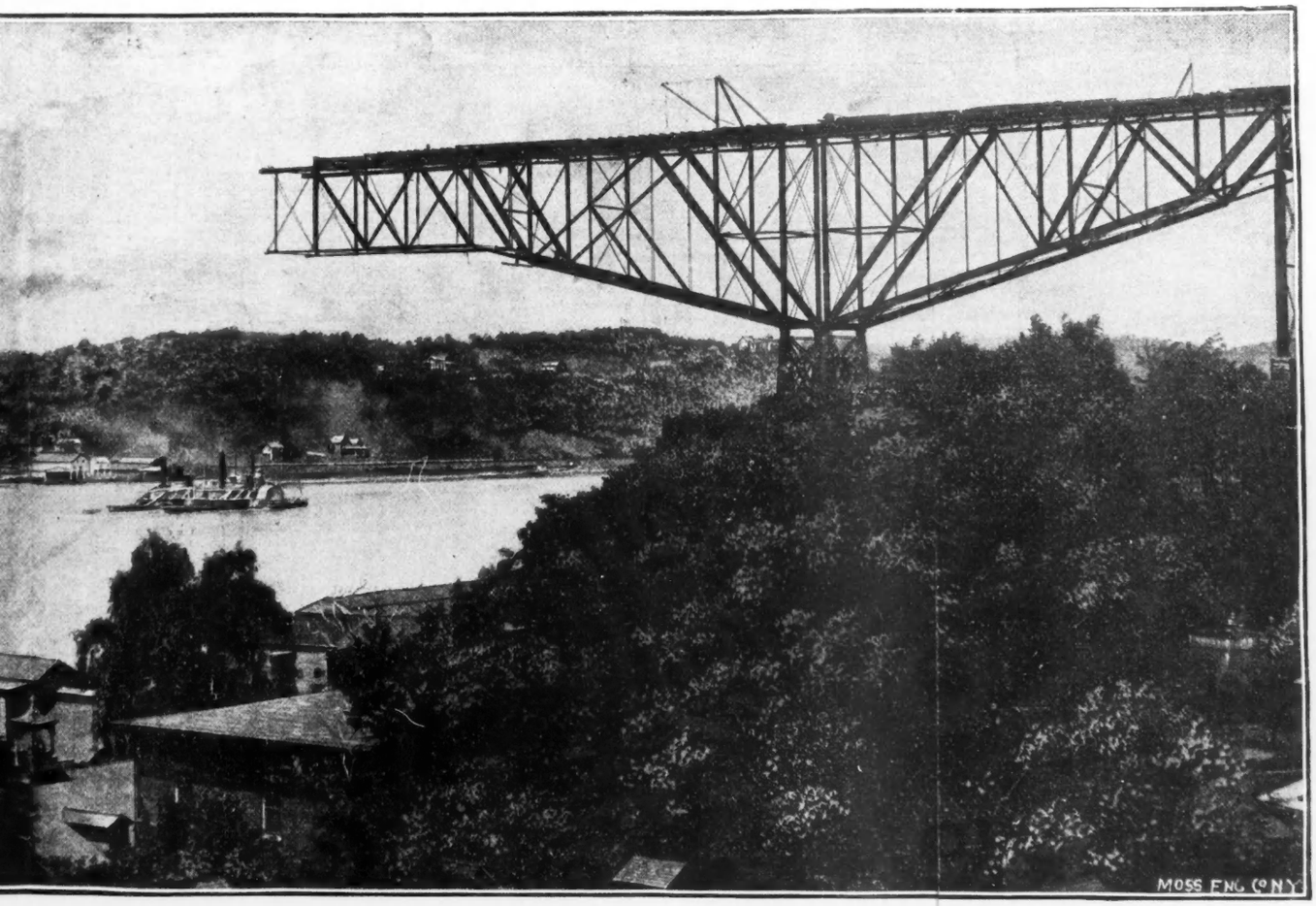
POUGHKEEPSIE CANT



POUGHKEEPSIE CANTILEVER BRI



CANTILEVER BRIDGE.



BRIDGE DURING CONSTRUCTION.

ELECTRIC TREE FELLING MACHINE.

Hitherto the only mechanical appliance to supersede hand labor in the felling of trees has been the steam tree feller, but the employment of steam for such a purpose is coupled with considerable difficulties. Not only is it necessary to place the boiler in close proximity to the tree that is to be felled, but the weight of the machine itself is considerable, and its application when the ground is uneven inconvenient. In a dense forest machinery of this description can only be used when the tree to be felled is either on the borders of the forest or is in a clearance accessible by a road over which the boiler can be transported. These difficulties are greatly minimized, if not entirely overcome, by the application of electricity. The source of power in this case is not a boiler, which must be placed near to the tree, but some prime mover and dynamo machine, which may be erected at any reasonable distance from the scene of operations; all that is required to convey the power being a pair of insulated cables, which can be easily brought into the innermost parts of the forest. The felling machine itself is lighter and smaller than a corresponding steam saw, and can therefore be taken over difficult ground and through narrow places where the former could not pass. We illustrate, in plan and elevation, an electric tree felling machine which has been brought out by Messrs.

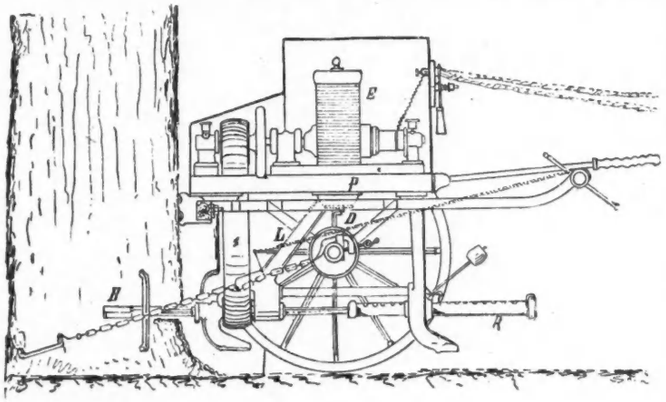


FIG 1.

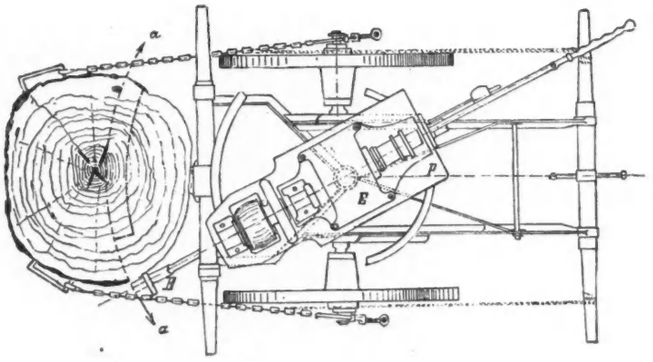


FIG. 2.

ELECTRIC TREE-FELLING MACHINE.

Ganz & Co., of Budapest, especially for use in the Galician forests. The separation of the tree from the stump is in this case not effected by a saw, as is usual, but by a special drill. According to the nature of the wood, this drill may be used either to perforate the base of the tree with a series of holes, placed so close together that when the operation is completed all the fibers have been cut through, or it may be used to take a sweeping cut, in which case the tool is shaped somewhat in the fashion of a twist drill, but with prominent cutting edges along its side. The latter method is adopted for medium hard and for soft woods, and is illustrated in our diagram. The electromoter *E*, with its platform *P*, is placed on a light two-wheel carriage, which is taken close up to the tree, and shackled to it by clamps and chains, the latter being attached to the axles of the carriage in such a way as to be readily detachable, so that the carriage may be quickly withdrawn if there should be danger of the tree falling before the operation is completed. The platform of the motor is mounted upon a vertical spindle *D* in such a way that it can swivel in a horizontal plane. The drill *B* is carried in a spindle, which receives motion from the motor by means of belt gear, the spindle being provided with a long key bed, and the pulley with a fast feather, so that the spindle may be shifted forwards or backwards by means of the rack *R*. The mode of operation is as follows: After the machine has been brought up to the tree and shackled to it, the current is switched on, and a sweeping cut of suitable depth is taken across the surface of the tree by slowly rotating the motor on its vertical spindle. The drill is then advanced by a few inches, and a second cut is taken in the same manner, until about half the thickness of the tree has been separated from the stump. When this point is reached clamps are driven in to keep the cut from closing up by the weight of the tree, and the operation is continued until a point is reached when it would not be safe to cut away more of the wood. The shackling chains are then loosened and the carriage is withdrawn to a safe distance, after which the final separation of the tree from the stump is performed by a hand saw or by the axe.—*Industries.*

CAREY'S PORTABLE MILLS.

We illustrate below the portable mill manufactured by Mr. Samuel Carey, in which the principle of construction differs from the ordinary burr-stone mill chiefly in the manner of hanging the upper non-revolving stone on a universal joint, so that the stones are parallel under all circumstances. As this condition is absolutely necessary to fine grinding, this feature of the mill is of great advantage. The running stone is fixed on the spindle and perfectly balanced, and at grinding speed will not oscillate in the least, so that the cock-head hanging is entirely useless as a means of causing the stones to fit, and with this hanging it is difficult to obtain so perfect a balance at high speed as with a stiff hanging. It is stated that with this mill mineral paints, bone black and similar substances, can be ground to an impalpable powder with certainty.

In grinding mineral paints considerable heat is generated, and it is of advantage to exhaust air through the mill, both to cool the product and mill, and to keep down the dust.

For grinding phosphate rock several sorts of iron pulverizer are used, and, as it is not necessary to grind fertilizers as fine as paint, these machines are, by some manufacturers, considered more advantageous than the burr stone mill.

It is of great importance in grinding with a millstone that the feed should be uniform, and the particles fed to the mill of a uniform size. Consequently, in a plant for grinding phosphate

CAREY'S PORTABLE MILL.

rock, there should be a pair of rolls between the crusher and the mill. Rolls are also of great advantage in grinding iron ore, paints, ochers, etc. It is not advisable to attempt to reduce mineral paints from the size passing through the rolls to impalpable powder at one operation. The material should be reduced on one mill, and fed from it to two finishing mills, which should be set as close as possible. No sieves or bolts of any kind are necessary, if the proper mills are intelligently used.

Public Improvements in the City of Mexico.—In the year 1888, 6000 square meters of wood pavement and 4000 square meters of stone pavement were laid in the streets in the central part of the city and 25,000 square meters of cobble pavement in other streets. Besides this the necessary mason work for sewers was completed and covers for manholes supplied. Pavements were repaired in 800 streets. Ten thousand square varas of artificial stone, and 1500 square varas of stone sidewalks were laid. Two thousand lineal yards of pipe have been placed in the streets. The municipal palace has been renovated. Five hundred tablets bearing the names of the streets under the new nomenclature have been placed, as have also 2600 tablets for house numeration. The sum of $536.5[illegible]7.09 was expended in public improvements. With the new schools opened in 1888 there are now 93 places of public instruction maintained by the city. The total number of pupils attending schools in 1888 was 20,045, at a cost of $134,737 71. Street cleaning cost the city $45,381.29. At the slaughter houses 83,228 beeves, 130,263 sheep and 42,549 were killed. Extensive improvements were made in the water service, which gave the city in rents $74,653.04. In improvements made in the city prison and in the taking care of prisoners the sum of $105,205.01 was expended. Rents from the markets aggregated $145,438.26. The sum of $33,920.09 was spent on public promenades. Public festivities cost the city $17,400.55. Hack owners paid into the city treasury the sum of $102,528.37. For lighting the city, with an increase of electric lamps, the sum of $164,457.87. was paid. Cemeteries paid the city $23,747 61, in which 12,399 bodies were buried. The city treasury was enriched by $28,961.21 from bull fights.

PRODUCTION OF PIG-IRON IN THE UNITED STATES IN 1888.

The American Iron and Steel Association has received from the manufacturers complete statistics of the production of pig-iron, Bessemer steel ingots and Bessemer steel rails in the United States in the last six months of the past year; also complete statistics of the stocks of unsold pig-iron in the hands of manufacturers or their agents on the 31st day of December, 1888.

We make the following extracts from this valuable report:

TOTAL PRODUCTION OF PIG-IRON.

States.	Blast-furnaces.				Production. Tons of 2000 lbs. (Includes spiegeleisen.)		
	In blast July 1, 1888.	December 31, 1888.			First half of 1888.	Second half of 1888.	Total for 1888.
		In.	Out.	Total.			
Maine	1	1	.....	1	2,550	3,024	5,574
Massachusetts	2	2	2	4	7,005	6,243	13,248
Connecticut	4	5	4	9	10,236	11,408	21,644
New York	15	16	24	40	134,900	122,280	257,180
New Jersey	6	8	10	18	50,393	51,489	101,882
Pennsylvania	130	146	92	238	1,630,845	1,958,341	3,589,186
Maryland	3	4	11	15	6,250	11,356	17,606
Virginia	12	13	20	33	92,495	104,901	197,396
North Carolina	1	1	1	2	1,100	1,300	2,400
Georgia	2	2	2	4	23,658	15,739	39,397
Alabama	23	25	13	38	169,696	279,796	449,492
Texas	1	.....	1	1	2,968	3,619	6,587
West Virginia	1	3	6	9	45,601	49,658	95,259
Kentucky	6	6	1	7	21,267	35,523	56,790
Tennessee	14	15	5	20	122,817	145,114	267,931
Ohio	38	47	30	77	528,536	575,282	1,103,818
Indiana	1	2	.....	2	7,300	7,960	15,260
Illinois	7	11	5	16	294,520	284,787	579,307
Michigan	12	12	15	27	106,578	106,673	213,251
Wisconsin	6	8	4	12	51,477	64,560	116,037
Missouri	4	3	8	11	60,789	30,994	91,783
Minnesota	.....	.....	.....	.....	.....	.....	.....
Colorado	1	1	1	2	11,522	10,476	21,998
Oregon	.....	1	.....	1	.....	2,509	2,509
California	.....	.....	1	1	.....	.....	.....
Washington Territory	.....	1	.....	1	.....	4,093	4,093
Total, 1888	290	333	256	589	3,382,503	3,887,125	7,269,628
Charcoal pig	70	71	91	162	278,238	320,551	598,789
Coke and bituminous pig	128	157	81	238	2,148,817	2,596,293	4,745,110
Anthracite pig	92	105	84	189	955,448	970,281	1,925,729

THE INGERSOLL-SERGEANT COAL MINING MACHINE.

We illustrate an entirely new coal mining machine recently introduced by the Ingersoll Rock Drill Company. The machine is used as an undercutter in coal mines, a process familiar to our readers. This machine differs in many essential features from those heretofore used for the purpose. It is built on the well-known percussion principle of the rock drill, the cutting tool being an extension of the piston rod. The special features are a duplex valve movement by means of which the piston is given a variable stroke, the valves operating whatever the position of the piston may be. The valves are spool shaped, resembling those used in the Ingersoll eclipse and Sergeant drills. The piston rod is grooved in a similar manner to what is known as the rifle-bar of the rock drill. The wheels have broad bearings, and are adjustable, so that the machine may be balanced. The force of the blow is controlled by small thumb-screws leading into the steam passages, and the general design of the machine is simple and exceedingly strong.

The following record of some work recently done by the machine in the mines of the Sloss Iron and Steel Company of Brookside, Ala., is furnished by Mr. E. M. Tutwiler.

Machine commenced running at 7 A. M., and the first room was cut in in 1 hour 35 minutes, room being 40 feet 9 inches lineal face and 4 feet undercut. Floor was bad and had to be taken up, as former runners had cut off the floor. Lost 15 minutes moving from room 1 to room 2. Cars loaded with coal passing entry cause of delay.

Room No. 2.—Commenced running at 8:50 and quit at 10:52. Room 36 feet 4 inches lineal face, 4 feet undercut. Lost 13 minutes moving to room No. 3. Same cause, loaded cars and empties in main gangway.

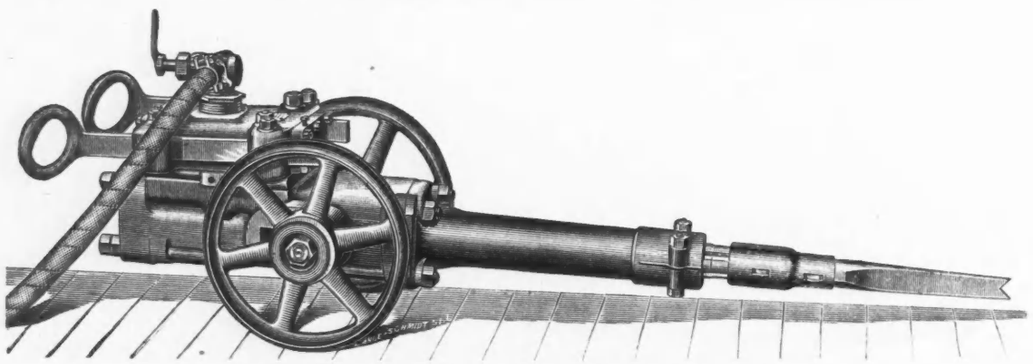
Room No. 3.—Commenced running at 11:05 and cut 18 feet 4 inches lineal face, 4 feet undercut, in 55 minutes.

Stopped one hour for dinner.

Room No. 4.—Commenced cutting at 1:05, finished at 3:15. Room 47 feet 9 inches lineal face, 4 feet undercut. Lost 13 minutes in balancing machine, which had to be changed, and 20 minutes delay in moving around the room owing to bad roof and props being very close to working face of coal.

Room No. 5.—Commenced cutting at 3:43 and quit at 5:53. Room 41 feet 6 inches lineal face, 4 feet undercut. Also badly full of props and dangerous roof, causing some delay.

Total lineal face cut, 183 feet 6 inches, 4 feet undercut. Actual time of cutting, 8 hours 47 minutes, which includes changing from one board to another, and changing picks. Used two boards 30 inches by 8 feet long and five picks in making cut. One machine runner and one man for shoveling slack.



INGERSOLL-SERGEANT COAL MINING MACHINE.

TOTAL STOCKS OF UNSOLD PIG-IRON.

States.	Tons of 2,000 lbs. Dec. 31, 1885.	Dec. 31, 1886.	Dec. 31, 1887.	Dec. 31, 1888.
New England	8,997	9,218	7,930	11,266
New York	32,796	28,202	35,019	31,224
New Jersey	4,126	1,632	22,211	23,817
Pennsylvania	117,209	71,202	154,175	109,003
Maryland	10,145	5,455	1,167	1,900
Virginia, North Carolina, Georgia and Texas	31,311	13,346	6,848	18,913
Alabama	17,693	14,025	14,248	23,851
West Virginia	4,300	4,680	4,835	400
Kentucky	5,819	4,218	4,324	8,970
Tennessee	18,667	14,488	7,726	8,282
Ohio	39,946	24,069	33,007	37,103
Michigan and Indiana	68,479	41,953	39,319	39,886
Illinois	3,834	300	.....	
Wisconsin	9,425	6,002	845	7,163
Missouri	38,058	7,682	5,329	11,701
Pacific States	5,707	6,232	1,159	2,682
Total	416,512	252,704	338,142	336,161
Anthracite pig	68,178	50,503	114,107	106,529
Charcoal pig	232,352	131,567	96,057	111,371
Coke and bituminous pig	115,982	70,634	127,978	118,261

PRODUCTION OF BESSEMER PIG IRON IN 1888.

New York	18,732	33,342	52,074
New Jersey	14,585	12,820	27,405
Pennsylvania	746,479	1,024,065	1,770,544
Maryland	.....	.....	.....
West Virginia	38,557	45,576	84,133
Tennessee	2,315	.....	2,315
Ohio	138,828	197,927	336,755
Illinois	275,675	275,401	551,076
Missouri	54,144	22,376	76,520
Michigan	3,000	.....	3,000
Wisconsin	17,136	17,400	34,536
Colorado	10,478	10,000	20,478
Total	1,319,929	1,638,907	2,958,836

Engraving by Electricity.—A process of engraving on glass and crystal by electricity has been communicated to the French Academy of Sciences by M. Plante. The plate to be engraved is covered with a concentrated solution of nitrate of potash and put in connection with one of the poles in the battery, and the design is traced out with a fine platinum point connected to the other pole.

Mineral Resources of Mozambique.—We note in a French contemporary an interesting article on the resources of the Portuguese possessions in East Africa, in which it is stated that "the province of Mozambique is extremely rich in mineral products, containing mines of gold, of silver, of magnetic iron, of coal and of copper. None of these mines are at present being worked, through lack of capital and of means of communication. The most important coal-bed is that which extends along the two banks of the Zambesi, and of this the town of Tête is supposed to be the center. But coal is also found in the valley of the Morongosi, a tributary of the Reougué, which falls into the Zambesi. By the law of the 21st of August, 1856, foreigners are as competent as Portuguese citizens to buy and develop State lands in the Portuguese colonies. The conditions of sale are always the same: a fifth of the sum is to be paid within thirty days of signing the contract, and the other four fifths within ten years, but subject to a tax of 2 per cent per annum on the sum left unpaid. The law grants exemption from Customs duty for five years on machinery, tools, or materials intended for the improvement of lands thus bought or rented, and from the levying of direct taxation for ten years on the product of the lands so cultivated or improved, and for twenty years on those of lands recovered from a river or the sea. There is also a drawback of 50 per cent on the imports due on goods brought from the colonies into the mother country, a privilege of no small importance. It is only fair to say that there are two disadvantages to be set against all this. One is the lack of personal security, the other is the scarcity of labor since the abolition of slavery."

"Spiegel" Making at Chicago.—The manufacture of "spiegel" is now one of Chicago's industries, most of the ore for the production of this material being brought from Batesville, Ark. Some also comes from mines in Virginia, West Virginia, Michigan and Colorado.

Glass-Lined Iron Pipes.—A process, called the Cooper process, of lining iron pipes with glass is reported, which is said to have stood the severe test of having water passed through them at the boiling point and immediately followed by water at a temperature of 33 degrees, and without in any way cracking or damaging the glass.

Paper Powder.—At the Royal Powder Factory of Wetteren, in Belgium, a new gunpowder is being made. They call it poudrepapier, or paper-powder, and it is said that a charge of 2½ grammes (39 grains) gives, in a rifle of small calibre, an initial velocity of 660 yards to the ball. This is equal to, if it does not beat, the Lebel powder. The additional advantages are attributed to it of not smearing the barrel, of producing no smoke, and of causing no recoil.

Ebb and Flow of Natural Gas Tides.—A strange phenomenon is noticed in connection with the natural gas supply at Montpelier, Ind. Six hours out of every twenty-four the gas runs down to a minimum, and six hours daily it reaches a maximum. While at low ebb the valves are open wide to get a sufficiency, and when at the highest point the smallest turn of the key will supply the demand. The movement is constant with the ocean tides, but whether or not the same influences are the cause is a matter of conjecture.

Excellent Rail Mill Record.—The South Chicago works of the North Chicago Rolling Mill Company have again broken the record in the production of Bessemer steel ingots and rails. In the 24 hours ending at 6 o'clock on Saturday morning, the 26th ult., their production was as follows: Blast-furnace department, furnaces 5, 6, 7 and 8, direct metal, 891 tons; cupola metal, 629 tons; total, 1430 tons; Bessemer department, 119 heats, 1393 tons; rail mill department, 3750 rails, 75 pounds to the yard, 1247 tons.

Demand for Railroad Cars.—The Pennsylvania Railroad system is said to have added 13,000 cars to its rolling stock equipment last year, and yet has an insufficiency for its traffic. There has lately been a revival of demand for car factory lumber, which indicates that the companies have been forced to increase their supply. The railroad mileage of the country is now so extensive, that the mere resupply of worn-out stock necessitates constant work in the shops. While wood shall be the material employed in such construction, a large portion of the sawmill product must go into rolling stock.

Steel-Plate Pavement.—We learn from the *Pittsburg Despatch* of a new use for steel, as a substitute for granite blocks, steel paving. It consists of steel strips about two and a half inches wide and one inch thick, rolled with a channel on the side exposed to traffic, and with notches about 8 inches apart. These strips weigh eleven pounds to the yard, are laid across the street a distance of about five inches between centres, and their length is only sufficient to extend to the middle of the street, so that the proper slope from the centre to the gutters can be secured. They are bolted together, so as to insure them against lateral slipping, and are fastened to wooden sills. A firmly constructed bed of gravel comprises the support for this pavement, while between the steel strips a mixture of pitch and cement is poured, filling the interstices to a level with the tops of the strips, and rendering the surface comparatively smooth.

Street Travel in New York.—The annual reports of the New York City railway companies to the State Railroad Commissioners show the total number of passengers carried by those roads of 1888 was 376,913,586, an increase of 18,000,000, or 5 per cent, over the figures of 1887. The elevated roads, which carried 45 per cent of the total number, obtained two thirds of the increased traffic, and consequently show the largest increase in earnings. Four of the nineteen roads operated showed decreases in earnings. The deficits shown by those roads bring the total net earnings of all the roads down to $2,880 333, against a total of $2,938,072 in 1887. The total funded debt of the roads in 1888 was $25,515,730, a decrease from 1887 of over $2,000,000. Of the total gross earnings of $18,461,915, over one third, or $6,328,189, was paid out in wages to 11,726 employés. Twenty-seven people were killed and 187 injured by the cars in 1888, or one killed to every 14,000,000 passengers carried, and one injured to every 2,000,000 carried.

Heroult Aluminum.—The results obtained at Laufen by the Metallurgische Gesellschaft with the Heroult process of producing aluminum have been so encouraging that a large company, with a share capital of £400,000, has been formed to work this process in Germany, France, Italy, Austria, Belgium and Spain. The new company, which is styled the Aluminum Industrie-Aktiengesellschaft, has been founded by representatives of some of the most prominent engineering works and bankinghouses both in Switzerland and Germany. The company has not yet issued any shares, the directors having amongst themselves subscribed sufficient capital to start operations. The old company, two of whose directors are also on the board of the new company, continue in the possession of their patents for England, the United States and Canada, and are at present very busy producing both aluminum bronze and ferro aluminum. It is estimated that for the manufacture of aluminum about 5000 horse-power will be obtainable from the Rhine without interfering in the slightest degree with the natural beauty of its famous fall. [As already explained, this is apparently an infringement of the Cowles process.—ED. E. & M. J.]

Electric Gold Extracting Process.—Mr. James Brookes, an English mining engineer, writes to the London *Mining Journal* under date 8th of January, 1889, as follows: During my visit to South America, from which I have just returned, I came across, at Los Angeles, an electric process extracting gold on a very large scale. It consisted of two bricks reservoirs, with underground furnaces; each reservoir had a capacity for 500 tons of ore, which was tipped in with a few chemicals, and brought up to a boiling-water heat; decomposition set up, and sulphureted hydrogen was evolved. The whole mass turned into a black sludge, with a very unpleasant smell. Powerful electric machinery was at work, and during the operation, which lasted about 14 days, the gold was precipitated over a number of plates that were immersed in the contents of the reservoir. The two reservoirs were producing about £20,000 per month, the whole concern being worked on a very economical footing, and the labor being chiefly Indian. As far as the outside world were concerned it was nothing more than a brick-making concern. The ores were the ordinary association of quartz, galena, antimony, blende, arsenic, etc., and are generally unwashed, as they are frequently called refractory or foul and base ores; yet here they are thoroughly understood. [We shall be greatly obliged to any of our readers who know anything about this "process." The statements above given are too vague to be of any value Where is the property? It is supposed to be in Venezuela. What are the chemicals?—EDITOR E. AND M. J.]

American Ozokerite.—Ozokerite, or ozocerite, is a mineral wax not found hitherto in any considerable quantities except in Moldavia, and in Galicia, Austria. Two or three years ago, however, a Mr. J. Wallace discovered a mine of the wax in Utah, on the line of the Denver & Rio Grande Railroad, 114 miles east of Salt Lake City. About 150 acres of the mine have been exploited thus far, and in January, 1888, the production of ozokerite in paying quantities from this mine began, and it is expected that the production will soon amount to 1500 tons per year. The consumption in this country of ozokerite, and its by-products, for all purposes to which it has been thus far applied, has amounted to about 500 tons per year. Its main uses have been for the adulteration of beeswax and in the construction of wax figures; it is used in connection with paraffine in the manufacture of the best grades of candles; it is employed very largely also in the manufacture of wax paper, its value for this purpose arising from the fact of its resistance to all materials containing acids; a great part of the body and polish in many kinds of shoe blacking are the result of a liberal use of ozokerite in its manufacture. But the chief use to which this wax seems to be destined is as a waterproof insulator for magnetic wires. The experiments thus far made have seemed to show that for this purpose ozokerite is preferable, all things considered, to any other substance hitherto employed. It is now in use extensively by eight of the electrical companies of this country, and if it can be produced as cheaply and in as large quantities as Mr. Wallace now anticipates, its use as an insulator is probably destined to very great extension at no distant day. That a fair trial is being given to the industrial part of the question of production is clear, as one day last week a car load of Utah ozokerite arrived in New York.

Artesian Wells as a Source of Motive Power.—The discharge of water from artesian wells has for many years been employed as a motive power in France. In the city of Tours there is an artesian well which drives a hydraulic wheel 7 meters in diameter, and works the machinery of a silk factory. At Grenelle the heat of the water issuing from a deep well is utilized in warming buildings. A project is now before a Commission of the Municipal Council of Paris, having for its aim the utilization of the power obtainable from the new artesian well in the Place Hébert, at La Chapelle. There are now three important artesian wells in the Paris basin; that of Grenelle being the oldest, and that at Passy the most productive. The new La Chapelle well is, however, situated in an industrial quarter of the 18th arrondissement, and is thus well adapted for the experiment of producing motive power. Besides these there are a number of private artesian wells in Paris belonging to manufacturers. The La Chapelle well was finished in March last, having been begun twenty-four years ago. It reaches a depth of 720 meters, and the water, left to itself, rises to a height of 35 meters above the mouth. It furnishes 6000 cubic meters of water in twenty-four hours. The proposal is to utilize the power furnished by the well in generating and distributing electricity for lighting and motive purposes. One object mentioned is the lighting of the park of the Buttes Chaumont, which is situated near the well. Before now electricity has been generated in this manner. At Ponce de Leon, in Florida, there is a hotel having a powerful artesian well, which drives a turbine-wheel and dynamo, thus generating the current necessary to light the building and its grounds. At Yankton, in Dakota, there is a flowing well which drives the dynamos of an electric light company. The well is 600 feet deep, and the water on issuing from it is conducted to a reservoir placed 30 feet above the turbine which actuates the dynamos.

BOOKS RECEIVED.

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

Annual Report of the Trustees of the State Museum of Natural History for the Year 1887. Published by the State, Albany, N. Y. Illustrated. Pages 390.

Report of the Director of the Mint upon Production of the Precious Metals in the United States During the Year 1887. By James P. Kimball. Published by the Department of the Treasury, Washington, D. C. Pages 375.

The Journal of the Iron and Steel Institute. No. II. 1888. Published by E. & F. N. Spon, London and New York. Pages 405 and Index. Illustrated.

Combustion in Locomotive Fire-Boxes. By Angus Sinclair. Published by the *National Car and Locomotive Builder*, New York, 1889. Pages 21. Price 25 cents.

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 JANUARY 29TH, 1889.

396,745. Machine for Operating Rock-Drills. Harrison Huston and Elwin J. Martin, Idaho Springs, Colo.

396,747. Apparatus for Casting Steel Pipes. Walter E. Koch, Sharpsburg, Pa.

396,866. Adjusting and Supporting Device for Drills. George E. Foster, Pleasant Valley, Cal.

396,875. Mining-Drill. William H. Jenkins, Philadelphia, Pa.

396,992. Compound Graphite Hearth for Metallurgic Furnaces. Charles J. Eames, New York, N. Y., Assignor to the Carbon Iron Company, same place.

397,025. Blast-Furnace for Reducing Zinc. Fernand Rigaud, Alais, Gard, France.

397,070. Ore-Separator. Etienne Derbec, San Francisco, Cal.

397,089. Mining-Machine. Andrew T. Moats, Pleasantville, Iowa, Assignor to the Black Diamond Tool Company, same place.

397,095. Blasting Compound. Rudolf Sjuberg, Stockholm, Sweden, Assignor to Rudolph Ericsson, New Britain, Conn.

PERSONAL.

Senator Mitchell, of Washington Territory, is at the Hoffman House, New York.

Mr. W. A. Beddoe, a well-known London capitalist interested in mines, has been staying a week at the Victoria Hotel, New York.

An adjourned meeting of the New England Water-Works Association will be held at Young's Hotel, Boston, Mass., February 13th.

Prof. Charles Pontez, for over twenty years chemist for the Union Pacific Railroad, died at his residence in Omaha, Neb., on the 24th ult.

Mr. Sheldon Nobles, senior member of the extensive iron foundry of Nobles & Sherlock, died at his home in Canton, O., on the 29th ult., aged thirty-eight years.

Mr. Samuel M. Felton, president of the Pennsylvania Steel Company since its organization in 1865, died in Philadelphia, Pa., on the 24th ult., aged eighty years.

Mr. H. C. Bomberger has been appointed Acting Superintendent of the Harrisburg & Potomac Railroad, one of the lines controlled by the Reading. His office will be at Boiling Springs, Pa.

Mr. Theodore Sutro, well known to mining people through his connection with the Sutro Tunnel Company, has become associated with Messrs. Salomon and Dulon, New York City, in the practice of law. The firm will be Salomon, Dulon & Sutro.

Mr. George W. Hadden has been appointed Superintendent of the Colorado Coal and Iron Company's mines, Colorado, vice John Cameron, resigned. Mr. Hadden has been in the employ of the company as Superintendent of the Coal Creek mines for the past ten years.

Mr. Frank M. Kelly has been appointed General Eastern Sales Agent for the Philadelphia & Reading Coal and Iron Company. He will have an office at 1 Broadway, New York, and will have charge of the coal business of the company in New York and the States east thereof.

The firm of Paul Lichtenstein & Co., New York, has been dissolved owing to Mr. Paul Lichtenstein having entered into business connection with Messrs. Ladenburg, Thalmann & Co. Mr. J. C. C. Knoblauch, late of the firm of Paul Lichtenstein & Co., has entered into a co-partner-hip with Mr. E. von Destinon, under the style of von Destinon & Knoblauch.

Jacob Tome, a millionaire banker of Port Deposit, Maryland, has determined to devote $2,000,000 or $3,000,000 to establishing a training institution where poor boys may learn the use of tools and receive instruction in any kind of trade they may select. Workhouses will be erected for 500 children at a cost of $500,000. In its general features the scheme resembles that of Mr. Williamson, of Philadelphia.

Mr. Pablo Maseulli, Government Railroad Commissioner, Chili, was in Pittsburg, Pa., last week. He has been ordered by his government to make a general inspection of the railway systems in this country for the purpose of gathering such information as may enable him to improve the railways of Chili. He is also working up a sentiment in this country looking to the establishment of a line of steamships between New York and the South American ports.

Mr. John Evans died at his home in Oakland, Pa., on the 25th ult., aged 73 years. Mr. Evans came to Pittsburg in 1819. At 8 years of age he began work in the old Union Rolling Mill, and was a roller with Lyon, Shyrb and Co. until 1863. In that year and the following one he engaged in the old business. The next venture of his was to successfully operate the first lap weld tube works west of the Alleghenies. He met with business reverses in 1877, and until four years ago was connected with the Volta Iron Co.

The Executive Board of the Miners and Laborers' Amalgamated Association met in Pottsville, Pa., on the 30th ult., and elected the following officers: President, Richard Northy, of Mahanoy City; Vice-President, D. D. Williams, of William Penn; Secretary, Danial Duffy, of St. Clair; Treasurer, John M. Thomas, of Frackville. A resolution was adopted recommending an amalgamation with the National Progressive Union. Organizer and Vice President Davis and J. J. Fitzpatrick of the National Progressive Union stated that the miners in the bituminous regions had adopted it as their National Union, and that it is rapidly gaining in favor in the anthracite region.

INDUSTRIAL NOTES.

The brass and iron foundry of Messrs. Ettes & Hangen on Bremen avenue, St. Louis, Mo., was burned on the 28th ult.

The Sheldon Axle Works, in Wilkes-Barre, Pa., said to be the largest plant in the country, has suspended temporarily.

The Montreal, Can., Rolling Mills Company is making some extensive improvements to its plant, which will be completed about June next.

The Fishback Rolling Mills of the Pottsville Iron and Steel Company, at Pottsville, Pa., has again suspended operations. It is stated that the suspension is compelled by lack of orders, and is indefinite.

The Lehigh Car Manufacturing Company, of Stemton, Pa., recently shipped a lot of new cars to the island of Cuba for use in transporting iron ore from the mines of the Jaragua Iron Company to the seashore.

An attempt to start the nail mill of the Pottstown Iron Company, Pottstown, Pa., on the 29th ult., proved a failure, the nailers who were discharged some time ago refusing to go to work at the proposed reduction.

The Lukens Rolling-Mill, at Coatesville, Pa., will erect a new steel plate mill. Messrs. McIntosh, Hemphill & Co. have received the contract for the train for rolls, and the Garrison Foundry Company for the rolls, which are to be 120 inches long and 34 inches in diameter.

We learn from Ottawa that a change has been made in the recent order in Council which increased the export duty from Canada on logs from $2 to $3 per 1000 feet, providing that logs cut and ready for shipment at the date of the passage of the order may be shipped at the old rate.

The Ducker Portable House Company, of New York, has sold two portable houses to the Copper Queen Mining Company, of Arizona. These houses, which are illustrated on another page in this issue, will also be used by the construction department of the Nicaragua Canal Company.

Judgments in foreclosure were entered on the 28th ult. in the suit of the executors of Edward Harvey against the Bushwick Chemical Works, L. I., for $37,688.25, and in the suit of the executors of the estate of Martin Kalbfleisch for $217,069.66. The sale of the property will be advertised for three weeks hence.

The Troy Steel and Iron Company, Troy, N. Y., has started blast furnace No. 1 on Breaker Island, and will make foundry iron instead of Bessemer steel, as heretofore. This is a new departure, as the furnaces have never been used to make foundry and mill iron. It is stated that the company has 30,000 tons of Bessemer pig on hand and no orders for rails.

According to reports from Des Moines, Ia., the barbed wire suit in which Messrs. Washburne & Moen were defeated by an Iowa firm which claimed priority of invention, may be fought all over again as a result of the confession of several material witnesses that they swore falsely. The are said to have made affidavit to this effect, which is now in the hands of Chicago attorneys of Washburne's firm.

The Baldwin Locomotive Works, of Philadelphia, Pa., export over 12 per cent of all the locomotives made by the firm to foreign countries, including Mexico, New Zealand, Australia, Brazil, Cuba, Central America, Ecuador and Canada. The works are now making for the Mexican Inter-Oceanic Railroad, which runs from Vera Cruz to Acapulco, ten of the heaviest narrow gauge engines ever constructed.

It is stated that Superintendent Hainsworth, of the Pittsburg Steel Casting Company, Pittsburg, Pa., is confident that with a proper model, good steel and proper annealing furnaces, a gun can be cast that will be equal, at least, to any built up gun. His tests on the fragments of the gun that burst, and to which we referred in a recent issue, show that "shrinkage strains" were the cause of its want of strength. The breech of the gun had been tempered to brittleness, while the muzzle was properly tempered.

The Inland Marine Power Company met in Wilmington, Delaware, on the 30th ult., and elected directors as follows: Colonel W. W. Dudley, of Washington; Henry Rawle, of Philadelphia; Francis Rawle, of Philadelphia; Charles Emory Smith, of Philadelphia; G. W. Delamater, of New York; James McLain, of New York; H. T. Gans and Samuel N. Trumpp, of Wilmington, and Hamilton Disston, of Philadelphia. The capital of the company is reported to be several millions of dollars. The object of the enterprise is to apply ammonia as an accessory motive power to steam.

CONTRACTING NOTES.

Our list of machinery and supplies wanted will be found on page xviii. Manufacturers of machinery, engineers and contractors should also consult our directory of "Contracts Open" on page xviii. This week, proposals are invited for the following new contracts: No. 1272, Electric Lighting; No. 1273, Excavating; No. 1274, Removing Broken Rock; No. 1275, Furnishing and Placing Stone; No. 1276, Furnishing and Placing Stone; No 1277, Blasting and Removing Ledge; No. 1278, Dredging; No. 1279, Furnishing Steel Wire; No. 1280, Sewer Construction; No. 1281, Erecting Gas-Works; No. 1282, Constructing Engines, Boilers and appurtenances for U. S. armored battle-ship "Texas"; No. 1283, Electric Lighting; No. 1284, Construction of Water-Works system.

The contract for furnishing the Baltimore, Md., Water Board with iron pipe (about 2397 tons) has been awarded to the Gloucester, N. J., Iron Works, at $65,666.20.

The Secretary of War, Washington, D. C., has awarded to the Midvale Steel Company, of Pennsylvania, the contract for furnishing forgings for the 12-inch type-gun at 40 cents a pound, to be delivered in twenty-nine weeks.

GENERAL MINING NEWS.

STANDARD OIL COMPANY.—This company will begin shipping petroleum to Europe in its own vessels in the early part of February. The steamships "Manhattan" and "Bayonne," built in England for the Anglo-American Oil Company, the English name for the Standard Company, will be the largest tank vessels afloat, having a capacity of 30,000 and 50,000 barrels respectively. The same company has a tank steamer and schooner in the coasting trade, and is about to contract for a second vessel, which will have a capacity for 1,000,000 gallons of oil in bulk.

Fourteen tank vessels are being built in England, six of which are for the Russian trade, and the remainder for Philadelphia and New York. When completed these will carry all of the oil needed in Europe. The shipments from this port this year have amounted to 7,783,635 gallons, while at the same date in 1887 the shipments were 6,665,539 gallons.

TENNESSEE COAL, IRON AND RAILROAD COMPANY.—The net earnings of this company for December were $77,000, and for the eleven months of fiscal year, $631,100. The proportion of coupon interest and sinking funds per month, $37,000; six months, dividend paid on preferred stock, January 1st, 1889, $40,000.

ALABAMA.

It is stated contracts have been made for the shipment of 5,000 tons of Alabama coal from the port of Pensacola monthly to the West Indies.

ARKANSAS.

MARION COUNTY.

ZINC BLENDE MINING COMPANY.—This company has been organized at East St. Louis, Ill., to mine zinc in Marion County, Ark.

CALIFORNIA.

AMADOR COUNTY.

AMADOR GOLD MINE.—Mr. H. R. Lounsbery informed an ENGINEERING AND MINING JOURNAL reporter this week that the total amount of development work done on this property up to the 28th ult. amounted to 2752 lineal feet.

[From our Special Correspondent.]

AMADOR, Jan. 22.

At Amador City the Bunker Hill, Keystone and South Spring Hill mines are all running full, and as their pay-days come round, and all their employés are made happy, we presume they may be said to be prospering. The Astoria, Hollywood and Middle Bar mines, stock of which I see quoted in New York, we hear absolutely nothing. They are "locations," not mines, on or near the Makalumnne River, and only a short distance south of the Amador gold mine. How people can be induced to buy stocks in such companies is more than I can tell. I do not believe a share of the stock of the three last named companies could be sold at any price in Amador County. We here ought to know something about the *value* of such stock if any one does.

AMADOR.—At this gold mine, on the South of Jackson, the work of prospecting goes on, and it would seem as though sufficient ore would be developed to keep their 60-stamp mill running when the latter is completed. Some seem to think the work of building that mill drags slowly along; but those who have had experience in building mills here in the winter, know how difficult it is to get material in over these mountain roads after the rains set in. One thing is certain, they are having built a *good* mill, with all the modern improvements, and, when it gets to running, it will soon tell its owners what they have in their ore. Undoubtedly their ore is low grade, but there is no telling what it is worth until it is put through the mill. We all hope it may be as good as reported.

COSMOPOLITAN.—This mine, on Dry Creek, midway between Plymouth and Amador City, is coming to the front as one of the prominent mines of the county. Geo. Weymouth and Mr. Crocker, of Fitchburg, Mass., two of the principal owners in the Cosmopolitan, are here for the winter. They assure me, if the present bright prospects continue, a mill will be built upon the property in the spring or early summer. The company has abundance of capital back of it, and everything will be done in first class shape. It is very gratifying to know this, as many good properties have failed to become paying mines simply for the want of sufficient means in the first place to prospect the ground properly. They have recently bought the adjoining claim on the north.

GOVER MINING AND MILLING COMPANY.—This old company has had its name changed to "The Gover Mining Company," and is under the management of J. Call, one of the principal owners. They have a 20-stamp mill on the property, which is kept running on fair ore. They have just completed the laying of 5000 feet of steel pipe, through which they take the water from the Amador Canal, under a 400-foot head. Knight & Co., of Sutter Creek, are putting in water wheels and suitable machinery by which all the hoisting from the mine can be done by water-power. This will lessen the cost of mining the ore materially. The prospects of this company are now very good.

NEW LONDON.—This mine, southwest from the Plymouth Consolidated about a half mile, has its shaft down 1250 feet, and the work of thoroughly prospecting the ground goes on. They have now sufficient ore in sight to warrant them in building a mill, and the report is a mill will be built in the spring.

This company has set a good example to others to thoroughly prospect a mine before building a mill.

NORTH STAR.—This mine, just south of the "SSH," of which such glowing reports have been telegraphed all over the country, is somewhat under a cloud just at present. Its star is not quite as bright as it was. The extremely rich ore found in this prospect (for I can hardly call it a mine) proved to be only a stringer as thick as one's finger, which neither went up down or lengthwise more than a few feet. Cross-cutting to the west is now going on to determine if an ore-body can be found in that direction.

PLYMOUTH CONSOLIDATED MINING COMPANY.—At this mine the water is reported *out*, and a few men are being put on. I presume the great fire may be said to be in the same condition as the water. Outsiders know little as yet what damage, if any, the reported fire caused in the mine. I have talked with men who claim to know, and they say they think there has been very little damage done. Several of the mill men have been called back; and we naturally supposed active operations would be resumed at once, but evidently the company is in no hurry.

WIDDMAN.—This mine on Sutter Creek is doing very well.

MONO COUNTY.

BODIE CONSOLIDATED MINING COMPANY.—Capt. John Kelly reports favorable indications in the present workings of the Bodie mine. The expense of keeping the water down is, however, great, as it requires the use of at least twenty cords of wood per day

COLORADO.

COLORADO COAL AND IRON COMPANY.—Rumors to the effect that this company recently refused an offer of over $1,000,000 for its lands in and around South Pueblo were confirmed this week by a prominent official of the company. At the New York office a representative of the ENGINEERING AND MINING JOURNAL was informedthat the company prefers selling its property in small lots itself, with the aim of building up the town. The property all together amounts to about 65,000 acres. In December $50,000 worth was sold, and during January, according to the company's estimate, the sales will aggregate at least $100,000. The lots bring from $200 to $1200 each, according to their distance from the town. A fair average, the officer above referred to says, would be $400 or $500. Up to last October, the same authority states, the company has earned the interest on its bonds, exclusive of some $54,000 in royalties, as well as the proceeds from the land sales. The boom in real estate, however, did not really strike the company's property until December 1st. The company furnishes the JOURNAL with the following statement of the output of the company's works at Bessemer in 1888: Pig-iron of all kinds, including some spiegel, 20,800 tons; steel rails, 8040 tons; merchant bar iron, 5300 tons; cast-iron water-pipe, 1340 tons; nails, 45,080 kegs; railroad spikes, 1330 kegs.

The capacity of the two blast-furnaces of this company is 200 tons per day; the full capacity of the steel rail mill is 120,000 tons per year. The nail department can turn out 100,000 kegs per year of all sizes, from the smallest nail to the large spikes.

The company has four iron mines, located at Calumet, Hot Springs, Grape Creek and Ashcroft. The output of coal in 1888 amounted to 730,000 tons and 135,800 tons of coke.

BOULDER COUNTY.

LOUISVILLE COAL MINING COMPANY.—This company has been organized at Louisville, with L. E. Andrews, President; David Carlton, Vice-President; J. S. Chambers, Treasurer, and John Connell, of Boulder, Secretary and General Manager.

A little over a month ago Mr. Carlton, in company with some of the above named parties, secured a lease on the farm of George Antrey, adjoining the town, on the supposition that there existed coal under the surface. A drill hole was put down, and a vein of 12 feet in thickness was found at a depth of 108 feet. Steps were taken at once to develop the mine. The shaft is 50 feet down. A lease has been secured of C. C. Welch on the property adjoining, on which the tower stands, and which contains the same vein of coal. The product of this mine will be called the New Welch coal.

GILPIN COUNTY.

CASHIER MINING COMPANY.—It is reported that this company's 35-stamp mill in Black Hawk is to be renovated, and repairing the same will shortly be commenced. The Cashier has proved a good custom mill.

GOULD SILVER MINING COMPANY.—The Jo Reynolds mine, situated on Silver Mountain, Enterprise Mining District, property of a Boston company, has been leased and bonded to Mr. W. E. O'Hea, one of the owners. He has formed a pool for working and developing this vein, which so far has proven to be a promising one, the ore heretofore yielding largely in silver. The ore is of a high grade, a portion of the crevice or vein matter carrying a high percentage of lead. The mine has been idle for about six years, through complications existing among Eastern stockholders. A plant of machinery is on the ground and placed.

HUBERT MINING COMPANY.—This company is about to let a contract for sinking an additional 100 feet. The shaft is now 850 feet in depth. The 850-foot levels are now being driven steadily, and will be continued under contract. They are both in good pay. Last month's shipment of mill ore averaged about 4½ ounces to the cord.

PITKIN COUNTY.

Messrs. H. W. Pierson, H. H. Cloud, C. H. Scheu, Wm. Ba'derston, the Aspen Consolidated Mining Company, and the Continental Divide Mining Investment Company, lessees of the Iowa group of claims, adjoining the Park on Smuggler Mountain, have let to Henry Hull a contract to do 400 feet of work for an interest. Mr. Hull has interested others with him. He will push the work as fast as possible. At present the shaft is 440 feet deep, with a 100-foot incline on the contact and 80 feet of drifting on the 400-foot level and 195 feet on the contact at the foot of the incline, besides a 32-foot cross-cut on the second level, showing the contact to be 30 feet thick.

The Durant-Bonnybel mining litigations, the official title of which is "D. M. Hyman vs. D. R. C. Brown, Y. C. Bacter, *et al.*," was called before Judge Hallett, in the United States Circuit Court, at Denver, on the 28th ult. The litigation arises from conflicting claims as to the ownership of the Bonnybel lode in the Aspen mining district. It is located near the apex of a high ridge on the opposite side from the Durant vein, but running in the same general direction, and connecting, as the Bonnybel claimants hold, therewith and constituting the main or real body of ore. The Durant owners, however, claim that the Bonnybel lode is but a break or slip from the Durant vein, and that it does not constitute a vein within the meaning of the law, but is only a jumbled up mass which has been detached from the Durant by a land slide or some other similar cause, and therefore is in reality a part of their property.

The most talented expert testimony which money could procure has been obtained on both sides. The Court has, however, limited the number of witnesses to twenty on each side. The witnesses for the prosecution are W. B. Page, F. G. White, Francis T. Freeland and J. C. Christian, Leadville; Hal Sayr, Central City; J. N. Palmer, Denver; John Filius, Georgetown; Albert S. Johnson, ex-United States Surveyor General; Charles P. Baldwin, Georgetown; George W. Lloyd, P. Pratt, H. S Howe, F. D. Howe, Joseph Ruse, E. M. Ray, Perry S. Burkhead, D Baders, J. W. Robinson and J. W. Calvin, Aspen.

Those for the defense, so far as reported, are Max Bachmer and C. J. Moore, of Leadville; F. F. Chisolm, of Denver; Cecil C. Morgan, L. C. Noble, J. Remfrey, J. H. Eimendorf, J H. Talbott, Joseph McDonald, Lon Pelland, Hank Tourtelotte, W. J. H. Miller, Charles Miller and John Boland.

SAN MIGUEL COUNTY.

SMUGGLER MINING AND MILLING COMPANY.—This company, of Telluride, has been organized with a capital stock of $500,000. The incorporators are J. Ernest Waters, John A. Porter, William Bell, Richard Pearce and A. H. Fowler.

SUMMIT COUNTY.

ORO.—This property, near Breckenridge, has been sold to Leadville capitalists for $45 000. The terms of sale provide for the payment of $10,000 down upon taking possession the 1st of February.

VICTORIA MINING COMPANY.—The Colorado papers state that this company has purchased the Knowles pump, which the city of Breckenridge bought several years ago to supply water in case of fire in town for $350. The pump is being placed several hundred feet below the mill and will force water up for use in the mill and works. The mill will soon be ready to start up.

WESTERN ORE MILLING COMPANY.—This company has been organized to introduce and erect the Wiswell Ore Pulverizer and Amalgamator. The capital is $100,000, divided into one dollar shares. The officers, nearly all of whom are members of the Consolidated Stock and Petroleum Exchange, are: S. W. Pollard, Preident; Charles E. Beale, of Cochran & Beale, Vice-President; P. J. Peters, Secretary, and L. S. Jacobs, Treasurer. The officers, together with Messrs. W. McGucken, Carlton Harris (said to be a nephew of Jay Gould), E. B. Witherell, of Denver; A. A. Reeve (of the Wiswell Electric Mining Machinery Co., of Boston) and C. H. Whittlesey constitute the board of directors. To a reporter for the ENGINEERING AND MINING JOURNAL, Mr. Peters said: "We are not making any effort to push this affair now for two reasons; first, we cannot begin erecting our mill until May or June, and secondly, we are negotiating with an investor who will probably take all that is offered of our capital stock. Not more than 2000 shares have been taken now in addition to 10,000 shares which the Wiswell people are to take in part payment for the mill, which is estimated to cost five or six thousand dollars. It will be erected in the vincinity of the Victoria, Monitor, Eclipse and other mines."

CONNECTICUT.

NEW HAVEN COUNTY.

A company of Waterbury capitalists who have been boring for oil at Southbury have discovered oil, it is stated, at a depth of 1500 feet. The well is about one mile from Pomperang Station, on the New England road.

DAKOTA.

BLACK HILLS MARBLE AND MINING COMPANY.—This company has purchased the property known as the Calico Canyon quarries, located three miles northwest of Buffalo Gap, near the Custer stage road, it is said, for $10,000.

It is expected that active operations will be inaugurated by this company.

LAWRENCE COUNTY.

CALEDONIA MINING COMPANY.—According to the regular report of the superintendent, Mr. T. H. Skinner, just received in New York, during the week ending January 21st, 1642 tons of ore were produced, making a total of 5051 tons extracted for the first three weeks of 1889, all of which has been delivered to the mill. About 95 men are on the pay-roll. The superintendent writes that a connection will soon be made with the winze on 200-foot level and the drift on the south end of the 300-foot, by which another stope will be opened out. The mill is running continuously on low-grade ore. The mine is reported as looking well and all the levels are producing their usual quantity of ore.

HOMESTAKE MINING COMPANY.—Messrs. Lounsbery & Co., the financial agents of this company in New York, send us the following statement of the product of the mine: Month of November, $79,765.73; December, $91,415.54. The report for the year 1888 will be issued shortly.

A few weeks ago we copied from a Dakota paper the statement that the Homestake steam stamp was a failure. Messrs. Lounsbery & Co., the financial agents of the company in New York, inform us that the stamp is working steadily and satisfactorily, and that any statement to the contrary is erroneous.

YANKTON COUNTY.

Prospectors who have been drilling for coal at Volins Siding, nine miles east of Yankton, on the Chicago & Northwestern Railway, it is stated, have found coal at a depth of seventy feet. An eight foot vein was discovered eighteen miles east of Yankton recently.

DELAWARE.

NEW CASTLE COUNTY.

It is reported that Messrs. Warehead & Co., iron manufacturers, of Philadelphia, are, in conjunction with the Baltimore & Ohio Railroad, negotiating for the purchase of iron ore tracts on Iron Hill, which is two miles southwest of Newark. Nothing definite has been done, but it is stated that the prospectors have the refusal of about sixty acres containing iron ore until May 1st next. The present owners want $200 per acre for the land. It is presumed that in the event of the purchases being consummated the Baltimore & Ohio will extend its tracks to Iron Hill, and thus open this apparently secluded spot to the commercial world. The prospectors have sunk several shafts and have found iron ore. Iron Hill is in Pencader Hundred, and is, in fact, Delaware's only "mountain." It was known to contain ore as early as 1661, and in 1725 a forge and furnace were built at the place and ore mined and smelted for about 10 years. The industry was then abandoned until 1841, when the pits and adjacent property were purchased by David Wood, of Philadelphia, who operated them for many years. In 1872 the property passed into the hands of the proprietors of the Principio Furnace, by whom the pits are still worked more or less extensively.

IDAHO.

LEMHI COUNTY.

VIOLA COMPANY, LIMITED.—The company is taking ore, and, it is said, has several months' supply ahead. The smelters, which have been idle for some time, will go in blast about March 1st.

OWYHEE COUNTY.

PROUSTITE MINING COMPANY.—Mr. J. S. Lockwood said to an ENGINEERING AND MINING JOURNAL reporter this week: "We have not been doing anything on the Proustite property for the last three months, but we expect to get our 10-stamp mill running in about six weeks. We have enough ore to last for two years at least. We were obliged to suspend work simply because we had no money, but now the principal owners are tired of waiting for the public to invest, and they are going to work at their own expense."

ILLINOIS.

CONSOLIDATED COAL COMPANY.—This company excavated and shipped to its Chicago office last week from its mine in Danville the largest lump of soft coal ever taken out from its fields. It weighed 3700 pounds, and timbers in the mine had to be taken down for its removal.

MARYLAND.

ALLEGHANY COUNTY.

BARTON & GEORGE'S CREEK VALLEY COAL COMPANY.—This company was organized a little over a year ago. For the past thirteen months the work of construction and development has progressed with a marked degree of activity, and the mine has now a shipping capacity of six hundred tons per day. The works are located one mile over the hill beyond the "Old Bowery Furnace," in the Whembumer hollow, and about three miles from Frostburg. The mine is reached by a branch road of the C. & P. Railroad a little over two miles distant, and intersecting with the latter road one mile above the Ocean mines. The tract now being worked is underlaid with one hundred and fifty acres of the big vein coal. Fifty-two acres of a separate tract of coal lies just across the ravine opposite that now being worked, which can be taken out and run over the same tipple. An additional two hundred acres have lately been purchased, which lies a short distance up the hollow above the mine. This tract was secured principally for the timber which is upon it. Mr. Owen Hitchins is the general manager.

MICHIGAN.

COPPER MINES.

FRANKLIN MINING COMPANY.—The agent writes that there is nothing new except in the thirty-first level, both north and south of the cross-cut on the east lode, which is showing more barrel copper than we have seen in it since it was first opened at this point.

HURON COPPER MINING COMPANY.—The agent writes, under date of the 25th instant: "Since my last report there is some change for the better in the fourth and fifth levels south of No. 10 shaft. At both points the lode will pay well to stope out. It seems as if this south ground will help us considerably when it is opened up, which we are doing as fast as circumstances will allow."

GOLD MINES.

MICHIGAN GOLD COMPANY.—A test is being made of the ore of this company in the mill of the Ropes Gold and Silver Mining Company.

ROPES GOLD AND SILVER MINING COMPANY.—The cost of treating the concentrates is a heavy one and experiments are now in hand for the purpose of finding some plan to lessen the expense. It is probable that a chlorination works will be erected at the mine in the near future. At present the concentrates go to Aurora Illinois, for treatment, costing something like $20 per ton.

IRON MINES

AURORA.—During 1888 this mine shipped 179,439 tons of ore, the net profit on which amounted to $95,456.66, or 53 cents a ton. After paying all debts there will remain in the treasury of the company a surplus of over $56,000. The production of the mine for this year is estimated at 250,000 tons.

NORRIE.—This mine shipped, during 1888, 410,763 tons of ore, which largely exceed the total shipments ever made from any single mine in the Lake Superior region in any one year up to the present time. The net earnings for the year, after paying all expenses of every kind, amount to $267,401.74, or $8.91 per share, or 65 cents a ton. A dividend of $5 per share has been declared, payable April 1st, 1889, the balance of earnings being carried to account of "working capital.

MONTANA.

A syndicate which, it is said, Messrs. Henry Villard, J. B. Haggin, Frederick Billings, ex-Governor Hauser and others are interested, has been formed to get control of and work the coal deposits of the Rocky Fork Coal Company. They have bought the franchise of the company, and their intention is to develop the coal mines at Rock Creek. Laurel, on the Northern Pacific, is to be the headquarters of supply, and the intention is to put the coal at such a price as to drive out all competition. The completion of the link from Boulder to Gallatin on the Northern Pacific is to begin in the spring. The survey is finished. The line will be completed from Calvin's to Butte so this coal can come in over it. It is also understood that the Northern Pacific branch from Billings to Fort Benton is to be begun this year.

DEER LODGE COUNTY.

RED LION MINING COMPANY.—This company has been organized with the following officers: R. Boyce, Jr., President; Green Majors, Treasurer; J. C. Belden, Secretary; and H. W. Sparks, General Manager and Superintendent. The capital stock of the company is $250,000, shares $1 each. It was decided to at once put up a 15-ton mill for milling gold ore. The mine is located about five miles northwest of Georgetown on a line between the Cable and the Granite, on what is known as Cable or Iron Mountain. The developments on the property so far is a tunnel in 115 feet and about 100 feet of levels run from the main tunnel. A winze also has been sunk 35 feet on the ore-body, which averages 4 feet.

NEVADA.

ELKO COUNTY.

DEL MONTE MINING COMPANY.—At the annual meeting of this company the officers elected for the ensuing year were: E Scott, President; F. A. Berlin, Vice-President, and M. A. Jackson, J. F. Caswell and J. W. Pew, Directors. J. W. Pew was re-elected Secretary and W. C. Price Superintendent. The Secretary's financial statement showed a cash balance of $4755.94.

NORTH COMMONWEALTH MINING COMPANY.—At the annual meeting of this company the following officers were elected for the ensuing year: E. Scott, President; F. A. Berlin, Vice-President, and J. F. Cassell, M. A. Jackson and J. W. Pew, Directors. J. W. Pew was re-elected Secretary and W. C. Price Superintendent. The Secretary's report showed a balance of $195.40.

STOREY COUNTY—COMSTOCK LODE.

We condense the following from the Virginia City *Chronicle*:

The vast deposit of iron ore in Wolverine District, about fourteen miles northeast of the Comstock, is said to be proving far more valuable than anticipated, recent assays showing it to contain both gold and silver as well as chrome. The owners have shipped samples of it to several reduction works, and are about to close a contract for furnishing the lowest grade for flux in the reduction of ore.

JUSTICE MINING COMPANY.—The company shipped bullion valued at $4583 January 19th, the result of five days' crushing of ore from the mine, the ore yielding above $25 per ton in bullion.

MASSEY CONSOLIDATED MINING COMPANY. This company, owning several locations on the Comstock, has driven a tunnel above 1500 feet in length in performing annual holding work, besides a half mile in length of drifts from the tunnel line. The Massey Con. joins the eastern boundary of the Con. Virginia and Best & Belcher, and is one of the oldest locations on the lode. The ground is unpatented and the owners have kept up the annual holding work for more than twenty years. Numerous stringers of high-grade ore have been cut at various points in driving the main tunnel and were followed by lateral drifts, but no paying body has yet been found.

SAVAGE MINING COMPANY.—The pulp assays of ore crushed from this mine during the week ended the 22d ult., disclosed an increase of $3 per ton in the average value of the ore, the area of which has recently been added to by a development in the 500 level west cross-cut No. 2.

NEW HAMPSHIRE.

According to reports a Pennsylvania syndicate has bonded for $25,000 the gold mine property at West Bath, and will operate it.

NEW MEXICO.

The Supreme Court of New Mexico at Santa Fe., on the 30th ult., handed down its unanimous decision in the case of the United States vs. the Maxwell Land Grant Company, affirming the judgment of Judge Reeves, dismissing the bill. This is the New Mexico branch of the now famous litigation involving the validity of the Maxwell land grant. The Court holds that the decision of the Supreme Court of the United States in the case originating in Colorado is conclusive of every question that can be raised, and that the validity and correctness of the survey and patent can no longer be questioned in any court.

SANTA FE COUNTY.

SANTA FE COPPER COMPANY.—The following despatch from H. B. Clifford to Irving A. Evans, respecting the Santa Fé Copper Company's property, has been received: Have made examination. There are four large ore-bodies now in sight. Last August there was but one. The mine is evidently a big property. With present three smelters running the product for February should be over four hundred tons matte. The ore is averaging thirteen per cent. If the mines continue to improve for the next three months as in the last, it will be the biggest copper property in America. No legal difficulties in sight; all seem to have been cleared away for good. The statement of Santa Fé operations for the month of December has been received, and shows as follows: Ore mined and sorted, 1822 tons; sent to smelter, 1410 tons; refined, 1000 tons; total mining cost, $5.96 per ton; and profit for the month, $15,000.

OHIO.

AMAZON OIL COMPANY.—This company, which has a capital of $300,000, has sold out its entire plant of 6000 acres of oil land in Ohio, to William Fleming and William F. Scheide. This purchase is made for the Standard Oil Company, and gives that corporation control of the entire oil-producing field in Ohio, excepting that portion held by the Ohio Oil and Gas Trust. The Amazon Company's holdings were in Wood and Sandusky counties, with thirty-two producing wells in Wood, and a monthly yield of 75,000 barrels.

PERRY COUNTY.

NEW YORK & PERRY COAL AND IRON COMPANY.—This company, it is stated, has made a contract for the delivery of 300 tons of coal a day over the Shawnee & Muskingum Railway, a connection of the Pennsylvania Railroad that has recently been built, to the company's mines.

PENNSYLVANIA.

A general strike of limestone quarrymen of the Shenango and Mahoning valleys was begun on January 28th for an advance of 3c. a ton. The strikers have formed a combination with the furnace men and railroad men, and if the companies attempt to handle limestone quarried by non-union men the strike may extend to the railroads and furnaces. An effort is being made to settle the strike.

PHILADELPHIA & READING RAILROAD AND COAL AND IRON COMPANY.—The statements of these companies for December, 1888, as compared with the same month in 1887, show a decrease in gross earnings for the railroad company of $198,590, and for the coal and iron company, $447,859, making a decrease in gross earnings for the companies of $646,449. There was a decrease in expenses for the railroad company of $32,603, and for the coal and iron company of $242,143, showing a decrease in net earnings of $371,703.

COAL.

The miners of Wyoming and Lackawanna coal-fields have asked that the price of powder be reduced from $3 to $1.50 a keg. It is said that granting the request would make a reduction of $1,000,000 per annum in favor of miners.

Many men were thrown idle on the 26th inst. by the suspension of all the Lehigh Coal Company and individual collieries. The "strippings" at Shenandoah and Mahanoy City also suspended, adding several hundred idle men to the list.

The Pittsburg Coal Exchange held a special meeting, with 35 operators present, on the 25th ult. It was decided to continue the shut-down, and in the cases of the Knob and Snowden works, which are operating, it was stated that the former is paying 2¼ and the latter 2 cents for mining, which is far below scale prices. Simpson Horner and John A. Woods were elected delegates to the Interstate Convention of Miners and Operators, to be held at Indianapolis, February 5th. They will make an effort to induce Kanawha to come to some kind of an agreement.

DELAWARE & HUDSON CANAL COMPANY.—The company reports its gross receipts for the year ending December 31st, 1888, at $20,729,180, an increase of $1,126,537; operating expenses, $14,044,710, an increase of $656,141; and net earnings, $6,684,470, an increase of $470,396. The fixed charges were $3,340,035, which, being deducted, leaves a surplus for the year 1888 of $3,344,134. Receipts from coal were $10,622,067; receipts from railroads, $9,554,221; miscellaneous receipts and interests, $552,891. This statement is extremely satisfactory and one which reflects great credit on the management of the company

H. C. FRICK COKE COMPANY.—This company signed the scale on the 31st ult., which will govern their works for the next year. The other operators have refused to sign, and the men say they will strike to-morrow. The brick scale is higher than the ruling wages in the coke regions.

PHILADELPHIA & READING COAL AND IRON COMPANY.—The breaker at the North Ashland Colliery, owned by this company, took fire early on the morning of the 31st ult., and the flames spread so rapidly that before help could be summoned they were beyond control. By 4 o'clock the breaker was a mass of charred ruins. Some of the mechanics were making repairs in the engine house during the night, and it is supposed one of them threw the cover of his lamp away without extinguishing it. The breaker was heated by steam. The breaker two years ago was rebuilt and the latest and most improved machinery put in. The colliery shipped about 800 tons per day.

PITTSBURG & SOUTHERN COAL COMPANY.—This company has appointed W. W. O'Neil, Joseph Walton and Simpson Horner to go to New Orleans and look after its coal interests, which, it was stated, are in bad shape. The company has 300 loaded coal boats at down Mississippi ports, and 7,500,000 bushels of coal. This, it claims, is sufficient to supply the trade for nine months, and therefore it does not care to start its coal mines for some time. The syndicate heretofore existing in connection with the Pittsburg & Southern Coal Company, was dissolved November 30th, 1888, by limitation. The business hereafter will be conducted by this company alone, a corporation of West Virginia, with a paid-up capital of $100,000.

WYNN COKE COMPANY.—This company's works, four miles from Uniontown, was offered at assignee's sale on the 29th ult. Messrs. J. W. Moore & Co. bid $39,000, but as this was insufficient, the sale was postponed.

OIL.

Exports of refined, crude, and naphtha from the following ports, from January 1st to January 26th:

	1889. Gals.	1888. Gals.
From Boston	248,856	176,024
Philadelphia	7,783,635	6,665,539
Baltimore	2,013	396,319
Perth Amboy	766,440	1,014,430
New York	23,731,205	22,251,658
Total exports	32,532,149	30,443,970

UTAH.

BEAVER COUNTY.

COMET MINING COMPANY.—The copper furnace in Copper Gulch has started up. The company has commenced the sinking of a new shaft to the northeast of the present hoisting works on the Cactus mine. The ore-body in the Massachusetts mine still holds out. Ores are being shipped from Star and Rocky districts, and the outlook is good.

HORN SILVER MINING COMPANY.—The stockholders are becoming rather anxious to learn what the new management is doing. To-day Mr. A. I. Harrison, the secretary, informed an ENGINEERING AND MINING JOURNAL reporter that any delay in presenting a report was due to the fact that the directors are waiting to secure an expert report on the property. This will be received in about six weeks time, it is thought. The new manager, Mr P. T. Farnsworth, has got to work. He writes from the mine on the 26th of January, that he found the mine in poor condition when he took it in charge, but every thing is now in good order. Up to the 26th ult., 750 tons were taken out, part of which was sold and the remainder stored in the bins ready for shipment. Mr. Farnsworth says: "We are working on a large breast of ore between the 600 and 700-foot levels. We are running a drift to the south on the 900-foot level, which is now in iron ore. It is in the contact and against the foot-wall, which is lime. Shaft No. 5, to the north, is being sunk as fast as possible. We are drifting to the west near the surface and are getting from it low grade ore, running 5 ounces silver and 40 per cent lead, which will more than pay the expense of prospecting."

The new shaft on the north end of this mine is now down 25 feet.

SUMMIT COUNTY.

DALY MINING COMPANY.—The Russell leaching process at the Marsac will be running up to its full capacity shortly, the last large tank being nearly finished.

VIRGINIA.

AMHERST COUNTY.

Messrs. Joy and Carpenter, of Petersburg, who are said to represent Boston capitalists, have been prospecting with a view to purchasing copper lands.

FOREIGN MINING NEWS.

ARGENTINE REPUBLIC.

PROVINCE OF SAN JUAN.

A company has undertaken to work the Dehera and Colorado coal mines, 25 kilometers from San Juan. It is stated that a seam of 60 centimeters thick has been discovered. Another bed has been discovered, and works undertaken at Loude. It is reported that the coal is large, firm, and gives a great heat, suitable for the manufacture of coke and gas.

AUSTRALIA.

QUEENSLAND.

The total production of gold by the Queensland mines last year is reported to have amounted to 426,000 ounces, showing an increase of 29,000 ounces over the yield of the preceding year.

INDIA.

GOLD PRODUCTION.—The Indian mines made greater progress last year than at any time in their previous history, and as the result, the total product was somewhat in excess of the whole of the output up to the end of 1887. The great bulk of the gold has been obtained from four of the mines. The approximate value of the gold produced, with the comparison of the preceding year's figures, is as follows: 1888, $672,750; 1887, $301,330.

MEXICO.

STATE OF CHIHUAHUA.

It is reported that an important concession of coal lands within three miles of El Paso, but on the Mexican side of the river, has been made by the Mexican Government to Filipe Arellano, of Paso Del Norte, and a number of El Paso parties, among whom are P. A. Arkins, George Russell, A. R. Hillebrand, L. H. Davis, Rosina Heley and M. E. Flores. The concession is for 6250 acres, and is just outside of the municipal limits of Paso Del Norte. One vein of coal, about three feet thick, has already been opened, and proves to be a good article of semi-anthracite. There are said to be several other veins, and active prospecting for them, by drilling, will be commenced as soon as the extent and full character of these coal deposits have been demonstrated.

SANTA JULIANA MINING COMPANY.—Private advices just received in New York announce that in sinking the Santa Juliana shaft connection has been made with the old Ronquilo vein. The water will be pumped out and the shaft sunk still deeper. The metal encountered assays $60 per ton. We refer to the ENGINEERING AND MINING JOURNAL of November 24th, for further information concerning this company.

MEETINGS.

Daly Mining Company, No. 29½ West First South street, Salt Lake City, Utah, February 18th, at two o'clock P.M.

Catalpa Mining Company, No. 4 Bridge street, N. Y. City, February 13th, at eleven o'clock A. M. W. J. Downing, Secretary.

Crescent Mining Company, No. 4 Bridge street, N. Y. City, February 13th, at eleven o'clock A. M. W. J. Downing, Secretary.

International Phosphate Company, No. 2 Stone street, February 16th, at three o'clock P. M.

Lehigh & Wilkes-Barre Coal Company, No. 226 South Third street, Philadelphia, Pa., February 28th, at twelve o'clock noon. George S. Jones, Secretary.

Mansfield Coal and Coke Company, 1042 Penn avenue, Pittsburg, Pa., February 12th, at two o'clock P. M.

Osceola Coal Company, 138 South Fourth street, Philadelphia, Pa., January 31st, at half past eleven o'clock A. M.

Oxford Gold Mining Company, 45 Broadway, February 5th, at twelve o'clock A. M.

DIVIDENDS.

The following dividends have been declared:

Chicago & Indiana Coal Railway, quarterly, one and one half per cent, payable March 1st.

Fulton Coal Company, four per cent, payable February 1st, at 227 South Fourth street, Philadelphia, Pa.

Henderson Bridge Company, two and one half per cent, payable February 1st, at Louisville, Ky.

Mahoning Coal Railroad Company, three per cent, payable February 1st, at the office of D. W. Pardee, Transfer-Agent, Room 47, Grand Central Depot, New York.

North Chicago Rolling-Mill Company, semi-annual, three dollars per share.

Poughkeepsie Bridge Company, will pay coupons on first mortgage bonds, due February 1st, on presentation at the Mercantile Trust Company, New York City.

The Metropolitan Land and Iron Company, owners of the Norrie mine, Michigan, annual dividend, five dollars per share, or $150,000.

ASSESSMENTS.

COMPANY.	No.	When levied.	D'l'nq't in office.	Day of Sale.	Amn't per share.
Bellevue, Idaho	....	Nov. 10	*Jan.20	*Feb.20	.15
Best & Belcher, Nev	42	Jan. 10	Feb. 15	Mar. 7	.25
Blue Bird, Dak.	4	Dec. 4	Jan. 30	Feb. 15	.001
Bullion, Dak.	6	Jan. 4	Feb. 8	Feb. 25	.005
Concordia, Nev.	2	Nov. 12	*Jan.24	Feb. 12	.50
Desire, Dak.	4	Jan. 3	Feb. 5	Feb. 23	.001
Goodman, Nev.	5	Jan. 15	Feb. 16	Mar. 20	.05
Gould & Curry, Nev	61	Jan. 10	Feb. 14	Mar. 7	.25
Gray Eagle, Nev.	11	Jan. 23	Feb. 26	Mar. 19	.03
Homeward Bound, Dak.	6	Jan. 12	Feb. 21	Mar. 9	.002
†Horseshoe Bar, Cal.	2	Dec. 7	Jan. 14	Feb. 4	.10
Imperial, Dak.	1	Jan. 2	Feb. 4	Feb. 21	.001
Iron Hill, Dak.	15	Jan. 17	Jan. 17	Mar. 9	.03
Lord of Lorn, Nev.	4	Dec. 19	Jan. 21	Feb. 11	.10
Martin White, Nev.	22	Jan. 19	Mar. 6	Mar. 26	.25
May Flower, Cal.	44	Jan. 14	Feb. 18	Mar. 11	.50
Monarch, Dak.	8	Jan. 15	Feb. 8	Mar. 8	.02
Nevada Queen, Nev.	4	Dec. 21	Jan. 28	Feb. 25	.50
N. Belle Isle, Nev.	14	Jan. 3	Feb. 6	Feb. 27	.50
N. Gould & Curry, Nev.	10	Dec. 18	Jan. 18	Feb. 4	.20
Occidental Con., Nev	3	Dec. 27	Jan. 31	Feb. 25	.25
Overman, Nev.	59	Jan. 15	Feb. 19	Mar. 12	.25
Pilgrim, Mich.	....	Dec. 31	Feb. 1	.....	.50
Russell R. & Mg., Cal	4	Dec. 17	Jan. 21	Feb. 12	.05
San Francisco Nat. Gas.	1	Jan. 15	Feb. 7	Feb. 28	.25
Savage, Nev.	72	Jan. 7	Feb. 11	Mar. 4	.75
Scorpion, Nev.	24	Jan. 3	Feb. 8	Mar. 4	.10
SeaburyCalkins, Dak	11	Jan. 2	Feb. 5	Feb. 28	.005
St. Louis, Cal.	2	Jan. 14	Feb. 18	Mar. 11	.05
Union Cons., Nev.	37	Jan. 4	Feb. 8	Mar. 1	.25

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

†Assessment No. 1, levied October 9th, 1888, has been rescinded. The money paid on same will be accredited on assessment No. 2, and any excess will be refunded.

MINING STOCKS.

New York.

Friday Evening, Feb. 1.

The market for mining shares closed to-day with the prices of nearly every stock ruling firm and with more activity than has been been apparent for some time past.

AN ENGINEERING AND MINING JOURNAL representative was informed on the Consolidated Exchange this week that the reorganization committee of the Sutro Tunnel Company are buying the old stock in order to prevent any possible trouble from litigation.

Judging from the frequent assertions of Mr. Theodore Sutro that the company has not the slightest fear of litigation, this appears improbable.

Those in charge of the Phœnix of Arizona investigation still aver that there is nothing to give the public yet. We learn, however, that a reorganization, to include only those stockholders who have subscribed to protect their interests, is contemplated. It was reported this week that an offer had been made to Mr. J. M. Seymour for a large portion of the stock held by him. It was stated that those in charge of the reorganization are desirous of securing a controlling interest and developing the property. Mr. S. W. Curtis emphatically denied this to-day. The sale of the mine has been further postponed from February 5th to the second Tuesday in March.

Sullivan Consolidated shows the largest business on the list amounting to 31,900; the price of the stock advanced from 77@81c. Homestake is quiet at $13.50. Deadwood-Terra declined from $2@$1.62.

We understand that the Cashier Mining Company is to be reorganized. The stock is now selling at 5@6c. Silver Cord was active, and advanced from 85 to 95c. Monitor is quoted at 4c., Lacrosse at 9@10c., Robinson Consolidated at 48c., Plutus at $1.05, Little Chief at 20c., and Little Pittsburg at 9c.

Moulton of Montana, which is rarely dealt in on this market, shows one transaction at 50c.

Mutual was active and firm at from $1.35 to $1.45.

There was a downward tendency in Colchis, which went from $1.70 to $1.55, selling to-day at $1.50.

The price of Buffalo iron mining this week was on the downward grade, and went from $5.38 to $5.

United Copper, which opened at 90c., advanced during the week to $1.20, at which price it sold to-day.

Rappahannock shows a small advance, and went from 6c. to 8c.

There was one sale of Phœnix of Arkansas at 10c.

There was little doing in Silver King, and the price declined from $1.25@$1.10.

Kingston & Pembroke is neglected, and went from $1.13 to $1.

Quicksilver Preferred was not dealt in until Wednesday, when a few sales were made at from $35 to $37, and Common at from $5.75 to $6, selling to-day at $6.25

Brunswick was dealt in at from 7c. to 8c.

One of the features of the week's trading has been the advance in the Standard, which is being boomed on the strength of reports from the mine that the ore is running much better. Mr. Tate, the secretary of the company, informs us that this ore was encountered in a leased portion of the mine. The lease, however, expires to-day (February 1st), and the company will probably work on its own account. A shipment of $11,400 for the last two weeks of January has just been made, making $27,500 extracted from the leased property in January. The company receives one-third of this amount. The stock went from $1.15 to $1.50

Bodie Consolidated slow; a sale at from $1.65@$1.70, and Bulwer a few at from 55@60c.

Amador was advanced from $1.80@$2. Astoria at 20c. Middle Bar at 33@35c., and Hollywood at from 3@4c.

Gould & Curry shows a sale at $3.10. Hale & Norcross was firm at from $5 to $5.38. Ophir declined from $6@5.38. Savage went from $3.10@$3.60. Sierra Nevada was quiet at from $3.15 to $3.25; Union Consolidated sold at from $3 to $3.10.; Mexican was firm at $3 50; Exchequer advanced from $1.40 to $1.55. Bullion from $1.75 to $1.80; Best & Belcher declined from $6.38 to $6.

Sutro Tunnel stock was actively dealt in, and declined from 9@6c. The Trust Certificates were quite, and declined from 59@56c.

Navajo shows a sale at $1.70. North Belle Isle at $2.95. Belle Isle at 40c.

Mount Diablo is quoted at $2.50.

Barcelona attracts but little attention, and is selling at from 63@66c.

The buying movement in El Cristo began on Tuesday, when the price advanced to 96c., closing at $1.35 to-day, showing total sales during the week of 17,900 shares. The annual meeting of the company was held on Thursday, and the following trustees were elected: H. B. Parsons, of Wells, Fargo & Co.; E. Motz, mining engineer; S. Perez Triana, South American merchant; J. Brownell, of S. V. White & Co.; James S. Leeds, capitalist; Lee R. Shryock and J. W. Thompson, Secretary. The report of Mr. R B. Brown, the retiring president, showed that during the past year more development work has been done upon the property than during any previous year of its history. It shows that during the year two new and distinct veins were encountered, one of which, between the 200 and 300-foot levels, ran as high as $200 per ton in gold and silver. President Brown thinks that the mine will soon be able to maintain an output of 50 tons a day. Owing to an unexpected delay in obtaining from the Colombian government a concession to import salt free of duty, for milling purposes, it has been deemed wise not to erect a mill just yet, but to ship ore at once to New York. The first shipment, it is stated, has already been made, and, says our informant (an officer of the company), shipments of at least 100 tons per week will be continued from this on. The total cost of transportation and of extracting the bullion is placed at $26.00 per ton. The officers of the company modestly disclaim any purpose of booming "El Cristo" stock, and after considering the above figures, our readers will doubtless believe them innocent of any such sinister intent.

The financial statement of the Treasurer shows that the debt of the company was $76,000 on January 1st, but at Thursday's meeting the Treasurer purchased the 20,000 shares in the treasury at $1.30 per share, reducing the indebtedness to $50,000, all of which is due the Treasurer for money advanced by him.

Horn-Silver is quiet, selling at from 79c. to 80c. Stormont shows a sale at 4c.

Boston Mining Stocks. Jan. 31.

The copper stocks have had a hard week of it. The exaggerated rumors in regard to the French syndicate, the uncertainty regarding its future movements, with the decline of Chili bars in London, have combined to unsettle the market and caused a great deal of uneasiness on the part of holders, who have pressed stock for sale upon a market in which there have been no buying orders; the only demand coming from those who have sold short stock and take advantage of the depression to cover. The lowest prices of the week were reached yesterday morning, but in the afternoon, on denials of any trouble with the syndicate and an advance of Chili bars in England, the market recovered somewhat from the panicky feeling of the morning, and there were evident signs of supporting orders, which was more fully manifested to-day, and prices have advanced beyond the closing prices of last evening

Calumet & Hecla declined from $280 to $270, with a rally to-day to $275.

Quincy dropped from $73 to $67, but sold to-day at $68.

Boston & Montana has been very active, selling down from $55½@$48; to-day it recovered to $52 and closed quite firm.

Franklin declined from $14⅞@$13½, with a rally to $14.

Atlantic touched $13, a loss of $2 per share, and only recovered $½ on the reaction.

Osceola sold as low as $16, recovered to $17½, but lost the gain and sold to-day at $16½.

Tamarack declined from $148 to $144. Kearsarge was very heavy; the pressure to sell it carried the price from $10 to $8, but later bids were about $9.

Butte & Boston lost $4, selling at $22. Allouez was fairly steady, losing only $⅝, from $4 to $3⅝, with later sales at $3¾. National only lost $¼, selling at $4¾. Huron declined from $4¼@$4, selling later at $4⅛.

Santa Fe has been rather quiet this week, but fairly strong at $1⅞@$2.

Bonanza dull, declining to $1½ and $1⅜. Silver stocks dull, but firm, with sales of Dunkin at 95c., Catalpa at 19c., Crescent at 9c., and Napa Quicksilver at $3.

3 P. M.—The market since noon has been quite strong. Boston & Montana sold at $52, and closed $51¾ bid. Franklin sold at $14¼, Kearsage at $9, same bid. Quincy, $69 bid. Butte sold at $25 and closed $25¼ bid. Napa Quicksilver advanced to $3¼.

Philadelphia.

We note sales of 25 shares of the Charleston, S. C., Mining and Manufacturing Company at $200½ per share on the Philadelphia Exchange this week. Since

1883, at least, this company has paid dividends of from $10 to $14 a share per year. Further than this, we have never been able to secure any information concerning the property, but the value and scarcity of the stock certainly shows that our friends of the Quaker City know a good thing when they see and are able to hold on to it.

Auction Sales of Stocks.

The following securities were sold at public auction in New York City this week:

Company.	Amount sold. Shares.	Par value.	Price.
Cent. R. R. of N. J.	500	50	$97¾
Del. & Hudson Canal Co.	700	100	138½
Del., Lack. & W. R.R. Co.	1	50	150
Cashier Mining Co., Colo.	5000	2	5c
Julien Electric Co.	12	50	20
Jos. Dixon Crucible Co.	20	100	67
Montauk Gas Coal Co.	100	100	5 for lot.
Standard Oil Trust	50	100	164

Pipe Line Certificates.

Messrs. Watson & Gibson report for the week as follows:

The oil market this week lost its strength which it momentarily acquired over the conference between the producers and the Standard, and the outlook is for lower prices. We have previously expressed our view of the new deal between the producers and the Standard, and we can only repeat that it is enough to utterly destroy the market from now until next July. Nothing short of a miracle will induce the public to operate against the "put and call" on 3,500,000 barrels held by the producers.

NEW YORK STOCK EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Jan. 26	88	88	86⅞	87⅛	507,000
28	87⅜	87⅜	86⅜	87	312,000
29	87	87¼	86⅜	86⅞	384,000
30	86⅜	86⅜	84⅞	85½	721,000
31	86⅞	86⅞	85	86¼	433,000
Feb. 1	86½	86⅝	85¼	85½	456,000

Total sales in barrels..... 2,813,000

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Jan. 26	88	88	86⅞	87	524,000
28	87¼	87¼	86⅜	87	360,000
29	86⅞	87¼	86⅜	86⅞	507,000
30	86⅜	86½	84⅞	85⅜	1,331,000
31	86½	86½	85⅜	85⅝	528,000
Feb. 1	85¼	86¼	85¼	86¼	738,000

Total sales in barrels..... 3,988,000

Electric Stocks.

The following are the latest quotations, prepared exclusively for the ENGINEERING AND MINING JOURNAL by Messrs. Crosman & Quick, brokers, New York city

Stocks.	Par value.	Market price.
Edison	$100	$193 @ $198
" Illuminating	100	95 @ 97
Brush	100	.. ..
" Illuminating	100	80 @ 95
United States	100	30 ..
" " Illuminating	100	50 ..
Daft	100	40 @ 60
Consolidated	100	48 @ 50
Westinghouse	50	38 @ 39

BALL ELECTRIC COMPANY.—Notice is given that S. L. Dunkle, of Reading, Pa., will sell 150 shares of Ball Electric Light stock of New York City, certificates number 39, 44 and 47, at public sale to the highest bidder, on February 9th, 1889, between 1 and 2 P. M., at the City Hotel, Reading, Pa.

Trust Stocks.

The following quotations are prepared for the ENGINEERING AND MINING JOURNAL by Messrs. C. I. Hudson & Co., Brokers, New York City:

Stock.	Par value.	Market price
White Lead Trust	$100	@$17
Standard Oil Trust	100	160¼@162
Sugar Refineries Trust	100	79½@ 79½
Whiskey Trust	100	.. @ 33

Domestic and Foreign Coin.

The following are the nominal quotations representing the price for American and other coin:

	Bid.	Asked.
Trade dollars	$ .72	$ —
Mexican dollars	.72½	.73½
Peruvian soles and Chilian pesos	.71	.72
English silver	4.82	4.87
Five francs	—	.95
Victoria sovereigns	4.85	4.90
Twenty francs	3.86	3.90
Twenty marks	4374	4.80
Spanish doubloons	15.00	15.75
Spanish 25 pesetas	4.80	4.90
Mexican doubloons	15.55	15.70
Mexican 20 pesos	19.50	19.65
Ten guilders	3.96	4.00

London Mining Share Market.

In the ENGINEERING AND MINING JOURNAL of December 29th, our London correspondent commented upon the annual report of the Josephine Mining Company, Limited, which showed that the yield of the ore worked during the year had been $7.18 per ton, as compared with $18.50, reported last April, and that the cost per ton had been $6.36, instead of $5. Our correspondent observed that the stock had advanced, upon the favorable statements made in April, nearly 100 per cent, adding, "that the promoters were enabled, no doubt, to clear out quite a large amount of stock." In conclusion, he said, among other things,

"There is something decidedly wrong, and the shareholders * * * are entitled to demand the fullest explanation. The discrepancy between the figures given at the first meeting and those of actual working experience would justify the assertion that the ore milled which gave the satisfactory result stated at the first meeting had been selected. If this is so, who is responsible for the grossly inaccurate and misleading statements made, and who has profited by the inflation in the value of the stock consequent thereon?"

The *prima facie* case, as stated by our correspondent, justified, no doubt, the rigid inquiry which he suggested. But we regret that his mention, in the same connection, of Mr. Hamilton Smith, as having made in April the statements upon which expectations of large profit are based, taken together with the circumstance (not mentioned, but well known) that Messrs. Smith and De Crano, are the managers of the Exploration Company, which was the vender of the Josephine mine, carried the intimation that these gentlemen and the Exploration Company had knowingly exaggerated the prospects of the enterprise and had profited by the result, through sales of stock.

It is worth while to say, in passing, that the promoters of mining companies, no matter how skilful, honest and careful, are always exposed to this suspicion. Whoever owns or finds a mine, recommends its purchase to others, and takes his own remuneration in stock, is going to be sharply criticised if he sells his stock. He may do this in perfect innocence; but if the stock declines after he has sold it, the evidence is against him, and he cannot fairly complain if his innocence must be proved

Fortunately for Mr. Smith and his associates, the stockholders' meeting of the Josephine Company afforded the opportunity for their vindication from all suspicion. The report of the meeting, in the London *Mining World* of Dec. 22, shows that the holding of shares by the members of the Exploration Company is about the same as when the company was organized, namely 35,000 out of the total of 60,000; that Smith and De Crano have nearly 9,000 shares; that Mr. Smith had made no charge for his visits to the mine as consulting engineer; that the principal cause of disappointment had been the lower grade of the ore opened in working; that even this low-grade ore had been mined and reduced at a profit, though, of course, much less than had been expected; and that Messrs. Smith and De Crano and their associates, in order to enable the company to sink deeper, and find if possible, an ore-body of higher grade, had advanced $15,000 at 5 per cent, without asking as security any lien prior to that of the stockholders. The terms of this loan are worth noting. After specifying that if debentures or new shares should be issued, they will take such security on an equal footing with others, the letter continues:

"In the event of the winding-up of the company, either voluntarily or otherwise, prior to repayment of the loan by any of the means aforesaid, then the amount remaining owing in respect thereof is to rank for payment ratably with the present ordinary shares of the company, pound for pound."

People do not often lend money on such terms to a mining company in difficulties; and we are not surprised that this action, together with the absence of speculative stock transactions, completely exonerated Mr. Smith and the promoters in the minds of the stockholders. The report and balance-sheet were unanimously approved; and not a word of hostile criticism was uttered at the meeting.

As to the Josephine mine, its future as a source of the large profits once expected of it, depends apparently upon the result of the deeper explorations now in progress.—ED. ENGINEERING AND MINING JOURNAL.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Feb. 1.

Statistics.

PRODUCTION OF ANTHRACITE COAL for week ended January 26th, and year from January 1st:

	1889. Week.	1889. Year.	1888. Year.
Tons of 2240 lbs.			
P. & Read. R.R. Co.	123,413	472,116	80,000
Cent. R.R. of N. J.	109,203	399,710	318,525
L. V. R.R. Co.	126,074	571,897	538,776
D., L. & W. RR. Co.	64,494	224,766	550,520
D. & H. Canal Co.	63,639	273,116	344,638
Penna. R.R.	50,350	210,193	274,034
Penna Coal Co.	14,159	44,491	118,018
N. Y., L. E. & W.	12,000	48,000	60,000
Total	563,332	2,244,289	2,284,511
Decrease		40,122	

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	1,884,875	1886	2,316,537
1885	1,568,179	1887	1,928,676

PRODUCTION OF COKE on line of Pennsylvania R.R. for week ending January 26th and year from January 1st, in tons of 2000 lbs.: Week, 81,200 tons; year, 333,962 tons; to corresponding date in 1888, 339,637 tons.

PRODUCTION OF BITUMINOUS COAL for week ended January 26th, and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

	1889. Week.	1889. Year.	1888. Year.
Tons of 2240 lbs.			
Phila. & Erie R.R.	2,751	7,085	2,129
Cumberland, Md	61,585	223,634	249,337
Barclay, Pa.	3,000	11,804	12,000
Broad Top, Pa.	7,298	37,808	32,633
Clearfield, Pa.	65,600	280,003	271,672
Alleghany, Pa.	19,333	77,879	64,530
Pocahontas Flat Top	20,123	100,224	109,618
Kanawha, W. Va.	*39,259	101,583	113,777
Total	218,949	840,020	855,696

* Week ending January 21st.

WESTERN SHIPMENTS.

Pittsburg, Pa.	11,344	47,907	57,172
Westmoreland, Pa.	35,004	132,274	113,831
Monongahela, Pa.	3,170	12,472	31,163
Total	49,518	192,653	202,166
Grand total	268,467	1,032,673	1,057,862

Anthracite.

The anthracite business continues very quiet, and shipments are heavily curtailed by the large companies. Prices are firmly maintained by the companies, but are shaded by the individual operators to a degree which has, perhaps, not been equaled for several months past. We have heard of a fair Lehigh coal selling at $4.15 alongside for stove and chestnut, and free burning coals are about the same. Four dollars f.o.b. is a fair quotation for individual coals, for stove or chestnut; $3.75 to $3.85 for broken; the price of egg is a matter of negotiation. It is sold very cheap indeed. We have heard of a cargo of Lehigh egg having been offered at Bridgeport on the cars at $4. These prices are nearly the low-water mark which is reached by the individual operators, who are always more or less disposed to cut, and the degree of their cut indicates the general condition of the market as far as supply and demand are concerned. It is not that any large quantity of coal is sold at these prices, but they measure the stagnation of the market.

So far as we can judge at present there are good indications for this year's business, though very possibly the output may not equal that of last year. It is too early yet to make any estimate of what the market will call for, but an inspection of the yards in the Eastern States shows that stocks are comparatively light and in all probability the demand from that direction, at least, will be as large as it was last year.

Companies' prices are f. o. b at New York shipping ports; Broken, $3.95; Egg, $4.30; Stove, $4.65; Chestnut, $4.65; Pea, $2 to $2.25.

The Delaware & Hudson Canal Co. has issued its report for the year 1888, and it makes an extremely favorable showing. The company mined 4,442,638 tons of coal and carried for others 1,153,933 tons. The net average selling price for all sizes of its coal at tide-water was $3.67½ per ton. This price will certainly not be considered an extravagant one, though it was very remunerative to the company on so large an output. The report calls attention also to the benefit which the steady employment has been to the miners, who were receiving very satisfactory wages. The company's accounts show that it earned 13·65 per cent on its capital and it has declared a 7 per cent. dividend.

Bituminous.

The negotiations with the Seaboard Association still continue. It is expected that the Beech Creek companies will join in the association, and that the details of the whole plan for the year will shortly be arranged and that the prices will stand at about the figures that ruled last year. We have already published some of the particulars of the new arrangement. The principal one is that the companies are to put up a forfeit of 20 cents a ton as a guarantee of good faith.

We continue, in the absence of any special business, to quote, as heretofore, the standard prices of the year past: $2 50 f.o.b. at Baltimore and Georgetown, $3.25 for New York Harbor shipping ports, $3.50 alongside New York.

BOSTON. Feb. 1.

[From our Special Correspondent.]

The market for anthracite coal has been a little more active owing to the colder weather, thus betraying the fact that the city trade here is really more lightly supplied than many have supposed. Retailers have been putting out so little coal for the last three months that they imagine they have a tremendous stock on hand. A fortnight, or even a week of cold weather would cause them to feel very differently. The out-of-town trade is better supplied than the city trade, and they will not want any coal to speak of until Spring. The restriction of the companies, claimed to be from 50 to 60 per cent, is certainly larger, because there is no pressure to sell. The companies look after their own closely held trade, and what little output there is in this direction furnishes them their business. Individual operators continue more restive than the companies and occasionally make a slashing reduction, but it is only occasionally that they meet a dealer who is willing to buy more than a small cargo at any price.

In bituminous coal there is no material change. There is a better feeling among the jobbers than at one time seemed likely. The big sellers in some cases oversold so greatly that they have bought thousands of tons of the other producers at full market prices, and so it turns out that orders were pretty well distributed after all. Inasmuch as the proposed new pool goes into effect March 1st, it is fair to presume that the still hunt has begun. The mild season, however, has saved the mills a lot of coal ordinarily used for heating, and treasurers are in no hurry to buy. The f.o.b. quotation continues at $2.50@$2 60.

Freights are weak and lower, owing chiefly to lack of orders. Less than 20,000 tons anthracite arrived last week. Some of the captains say they will not go out to shipping ports until there is a better demand, and there is a general feeling that any demand will cause a return of higher freights.

We quote, exclusive of discharging: New York, 90c. @$1.10; Philadelphia, $1.25@$1.35; Baltimore, $1.25 @1.35; Newport News and Norfolk, $1 25; Richmond, $1.50@$1 75.

Retail trade is somewhat better, but dealers are far from happy. The combination prices rule. We quote delivered prices, 2000 lbs., as follows: Stove, $6.50; Nut, $6 50; Egg, $6.25; Furnace, $6.00; Franklin, $7.75, all sizes; Lehigh Egg, $6.50; Furnace, $6.25. Wharf prices are 50 cents per ton less than the above. Bituminous coal is $4.75 on the wharf.

RECEIPTS OF COAL AT BOSTON.—The receipts for

the year 1888 at this port were $2,040,684 tons anthracite and 985,742 tons bituminous, according to the Chamber of Commerce reports. I am bound to say that I do not consider these figures reliable, but they are all that are at hand. For 1889 the Retail Coal Exchange is keeping a record, and it will be interesting to see if the two authorities agree. Probably not five members of the Boston coal trade knew that the Chamber of Commerce collected the coal receipts last year. Thus far this year receipts are stated at 65,756 tons anthracite and 100,171 tons bituminous.

BUFFALO. Jan. 31.

[From our Special Correspondent.]

"The anthracite and bituminous coal market is without change," says a dealer, "and there is really nothing new to say a word about. The condition of affairs is very unsatisfactory to dealers and producers, but if the seasonable weather now prevailing continues to be experienced there must be some trade done, although the magnitude thereof is a matter of speculation." This statement can be taken as an expression of the general feeling of the trade.

Of items the following may be interesting: Lockport, N. Y., wishes to raise $30,000 to purchase an electric light plant; this means, if accomplished, less consumption of coal.

The shipments to interior points of coal from Duluth have been comparatively small this winter, indicating that a large surplus will be on the docks at opening of navigation.

The coal-carrying railroads earnings thus far this winter have been lessened materially by the mildness of the season.

The annual report of the coal trade of Buffalo is appended hereto, as follows:

COAL TRADE OF BUFFALO.

The following statistics are from the forthcoming annual report of Mr. William Thurstone, Secretary of the Merchants' Exchange:

The anthracite and bituminous coal trade of this city for four years is shown by the following figures:

	1886.	1887.	1888.
Imports by canal—Anthracite, tons	81,445	59,439	149,474
Exports by Canal—Bituminous, tons	19,676	8,706	7,452
Imports by lake—Bituminous, tons	500	.....	.....
Exports by lake—Anthracite, tons	1,552,060	1,894,060	2,541,905
Blossburg, tons*	10,000	10,000	5,000
Imports by railroads—Anthracite, tons*	2,592,333	3,437,764	4,399,541
Bituminous, tons	1,420,455	1,776,217	1,892,823
Blossburg, tons*	30,000	25,000	22,500
RECAPITULATION.			
Total imports anthracite, tons	2,673,778	3,497,203	4,549,015
Total imports bituminous, tons	1,420,955	1,776,217	1,892,823
Total imports Blossburg, tons.	30,000	25,000	22,500
Total exports bituminous, tons	19,676	8,706	7,452
Total exports, anthracite, tons	1,552,060	1,894,060	2,541,905
Total exports Blossburg, tons,	10,000	10,000	5,000

* Partly estimated.

ANTHRACITE WHOLESALE CIRCULAR PRICES.

The following were the circular wholesale prices of anthracite coal during 1888, per gross ton:

	Free on board vessels.			
1888.	Grate.	Egg.	Stove.	Chestnut.
April 23	$4.55	$4.55	$4.80	$4.80
July 2	4.80	4.80	5.05	5.05
September 1	5.05	5.05	5.30	5.30
	On cars at Buffalo or Suspension Bridge.			
1888.	Grate.	Egg.	Stove.	Chestnut.
January 1	$4.40	$4.40	$4.75	$4.75
April 23	4.25	4.25	4.50	4.50
July 2	4.50	4.50	4.75	4.75
Sept. 1 to Dec. 31	4.75	4.75	5.00	5.00

ANTHRACITE RETAIL PRICES.

The retail prices of anthracite per 2000 pounds, delivered in the city limits, during the year, were as follows:

1888.	Grate.	Egg.	Stove.	Nut.	Blossburg.
January 1	$5.50	$5.50	$5.75	$5.75	$4.00
May 1	4.50	4.50	4.75	4.75	4.00
July 2	4.85	4.85	5.10	5.10	4.00
August 1	5.00	5.00	5.25	5.25	4.00
September 1	5.25	5.25	5.50	5.50	4.00
December 31	5.25	5.25	5.50	5.50	4.00

BITUMINOUS PRICES.

The range of prices during 1888 for bituminous, delivered to manufactories, gas works propeller lines, etc., was from $1.75 to $2.75 per net ton, on cars, according to description. The price at retail, for family use, varied from $5 to $6 per net ton delivered, according to quality.

CITY DOMESTIC CONSUMPTION.

About 300,000 tons of anthracite and 17,000 tons of bituminous coal were consumed by families in this city during 1888.

SHIPPING DOCKS AND COAL POCKETS.

The shipping docks and coal pockets at this port are:

Name.	Av. shipping capacity daily. Tons.	Av. capacity of pockets, Tons.
Western N. Y. & Penn. RR.	2,500	3,600
Del. & Hud. Canal Co.	3,500	5,000
Del., Lack. & W. RR.	3,000	4,000
J. Langdon & Co. (incorporated)	1,000	.....
Lehigh docks	6,000	12,000
Erie docks	2,500	3,000
Pennsylvania Coal Co.	2,000	3,300
Totals	20,500	30,300

In addition, just outside the city limits, at Cheektowaga, is the stocking coal-trestle of the Delaware, Lackawanna & Western Railroad Company, with a capacity of over 100,000 net tons storage.

The Buffalo, Rochester & Pittsburg Company are preparing for an extensive shipping business the coming season, by the purchase of land and the erection of storing and shipping facilities on a large scale.

PITTSBURG. Jan. 31.

Coal.—The condition of the market is about the same as for some time past, the January shipments being about 2,000,000 bushels. January, 1888, shipments exceeded 14,000,000. A number of steamers have left light to bring up empties. The miners with few exceptions are still out and likely to remain—at least for some time. The amount of Pittsburg coal in the lower markets has been estimated at 7,500,000 bushels.

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
Third pool	3.90		

Connellsville Coke.—The fact is self-evident the dullness in the coke region is caused by over production; the capacity of the Connellsville region alone is not greater than the demand, but that region is no longer the only coke-producing section in the United States, although it makes the best coke. Last week's production shows a decrease of 13,582 tons, falling off in shipments 355 tons. The above is not a very good showing to say the least. A strike for higher wages is still talked of.

Nominal rates at the ovens:

Furnace Coke	$1.25@$1.35	Foundries	$1.50
Crushed	2.20		

Freight rates from ovens to Pittsburg, 70c per ton; to the Mahoning and Shenango valleys, $1.35; East St. Louis, $3.20; Cleveland, $2.80; Chicago, $2.75.

FREIGHTS.

The following table of freight rates will be a guide to manufacturers in shipping abroad:

Africa, South—Port Natal and Elizabeth	37s. 6d. to 40s.	
Cape Town	32s. 6d. to 35s.	
Australia—Sydney and Melbourne	22½@24c.	
Adelaide	24c.	
Brisbane	25 @27c.	
Dunedin and Auckland	27c.	
Lyttleton and Wellington	27c.	
5 per cent primage.		
New York to Sydney or Melbourne, via National Steamship Co.	75s. per 40 cubic feet.	
New York to New Zealand (10 per cent primage)	67s. 6d. per 40 cubic feet.	
New York to Sydney or Melbourne, via North German Lloyd	60c. to 40c. per cubic foot.	

	Sailing ship, per cubic foot. Cents.	Steamer, per cubic foot. Cents.
Buenos Aires	19	27
Montivideo	19	27
Rio de Janerio	17	23
Rosario	19	40
Matanzas	...	15
Santiago de Cuba	...	15
Havana	...	15
La Guaira	...	20
		Per ton.
Valparaiso		32s. 6d.
Callao		37s. 6d.
Iquique		37s. 6d.
Guayaquil		47s. 6d.
Hong Kong		42s. 6d. and 45s.
China		47s. 6d. and 45s.
Bombay and Calcutta		40s. and 45s.
Singapore		45s. and 50s.

With each *Export Edition* we publish in the form of a supplement an illustrated prices current with export discounts for the benefit of foreign purchasers.

Pig-Iron Freight Rates from Birmingham Ala.—On February 1st, the following pig-iron rate from Birmingham to principal shipping points went into effect:

To	L.C.L.	C.L., not less 30,000 lbs.
Akron, O.	29	22
Aurora, Ill.	31	24
Bloomington, Ill.	30	23
Cairo, Ill.	16	12
Chicago	31	24
Cincinnati	16	12
Cleveland	29	22
Dayton	23·5	18·5
Detroit	30	23
East St. Louis	18	14
Evansville	16	12
Hegewisch, Ill.	31	24
Indianapolis	25	20
Lima, O.	26	20
Louisville	14	11
New Albany	16	12
Peoria	31	20
Pittsburg	31	24
St. Louis	18	14
Toledo	28	22

The latest coal charters per ton of 2240 lbs.

From Baltimore to:—Bangor, Me., 1.60; Bath, 1.60; Boston, 1.25; Bridgeport, Conn., 1.00; Bristol, 1.25@1.30; Brooklyn, 1.00; Charleston, 90c.; Fall River, 1.00; Galveston, 3.00; Gardner, Me., 1.75; New Bedford, 1.00; Newark, N. J., 1.00; Newburyport, 2.25; New Haven, 1.00; New London, 1.00; New York, 1.00; Portland, 1.25; Portsmouth, N. H., 1.65@1.75; Providence, 1.25@1.40; Quincy Point, 1.50; Richmond, Va., .70 Roxbury, 1.50 3c.; Salem, Mass., 1.25; Savannah, 1.25; Somerset, 1.25@1.30; Williamsburgh, N. Y., 1.00; Wilmington, 1.35.

From New York to:—Bangor, Me., 1.25@1.30*; Bath, 1.30@1.40*; Beverly, 1.15*; Boston, 1.25*; Bridgeport, Conn., .60; Cambridge, Mass., 1.15*3c.; Cambridgeport, 1.10*; Charlestown, 1.10*; Chelsea, 1.10*; Com. Pt., Mass., 1.15*; E. Boston, 1.15*; E. Cambridge, 1.15*. Fall River, .75@.90; New Bedford, .80@.90; Newburyport, 1.25*; New Haven, .60; Newport, .75@.90; New London, .85; Norwalk, Conn., .60; Portland, 1.10*; Portsmouth, N. H., 1.20*; Providence, .75@.90; Salem 1.15*.

From Philadelphia to:—Bangor, 2.00*; Boston-1.60@1.70*; Charleston, 1.00; Chelsea, 1.55@1.60*; Com. Point, Mass., 1.60*; E. Boston, 1.70*; East Cambridge, 1.50*; Fall River, 1.15@1.25*; Galveston, 3.00*; Gardner, Me., 1.60*‡; Georgetown, D. C., 1.00; Lynn, 1.75@1.85*; New Bedford, 1.15@1.25*; Newburyport, 1.75*; New York .90†; Norfolk, 1.60@1.70*; Portland, 1.60@1.70*; Portsmouth, N. H., 1.60@1.70*; Portsmouth, Va., .65; Providence, 1.35@1.40*; Richmond, Va., 1.00; Rockport, 1.22½*; Saco, Me., 1.75*; Salem, Mass., .90*; Savannah, 1.25; Washington, 1.00; Weymouth, 1.15*; Wilmington, N. C., .60.

* And discharging. 3c. per bridge extra. † Alongside. ‡ And towing.

METAL MARKETS.

NEW YORK, Friday Evening, Feb. 1, 1889.

Prices of silver per ounce troy.

Jan.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.	Jan.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.
26	4.88¼	42 9-16	93	30	4.88¼	42⅝	93⅛
28	4.88¼	42 9-16	93	31	4.88¼	42 9-16	93
29	4.88¼	42⅝	93⅛	*1	4.88¼	42½	92⅞

* February.

The U. S. Assay Office at New York reports total receipts of silver for the week, 55,800 ounces.

London market has shown a limited demand for silver this week, and exchange has a weaker tendency. Council bills advanced ⅛.

Foreign Bank Statements.—The governors of the Bank of England at their weekly meeting reduced its rate for discount from 3½ to 3 per cent. During the week the bank gained £378,000 bullion, and the proportion of its reserve to its liabilities was raised from 45·83 to 46·28 per cent, against a decline from 45·60 to 45·53 per cent in the same week of last year, when its rate for discount was 3 per cent. Thursday, the bank gained £12,000 on balance. The weekly statement of the Bank of France shows a loss of 1,925,000 francs gold and a gain of 2,350,000 francs silver.

We are indebted to the courtesy of the Chief of the Bureau of Statistics in Washington for the following advance statement, showing the exports (domestic and foreign), from the United States of copper, lead and zinc, during the calendar year ending December 31st, 1888:

Exports of domestic products.	Quantities.	Values.
Copper, and manufactures of:—		
Copper ore, tons	39,748	$6,779,294
Ingots, bars, and old, lbs	31,664,046	4,899,426
Sheets, pounds	42,481	7,382
All other manufactures of	.....	211,141
Lead, and manufactures of	.....	194,216
Zinc, and manufactures of:—		
Ore or oxide, tons	228	18,034
Pigs, bars, plates and sheets, pounds	1,970	125
All other manufactures of	.....	19,098
Exports of foreign products.		
Copper, and manufactures of:—		
Ore (fine copper contained therein), pounds	367,874	31,304
Pigs, bars, ingots, old, and other unmanufactured, pounds	65,854	3,283
All other manufactures of	.....	69,019
Lead, and manufactures of	.....	491,296
Zinc, manufactures of	.....	21

Copper.—Since we last went to press, copper has been the subject of rather violent fluctuation in values, and the market has been in a nervous condition. This state of affairs has characterized both the domestic and the European markets, and was caused by reports to the effect that the much discussed London Metal Bank had met with some serious obstacles in the way of its successful constitution, and also that the newly extended contracts with the great producing companies had not been signed. This uneasy feeling was greatly aggravated by the fact that the representatives of the French Syndicate were altogether abstaining from making further purchases, and prices in consequence of these unfavorable influences naturally took a decidedly downward movement. Had it not been that at this crisis the syndicate again commenced to buy after an interval of three or four days there can be little doubt that a serious panic would have ensued. The result in quotations is seen from the fact that whilst at the end of last week the London quotation for Chili bas stood at £77 5s., within less than two days afterward the official quotation for spot had dropped to £73, and futures were even offered considerably below that figure—it is reported at £70—without finding buyers. A similar disorganization of prices took place in this market, and the fact that the operations in this country in copper are now of a very limited nature only prevented a more serious decline in quotations. As it was, Lake copper for March delivery sold down to 16c., but rallied again on the improved quotations cabled from London to 16½, and the few transactions for March delivery covered the whole of the business done in our Metal Exchange. Our present quotations for Lake copper are now nominally: Spot, 17; February, 17, March, 16·40; April, 16; May, 16.

The London quotations for Chili bars and G. M. B., which opened on Monday at £77 5s., close to day at £77 12s. 6d.

Mail advices recently to hand from England are of a very discouraging nature, and there seems to be no buying at all except by the syndicate, and the demand from consumers is practically nil. Another significant fact is that Chili bars for forward delivery can readily be purchased by responsible parties at from £1 to £1 10s. below the quotation ruling in the London Metal Exchange. According to cable advices just received from Messrs. H. R. Merton & Co., the statistics of visible supplies for the last half of January have increased 8000 tons.

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

To Liverpool—	Copper matte.		Lbs.	
By S.S. Spain	Sacks.	6,469	760,000	$38,000
By S.S. Bellaura	Sacks.	899	122,997	10,800
By S.S. Celtic	Sacks.	2,991	359,900	18,000
By S.S. City of Chicago.	Sacks.	9,291	1,088,950	54,450
By S.S. Italy	Sacks.	1,395	116,000	8,300
By S.S. Holbien	Bbls.	276	269,321	12,000
To Havre—	Copper.			
By S.S. La Champagne.	Sacks.	134	167,500	23,450
To Hamburg—	Old Copper in transit.			
By S.S. Amalfe	Casks.	12	12,907	1,663
	Pieces.	2	1,980	245
To Liverpool—	Old Yellow Metal.			
By S.S. Nevada	Bundles.	75	8,325	817
	Bbl.	1		
To Hamburg—	Copper Bullion.			
By S.S. Bohemia	Bars.	10	894	2,500

Tin.—This market has shown a strong and advancing tendency, and a decidedly better demand has lately set in. For some time past our market on this side has ruled below the London parity, owing to certain parties here pressing sales, but it is now believed that such parties are cleared out and the improvement in the statistical position also favors higher prices. According to cable advices just received the stocks of tin, have unlike the copper stocks, decreased 400 tons for the month of January.

Our closing quotations to-day are: Spot, 22; February, 22; March, 22·10, and the latest London price is £98 17s. 6d., an advance of about £2 for the week.

Lead.—This market has continued in a dull condition, and prices have been weak. Some 300 tons were sold at 3·75, but at that figure there appears to be a very good demand, and nothing can at present be bought below 3·80. At this latter figure, however, buyers seem disposed to adopt a waiting policy, and consumers being pretty well bought forward, it is not unlikely that prices may give way again within the next few days, and if so a very active business seems probable.

St. Louis, Mo.—Messrs. John Wahl & Co. telegraph to-day as follows: "There are more sellers than buyers in the market, hence prices are weak. Sellers are offering argentiferous at 3·60c., and common at 3·55c., but no buyers can be found. At about 5c. less for each, round lots could be placed."

Chicago, Ill.—Messrs. Everett & Post telegraph us to-day as follows: The market has declined slowly since our last report. There are no buyers. Sales of 300 tons, February delivery. Market closes at 3 53c.

Spelter.—Reports from the West all agree that the demand for domestic spelter is unusually active, and the producers have lately made enormous deliveries and have cleared out nearly all their stocks. The Western markets are consequently very strong in line, and indications all point to higher values for this metal in the near future. The quotation out in the West is 4·75@4·80 East St. Louis, which is equivalent to 5·05 @5·10 delivered in New York.

Antimony is in very active demand on the part of both consumers and speculaters, and prices are strong and advancing, at 11½c. for Hallett's and 13c. for Cookson's.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Feb. 1.

Notwithstanding the announcement of the organization of a Standard-Oil-Pig-Iron Warrant Company, which is to give every one who has become disgusted with, as well as every one who likes gambling in pipe line certificates, a new chip to play with, the pig-iron market remains very dull and the demand light. Nevertheless, every one must now recognize that a very important and revolutionary element has entered the trade, and the condition, both of stocks and of many producers, renders the successful establishment of this great pig-iron trust comparatively easy.

It seems probable that the business of selling and buying of pig-iron will before long be conducted by stockbrokers and not by iron-brokers or commission merchants, and that gambling in pig-iron warrants will become a feature like gambling in pipe line certificates. The Standard Oil methods may therefore be studied with advantage by those who are in the iron business and by those who desire to embark in it.

Unless it secures better prices to the furnaces it will not help them, but it proposes to do this by cutting out the commissions of middlemen and substituting the less expensive brokerage on warrants. It may be reasonably assumed that the Standard Oil control of railroads will save on freights, and the accommodation to the furnaces of being able to get their cash as fast as their iron is made, and the reduction in cost which would accompany a maximum output might well make a substantial benefit to the furnace and to the trust without increasing the price of pig-iron in the market or to consumers. With the complete development and success of the scheme, independent ironworks would be placed in a precisely similar position to that of independent oil refineries, so that the new Standard-Oil Pig-Iron-Warrant Company seems to aim, ultimately, at a monopoly of the iron business of this country.

The general opinion of the iron men in this market is opposed to this new scheme, and few can be found who believe that it will be carried through to anything like a large or comprehensive development.

The market is certainly very dull, and Southern iron is still being offered at low prices. The Thomas Iron Company is still indisposed to name prices, hoping, probably, that a betterment in the condition of affairs will show itself within the next month or so. We continue our quotations of last week, which are given in our table of Current Prices on another page. The condition of the market is such as will stand very careful watching, the stocks being so light that any unusual demand might create a sudden jump that would be very injurious to the trade. The prices at present are too low, but an advance should be moderate and not too rapid if it is to be permanent.

Scotch Pig.—The market continues steady with but very little demand and no notable changes in prices. Freights continue quite low, from 4 to 5 shillings, and the market in Glasgow remains also without material change. We refer to our table of Current Prices for quotations.

Structural Iron.—There is little new to be quoted in this market. The demand is fair, with a prospect of a good deal of business in the early spring. Prices are as heretofore: 1·09@2c. for Plates, 2@2·10c. for Angles, 2·04@2·05c. for Ts and 2·08c. for Channels and Beams on dock.

Steel Rails.—We hear of but little business this week. One order early in the week for 5500 tons for the Northwest was taken by an Eastern mill at $30.60 in Chicago, which would leave the mill about $27. The Eastern mills are selling at from $27 to $27.50, and some of them below $27. Twenty-eight dollars is asked in some cases, but it is difficult to obtain even $27. Pittsburg is still lower, and it is confidentially affirmed that $26 has been accepted and possibly shaded there. Chicago is higher though it is doubtful if it is getting the full rates which it quotes. On the whole, the rail business is not in a very flourishing condition. Few of the mills can make any money at the present prices even where they are able to keep running steadily. While there is no immediate prospect of an advance, an increase in railroad building might in the early spring bring about higher prices, but not until several of the mills which are now bidding get pretty well filled with orders.

Merchant Steel.—Competition still rules in this market, and we hear of sales of spring steel as low as $43 a ton, and even this figure has been shaded.

Old Material.—Old rails are still held very firmly at $23 to $23.50, but there is very little doing. These prices appear high, but the demand is good and the supply is short. There is no notable change in other articles in this material. The market is dull throughout, with a steady but quite moderate business being transacted and no immediate prospect of any change, either for better or worse. We refer to our table of Current Prices on another page for the quotations.

LOUISVILLE. Jan. 29.

[Special market report by HALL BROTHERS & Co.]

The market since the last report has been very quiet, with only a few sales of any importance to note. The transactions of the past week have been confined mainly to car-load orders, and from that up to 100 and 200 tons. There does not appear to be the same amount of iron offering now in this locality as there was some two weeks ago. Some of the leading companies have withdrawn from the market, and others are not pressing it now, as was the case recently; at the same time there is no demand, in consequence of many of the principal buyers having well supplied themselves for some time to come at very favorable figures.

In the absence of any notable change, our figures remain on a cash basis f.o.b. cars at Louisville.

PHILADELPHIA. Jan. 31.

[From our Special Correspondent.]

Buyers of nearly all kinds of irons seem frightened at their shadows. The market is in a very unsettled condition. While quotations have not been formally lowered, reductions have been made on nearly all kinds of iron offered in the market. Makers of steel profess to believe that a reaction will soon set in, when buyers will conclude that it is safe to buy for spring and summer requirements. Even those who ordinarily purchase in a large way at this time are buying only in small lots till certain elements of uncertainty are removed. After all this is the influence Southern iron will have upon this market. A good many offerings are being made by makers, and buyers have named figures that they would be willing to pay, but the total transactions are yet very insignificant. Some makers have stated that it would be cheaper to blow out than make iron at prices which buyers seem disposed to pay. So far as the Pennsylvania production is concerned it has not yet been reduced, and will not be for the present. Consumption is still heavy, and makers are positive in their statements that an improving demand must shortly set in, and hence they are not inclined to make sweeping reductions on all makes and grades. The best judges now express contrary opinions. Yesterday and to-day offers were made for 1000 ton lots of forge, which makers have not as yet accepted. Founders are better supplied with stocks than mill men. Southern makers are very anxious to place sample lots and are doing so at concessions that are likely to bring about considerable business in a small way. Foreign iron is not selling. Quotations remain about where they were.

The bloomaries are doing a good business, and the indications are that prices will continue at about the figures makers have named. Muck bars are weakening, and in some cases quotations are about one dollar below what they were in December.

Merchant bar sales have been made at very low prices. Several large orders are on the market an will be in all probability taken before March. Two or three good sized orders for skelp have been taken, but at concessions from prices usually quoted.

Nails are moving in a sluggish way. Makers expect a heavy demand on account of the prospects of restricted production. Wrought iron pipe is also in a little better request, but sharp cutting is going on among makers.

Two or three good sized transactions have just been reported for sheet iron, and manufacturers and storekeepers report a better business to-day. The merchant steel manufacturers have been favored with an improving demand for certain kinds of steel, and think that there will be a farther improvement followed by hardening prices on those kinds of steel which have been subjected to the greatest depression.

Plate and tank iron is dull in Eastern markets because of the successful competition of some Western makers who have been capturing most of the business. Nothing of importance is to be found this week in regard to structural iron, and quotations are unchanged.

There is a great deal of stir in the steel nail trade, but it is impossible to find any thing to modify statements heretofore made. A good deal of railroad building has been projected, but orders have not been placed. A declining tendency is at work, and $27, it is asserted by buyers, would be accepted for large lots. It is intimated that several railroad buyers are about ready to place orders and that a sudden demand will soon set in which will restore prices to the makers' terms, namely, $28. This rumor is given for what it is worth. Old rails would sell much more rapidly if they could be had. Buyers are unwilling to pay holders' demands. Stocks are light among consumers. The usual movement in scrap is going on without any change in prices.

IMPORTS AND EXPORTS OF METALS AT NEW YORK JANUARY 1st TO JANUARY 29th, 1889.

IMPORTS.

Spelter.	Tons.
American Metal Co	56
Nickel.	Pounds.
McCoy & Sanders	11,240
Antimony.	Casks.
Total	250
Tin.	Tons.
American Metal	17
Bidwell & French	23
Crooks & Co	60
Daval & Son, John	11
Hendricks Bros	30
Lehmarer, S. & Co	11
Muller, Schall & Co	112
Naylor & Co	95
Phelps, Dodge & Co	380
Schmarer & Co	11
Thomsen & Co., D	11
Wheeler & Co	1
Tin Plates.	Boxes.
Bruce & Cook	5,985
Byrne & Co., J	2,883
Central Stamp. Co	6,123
Coddington & Co	18,625
Cort & Co., N. L	3,139
Corbier, F. & S	1,132
Crooks & Co	2,931
De Milt & Co	2,754
Dickerson, V. D	29,263
G. L. N	72
Iron Clad M. Co	45
Lalance & Grosjean	2,180
Lombard, Ayres	2,000
Merchan & Co	1,444
Mersick & Co	159
Morewood & Co	1,733
Phelps, Dodge & Co	38,341
Pratt Mfg. Co	18,883
Shepherd & Co	1,626
Somers Bros	569
Thomsen & Co., A. A	21,605
Wheeler & Co	1,797
Whittemore & Co	1,044
Pig Iron.	Tons.
Bartlett, N. S	200
Crocker Bros	600
Crooks & Co	100
Martin, W. T	159
Page, Newall & Co	50
Pope. J. E., Jr	100
Stetson & Co	500
Williamson & Co	300
Steel Sheets, Billets, Forging, etc.	Tons.
Abbott & Co	481
Bowker, C. F	29
Carey & Moen	46
Carter, G. F	200
Crenshaw, Hugh	25
Crooks & Co	51
Cortis, R. J	80
Curran, J	5
Downing & Co	18
Erie Despatch	40
Hugill, Chas	26
Ismay, J. B	53
Lalance, G. Mfg. Co	52
Leng's Sons, J. S	2
Lundberg, G	50
Milne & Co	635
Naylor & Co	776
Newton & Shipman	4
Oelrich & Co	91
Pierson & Co	22
Pilditch, F. S	7
Power, C. W	8
Prosser, Thos	80
Schulze & R	3
Temple & Lockwood	2
Wagner, W. F	63
Wallace & Co	5
Whitney & W	2
Wiell & Co	7
Williams & W	75
Wolff, R. H	29
Bar Iron.	Tons.
Abbott & Co., J	205
Bacon & Co	87
Downing & Co	200
Jacobus, E. G	8
Milne & Co	89
Steel and Iron Rods.	Tons.
Abbott & Co., J	302
Boker, H	3
Carey & Moen	95
Crabb & Co., W	5
Dana & Co	1,530
Downing & Co., R. F	125
Fuller, D. & T	15
Galpin, S. H	115
Heyn, A	156
Lilienberg, N	1
Lundberg, G	56
Milne & Co	200
Muller, Schall & Co	202
Naylor & Co	1,419
Robeling's Son, J. A	101
Whitney & Co., A. R	70
Wolf & Co	449
Wright, P. & Co	3
Old Rails.	Tons.
Neumark & Gross	200
Perkins, C. L	433
Scrap Iron.	Tons.
Bungass & Co	162
Spaulding, A. B. & Co	172
Ward & Co., J. E	20
Sheet Iron.	Tons.
Coddington & Co	64
Charcoal Iron.	
Bacon & Co	97
Downing & Co	175
Milne & Co	88
Muller, S. & Co	25
Page, N. & Co	105
Spiegeleisen.	Tons.
Crocker Bros	1,174
Dana & Co	315
Crocker Bros	151
Farris & Co	525
Jansen, J. A	1,155
Naylor & Co	2,520
Perkins, C. L	101
Iron Ore.	Tons.
Earnshaw, A	526

EXPORTS.

Copper.	Pounds.
American Metal Co	111,750
Hurst, F. W. J	113,000
Naylor & Co	112,000
Piper, Doremus & Co	3,893
Copper Matte.	Pounds.
Abbott & Co	310,585
American Metal Co	1,257,740
Henriott, F	3,672,890
Williams & Terhune	692,494

CURRENT PRICES.

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..... 8.50@9.00
Sulphuric, 60°, ₱ 100 lbs ..... 90@95
Sulphuric, 66°, ₱ 100 lbs ..... 95@1.25
Alkali—36 p. c..... 1.12½@1.15
48 p. c ..... 1.25@1.27½
Refined, 58°..... 1.15@1.25
Alum—Lump, ₱ lb..... 1¾
Ground, ₱ lb..... 1¼@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... 3.35@3.45
Carb., per lb..... 7½@8
Muriate per lb..... 6½@8
Arsenic—White, powdered, ₱ lb..3@3½
Red, ₱ lb ..... 5½@5¾
White, at Plymouth, ₱ ton. ..£11 10
Asbestos—Am., p. ton.....$50@$300
Italian, p. ton, c. i. f. L'pool.....£18
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. 1.87½@2.12½
Borax—₱ lb 9¼
Refined at Liverpool, ₱ ton..... £29
Brimstone—*See Sulphur.*
Bromine—₱ lb..... ....37@38
Chalk—₱ ton..... ..... 3.15
Precipitated, ₱ lb..... 5
China Clay—English, ₱ ton13.50@18.50
Southern, ₱ ton..... 13.50
Chrome Yellow—₱ lb..... 1@25
Cobalt—Oxide, ₱ lb..... .2.60@2.90
Copper—Sulph. English Wks.,ton£24 10s.
Precip., Eng. Wks, unit.. .fluctuating
Copperas—Common, ₱ 100 lbs... 62½
Best, ₱ 100 lbs..... ....75@1.00
Liverpool, ₱ ton, in casks.....£1 15s.
Cream of Tartar—Am. 99%....31@31¾
Powdered, 99 p c..... 31¾@32¾
Emery—Grain, ₱ lb 4
Flour, ₱ lb 2½
Feldspar—Ground, ₱ ton..... .16.00
Fuller's Earth—Lump, ₱ bbl. .90@95
Powdered, ₱ lb.. ....1¾@2
Gypsum—Calcined, ₱ bbl. 1.25
Iodine—Resublimed..... 3.50
Kainit—₱ ton..... .... 9.75@10.50
Kaolin—*See China Clay.*
Lead—Red, ₱ lb. ..... 8½@9
White, American, in oil, ₱ lb... 6¾@7
White, English, ₱ lb 7½
Acetate, or sugar of..... 13@13½
Lime Acetate—Amer. Brown.1.00@1.05
" Gray..2.00@2.10
Litharge—Powdered, ₱ lb. .... 6½@6¾
English flake, ₱ lb..... .9@9½
Magnesite—Greek, ₱ ton..... 10.00
Manganese—lump,c. i.f. L'pool 62s. 6d.
Per unit, up or down..... 1s. 6d.
Ground..... .£5 17
Mercuric-Chloride—(*Corrosive Sublimate*) ₱ lb..... .. 65@67
Mineral Wool—₱ lb..... 2
Mica—In sheets according to size,
1st quality, ₱ lb..... .25@$6 00
Phosphate Rock—S. Carolina,
per ton, o. b Charleston. 5.00@6.00
Ground, ex vessel New York.10.00@10.50
Canadian Apatite, lump, f. o. b. at
shipping port, ₱ unit..... ..
Phosphorus—₱ lb..... .. .. 70@75
Pumbago—Ceylon, ₱ lb. ... . 4@5
American, ₱ lb..... 5@7
Potassium—Cyanide, ₱ lb..... .39@40
Bromide, ₱ lb..... 33
Chlorate, ₱ lb. .... 15@15½
Carb. ₱ lb. ....4.70@5.50
Caustic, ₱ lb..... ..... 7¼@8
Iodide..... ..... .2.70@2.75
Muriate, ₱ 100 lbs..... .....1.80@1.85
Nitrate, refined, ₱ lb..... .. 6
Bichromate, ₱ lb .... 11½@12
Sulphate, ₱ 100 lbs. 2.30
Yellow Prussiate, ₱ lb.... 19
Red Prussiate, ₱ lb... . ..... 42@45
Pumice Stone—Select lumps, lb. 3¼
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@3½
Lump, ₱ lb..... ..... 6@10
Eng., powdered, ₱ ton... ..... £4
Lump, ₱ ton..... ..... £5
Salt—Liverpool, ground ₱ bbl. . 75@80
Turk's Island, ₱ bbl ..... .30@33
Salt Cake—₱ 100 lbs. .....50@57
Saltpeter—Crude, ₱ lb. ... . 5@5½
Refined, ₱ lb. .... 6@8
Soda Ash—Carb.,48 % 100 ℔...1.25@1.35
High test .... 1.12½@1.15
Caustic, 48 % ....1.26¼@1.35
Soda Caustic, 60% ..... 2 40@2 65
" " 70% ..... 2.25 @2.35
" " 74–5% ..... 2.25 @2.35
Sal, English, ₱ 100 lbs.... .95
Sal, American, ₱ 100 lbs .. .95 @1.20
Nitrate. ₱ 100 lbs..... .. 2.32½@2.40
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@19.75
Talc—Ground French, ₱ lb .. ..1¼@1½
Domestic, ₱ lb . ..... ¼
Domestic, ₱ ton..... 15 00
c. i. f. Liverpool, ₱ ton..... .. £4 5 0
Tannin—Pure, ₱ lb. . .....
Vermillion—American, ₱ lb.. .. 61
English, ₱ lb.. ..... 82@85
Vitriol—(Blue), Ordinary, ₱ lb. 5¾@6¼
Extra, ₱ lb..... 6¼@6¾
Zinc Oxide—Am., Dry, ₱ lb. 4½
Antwerp, Red Seal, ₱ lb..... .....6@6½
Paris, Red Seal, ₱ lb..... .....6¼@7
* Spot

BUILDING MATERIAL.

Bricks—Pale, ₱ 1,000 ..... 2.75@3.00
Jerseys, ₱ 1,000..... 6.00@6 50
Hackensacks, ₱ 1000..... 6.50@7.00
Up Rivers, ₱ 1000..... 6.50@7.00
Haverstraw seconds, ₱ 1000... @7.00
Haverstraw firsts ₱ 1,000. .. 7.25@7.75
Fronts, nominal, ₱ 1000.
Croton..... 14.00@16.00
Wilmington..... 20.00@21.00
Philadelphia..... ... ... 28.00@29.00
Trenton..... @28.00
Baltimore..... 37.00@41.00
Building Stone—Amherst
freestone, ₱ cu. ft..... 80@1.00
Brownstone, ₱ cu. ft. .... 1.00@1.35
Belleville, N. J., red and gray
rock, ₱ cu. ft.. ..... 1.00
Corncockle red freestone, ₱ cu
ft..... 1 00
Granite, rough, ₱ cu.ft..... 45@1.25
Granite, Scotch ₱ cu ft.. .. 1.00@1.05
Cement—Rosendale, ₱ bbl 1.15@1 20
Portland, American, ₱ bbl. . 2 15@2 45
Portland, foreign, ₱ bbl.... 2.10@2.40
Portland, " special brands.2.45@3.75
Roman, ₱ bbl. ..... 2.65@2 85
Keene's coarse, ₱ bbl..... 4 50@6.50
Keene's fine, ₱ bbl..... .... 7.00@9.25
Slate—Purple and green roof-
ing, ₱ 100 ft..... 5.00@6.00
Red roofing, ₱ 100 sq. ft.... ..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..... .... 3.5 @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
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. ..130.00
Potassium—Metallic, per lb... 3.00
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. .. 3.00
Strontium—(Metallic), per oz..128 00
Tantallum—(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 lb..... 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.... .... 16 75c.
Electrolytic, ₱ lb .... 16c.
Casting Brands, ₱ lb. .... 15¾c.
Chili Bars, London, ₱ ton ... £77 12s.6d.
Sheet Copper (according to
size), ₱ lb..... ..... 25 @38c.
G. M. B..... ..... £77 12s.6d.
Nickel.—
Metallic, per lb..... 46c.
Lead—
Domestic, Common, Spot.... 3·80c.
Foreign..... ..... 4 90c.
Sheet, ₱ lb, net .... 7c.
Pipe, ₱ lb .. .. 6¼c.
Tin lined Pipe, ₱ lb..... 15c.
Shot, ₱ 25-lb. bag 1.16
Spanish Lead, London.. ...£12 17s. 6d.
Tin—
Tin Plates .... 13s. 6d.
Tin Spot in London . ... £98 15s.
Pig tin, spot in N. Y., ₱ lb.. 22½c.
Zinc—
Domestic spelter, ₱ lb.... .. 5·10c.
Foreign spelter, ₱ lb... .. 5·85c.
Silesian. ton..... £18 10s
Sheet, American, ₱ lb .. .... 6¾c.
Antimony—Hallet's, per lb.... 11½c.
Cookson's, per lb.... ..... 13c.
Star Antimony..... .... £45
Quicksilver—Per lb..... 60c.
London, ₱ flask..... £9 10s.

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 50@ 16 00
Scotch Pig—Coltness .. $20.50@ .....
Clyde ..... 19 75@$ 0.00
Dalmellington..... 19.25@ 19.50
Summerlee..... .....
Shotts..... 20.00@ 20.50
Langloan ..... 20.00@ .....
By Cable to-day to the Metal Exchange :
Scotch Warrants..... 41s. 4d.
Coltness, at Glasgow ..... .51s.
Langloan, at Glasgow..... 5os.
Summerlee, at Glasgow..... 50s. 3d.
Gartsherrie, at Glasgow.... .....48s. 6d.
Glengarnock, at Ardrossan..... 48s.
Dalmellington, at Ardrossan.....44s.
Eglinton, at Ardrossan ... . 42s. 6d.
Bessemer Pig—
Foreign, nominally..... .....
Domestic " ..... 17 60@ 17.50
Spiegeleisen—
German, 20 per cent.. .. ..
English, 20 " " ..... 28 00@ 28.50
" 30 " " ..... 33 00@ 34.00
Ferro Manganese, 80%..... 55.00
Steel Blooms, nominally ....
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 " " ..... 30.00@ 32.00
Structural Iron and Steel—
Bridge Plate, at mill ..... 2·10@2·1c.
Angles, at mill ..... 1·90@2·00c.
Tees, at mill..... .. 2 40@2 60c.
Steel Angles, at mill..... ...2¼ @2½c.
Beams and Channels, on wharf, 2·8c. base
Steel Plates—
Tank and Ship, on wharf..... 2¾@2½
Shell, on wharf..... .... 2¾@3
Flange, " ..... 3 @3¼
Fire-Box, on wharf..... 3¼@4
Iron Plates—
Common tank, on wharf....2·10@2·2c.
Refined, on wharf..... 2·30@2 4c.
Shell, " ..... 2·40@2½c.
Flange. " ..... 3·40@3·5c.
Extra flange, on flange.....3¾@4
Bar Iron—
Refined..... ..... 1·8@2·0c.
Common ..... 1·7@1 8c.
Merchant Steel—
American tool .... 8½@10c.
Special grades..... ..... 13 @20c.
Crucible machinery... ..... 5 @6c
" spring..... ..... 4½c
Bessemer machinery..... .... 2·0@2·5c
" 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, 52½% disc; Galv., 42½% disc.
Lap-Welded, Plain and Tarred, 62½% disc
Galv., 52½% disc.
Boiler Tubes—Per cent disc..60@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—
Foreign, *ex store*..... @
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. .. 1·8 @ 1·9c.
—From store . ..... 1·85@ 1·95
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 50@ 15 00
" " No. 2½ ..... 14.00@ 14 50
Mahoning Valley (Lake Ore
Mixture) .... 19.00@ 20.00
So. Charcoal, No. 1..... 17.00@ 17.50
" " No. 2 ..... 16.00@ 16.50
Missouri Charcoal No. 1 ... 18 00@ 18.50
" " No. 2.... 17.75@ 18.00
Forge Irons—
Neutral Coke..... $13 50@$13.75
Cold Short ..... 13.00@ 13.50
Mottled..... 12.0 @ 12.50
Car Wheel and Malleable Irons—
Southern (standard brands).$22.50@$23 00
" (other brands)..... 18 00@ 18 50
Lake Superior..... 22.50@ 22.50

Pittsburg Prices.

Coke or Bituminous Pig—
Foundry No. 1..... ... $17.25@17.50
Foundry No. 2..... .... 16.25@16.50
Gray Forge No. 3..... 15.00@ .. ..
" " No. 4.... .. .. .. 14.50@14 75
White .... 14.50@ .....
Mottled..... 14.50@ .....
Silvery..... .... 16.50@18.50
Bessemer..... ..... 16.50@16.75
Low Phos .... 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
20 p. c. Spiegel..... 27.50@28 00
Muck-Bar..... ..... 27.50@27.75
Steel Blooms..... .... 28 00@28.50
Steel Slabs .... 27 50@27.75
Steel Crop Ends..... ..... 19.00@19 50
Steel Bloom Ends..... .....@19.25
Ferro Manganese, 80%.. . .... 56.00@58.50
Steel Billets..... ..... 27.50@28.00
Old Iron Rails..... ..... 23.50@23.75
Old Steel Rails..... .... 18.50@19.50
No. 1 W. Scrap..... ..... 21.00@.....
No. 2 W. Scrap.. . ... 18.50@19.00
Steel Rails..... ..... 28.00@.....
" light sections... ..... 28.00@31.00
Bar Iron., nominal..... 1.75@ 1.80
Iron Nails..... 1.80
Steel Nails..... .... 1.80
Wire Nails.. ..... . 2.55

Philadelphia Prices.

Foundry No. 1..... ... $18.00@19.00
Foundry No. 2. ..... 17.00@17.50
Gray Forge..... 15.50@16.50
Bessemer Pig..... 20.00@.....
Steel Rail Blooms..... 29.50 nom
Foreign Bessemer..... 20.00@.....
Spiegeleisen. ....@27.00
Scrap, Selected..... 22.00@22.50
No. 1..... ..... 21.00@22 00
Cargo Scrap..... ..... 20.00@21.00
Muck-Bars..... ..... 26.50@27.50
Merchant Iron..... ... 1.70@ 1.80
Plate Iron..... .. 2.00@ .....
Tank Iron .... 2 00@ 2.10
Skelp Iron..... ..... 1.80@ 1.85
Angles..... ..... 2.00@.....
Beams and Channels..... .. 2.80@.....
Nails .... 1.70@ 1.90
Steel Rails. ..... 28.00@.....
Old Rails..... ..... 23..0@.....

STOCK MARKET QUOTATIONS.

Baltimore, Md.

COMPANY.	Bid.	Asked.
Atlantic Coal....	1.40	1.90
Balt. & N. C.....	.20@.21	.25
Big Vein Coal...	1 10	1.50@2.00
Conrad Hill	.05	.15
Diamond Tunnel	.35@.47	.45
George's Cre. C.	105@106	109.75@115.00
Lake Chrome	.05	.10
North State (Balto)	.20	.....
Silver Valley.. ..	.35@.45	.50@.60

Highest and lowest prices bid and asked during the week ending January 31st.

Birmingham, Ala.

COMPANY.	Bid.	Asked.
Ala. Coal. C..	....	$27
Ala. R. Milt Co.	....	$10
*Alice Furnace,	$102	....
Bess. Land Co.	$19@$20	$20@$20½
Bir. Fur. & Mg.	$10	$10@$20
Broken Arrow.	....	$15½
Decat. L. Imp.	$12@$12¾	$13⅞@$13¼
DecaturMin. L.	$10¼	$23@$25
Enterprise Mfg.	....	$50
*Eureka	$08½	....
Hen. S. & M. Co.	$120@$125	$123@$132
Jagger-Townley	$ @$8	....
Mag-Ellen.....	$9@$95	....
*Mary Pratt...	....	$102
††Sloss I. & S....	....	$89½
†Sloss I. & S....	....	$56
Tenn. C. & I. Co.	$34	....
*Williamson ...	$98¾	....
Woodstock I. Co.	$32	....

Sales during the week ended Jan. 29th.
Besemer Land Co.... 35 shs. $ 9½@$20.
Henderson S. & M. C. 150 shs.$120@$135½

* Bonds. †† First mortgage. † Second mortgage.

Pittsburg, Pa.

COMPANY.	H.	L.	Closing.
Allegheny Gas Co.	36.25	36 25	36.25
Bridge-water Gas.	35.00	35.00	50 00
Chartiers Val. Gas.	56 00	52 50	56.00
La Noria Mining ..	1.88	1.75	1.88
Lustre Mining	15.00	15.00	15.00
Manuf'urers' G. Co.	20.00	20.00	20.00
Nat. Gas of W. Va.	57.00	55 00	55.00
Penn Gas Co.....	15.00	13.88	15.00
Ohio Valley Gas...	34.00	34.00	34.00
Philadelphia Co...	39.13	38 00	39 00
Silverton Mining..	1.50	1.50	1.50
South Side Gas ...	28.00	28 00	28.00
Tuna Oil Co.....	63.00	63.00	63.00
W'ghouse A. B. Co.	119.75	119 75	119.75
Whouse B. Co. Lm.	60.00	60.00	60.00
Wheeling Gas ...	29.00	28.00	29.00

Highest and lowest prices bid and asked during the week ending January 29th.

Foreign Quotations.

London, January 19.

COMPANY.	Highest.	Lowest
Alturas Gold, Idaho...	4s. 9d.	4s. 3d.
Arizona Copper, Ariz..	33s. 9d.	33s.
Birdseye Creek.....	4s. 6d.	3s 6d.
Callao Bis , Venz.....	11s 6d.	10s. 6d.
Carlisle, N. Mex	8s 6d.	7s 6d.
Colorado United, Colo.	4s 6d.	3s. 6d.
Columbian, S A.....	35s.	33s.
Comstock, Utah.....	£1¼	£1⅛
Cons. Esmeralda, Nev..	7s.	6s.
Denver Gold, Colo... ..	2s. 3d.	1s. 9d.
Dickens Custer, Idaho.	4s. 3d.	3s. 9d.
Eberhardt, Nev	2s. 6d.	1s 9d.
El Callao, Venezuela....	£3¼	£2¾
Empire, Mont.....	10s.	9s.
Flagstaff, Utah.....	4s.	3s. 6d.
Garfield, Nev.	14s.	13s.
Gold Hill, N. C.....	2s.	1s. 6d.
Ilex, Cal.....	£⅜	£⅛
Josephine, Cal	6s.	4s.
Kohinoor, Colo.....	2s. 9d.	2s. 3d.
Mason & Barry, Port...	£1⅝	£9⅜
Montana Lt., Mont	£2 3-16	£2 1-16
New California, Colo....	9s. 9d.	9s 3d.
New Consolidated	2s.	1s. 6d.
New Emma, S., Utah...	6s.	5s. 6d.
New La Plata, Colo...	2s.	1s 6d.
Pittsburg Cons., Nev...	£¾	£¾
Quebrada, Venezuela...	£5¼	£5
Richmond Con., Nev...	£2¾	£2¼
Ruby&Dunderberg, Nev	3s.	2s.
Russell Gold, N. C.....	3s. 6d.	3s.
Sierra Buttes, Cal....	£13-16	£11-16
United Mexican, Mex ..	£⅜	£⅜
U. S. Placer, Colo.....	6s.	5s.
Viola Lt., Idaho	8s. 6d.	8s.

Paris * January 17.

Belmez, Spain.....	540.00	540.00
El Callao, Venezuela..	61.00	61.00
Golden River, Cal ...400.00		400.00
" " parts.. . 80.00		80 00
Lexington, Mont. 117.50		117.50
" parts 4.75		4 75
Rio Tinto, Spain.....605 00		605.00
Tharsis, Spain.. .. .. 138 75		138 75

* Francs

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES

NAME AND LOCATION OF COMPANY.	Jan 26		Jan. 28.		Jan. 29		Jan. 3 .		Jan. 31.		Feb. 1		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Adams, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Alice, Mont	..	.....	....	....	....	....	....	....	....	....	....	....	.....
Argenta, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Bassick, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Belcher, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Blue Isle, Nev.	....	.....	.40	....	....	....	....	....	....	....	....	....	300
Bodie Cons., Cal	....	.....	....	....	....	....	....	....	1 65	....	1.70	....	500
Breece, Colo	....	.....	....	....	....	....	....	....	....	....	.29	..	500
Bulwer, Cal	.60	.55	60	....	....	....	....	....	....	....	....	....	250
Caledonia, Dak	..	.....	....	....	....	....	....	....	....	....	....	....	.....
Calumet & Hecla	..	.....	....	....	....	....	....	....	....	....	....	....	.....
Challar, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Chrysolite, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Colorado Cent'l, Colo.	....	.....	....	....	....	....	2.15	....	....	....	....	....	1,000
Cons. Cal & Va., Nev	8.00	.....	9 37	8 63	9 00	8.25	8 88	8.00	9. 3	8.50	8.75	8 50	2,110
Crown Point, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Deadwood, Dak	2.00	.....	....	....	1.62	.....	....	....	....	....	....	....	600
Dunkin, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Eureka Cons., Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Father de Smet, Dak	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Gould & Curry, Nev	..	....	....	....	3.10	.....	....	....	....	....	....	....	300
Grand Prize, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Hale & Norcross, Nev	.	.....	5.38	5 00	5.25	5.13	....	.....	....	....	....	....	800
Holyoke, Idaho	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Homestake, Dak	....	..	....	....	....	....	....	....	13 50	....	....	....	20
Horn-Silver, Ut	....	.....	.79	....	.80	....	....	....	....	....	....	....	5.0
Iron Hill, Dak	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Iron Silver, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Leadville C., Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Little Chief, Colo	.20	.....	.20	....	....	....	....	....	....	....	....	....	1,100
Little Pittsburg, Colo	....	.....	....	....	.09	....	....	....	....	....	....	....	1.0
Martin White, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Mono, Cal	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Moulton, Mont	....	.....	.50	....	....	....	....	....	....	....	....	....	200
Mount Diablo, Nev	....	.....	....	....	....	....	2.50	....	....	....	....	....	100
Navajo, Nev	1.70	.....	....	....	....	....	....	....	....	....	....	....	200
North Belle Isle, Nev	....	.....	....	....	....	....	....	....	2 95	....	....	....	50
North Star, Cal	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Ontario, Ut	....	.....	6 00	....	5 38	....	....	....	....	....	1 05	....	250
Plutus, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	500
Plymouth, Cal	....	.....	8.75	....	....	....	....	....	8.75	8.50	....	....	235
Quicksilver Pref., Cal	....	.....	....	....	....	....	37.00	35. 0	....	....	....	....	160
" Com., Cal	..	.....	....	....	....	....	6 00	5.75	....	....	6 25	..	600
Robinson Cons. Colo	....	.....	....	....	....	....	....	....	.48	....	....	....	100
Savage, Nev	....	.....	....	....	....	....	3.10	....	....	....	3.60	....	200
Sierra Nevada, Nev	....	.....	....	....	3 25	....	3.15	....	....	....	3.25	....	600
Silver King, Ariz	1.25	1.15	....	....	....	....	1.10	....	1.15	....	1.15	....	450
Silver Mg. of L. V	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Small Hopes, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Standard, Cal	....	.....	1 35	1.25	1 30	1 15	1 35	.....	1 40	1.35	1 50	....	1,225
Stormont, Utah	....	.....	.01	....	....	....	....	....	....	....	....	....	500
Yellow Jacket	....	.....	....	....	....	....	....	....	....	....	....	....	.....

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Jan. 26.		Jan 28		Jan. 29		Jan. 30.		Jan 31.		Feb 1.		SALE .
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Allouez, Mich	....	....	.....	....	....	....	....	....	....	....	3 88	....	100
Amador, Cal	1.80	.....	...	...	1.80	....	1.85	...	1.85	....	2.00	1 90	1,100
American Flag, Colo	....	....	.....	....	....	....	....	....	....	....	....	....	.....
Astoria, Cal	.20	..	.20	....	.20	....	.20	....	20	....	.20	....	1,900
Barcelona, Nev	....	....	.65	.63	....	....	.66	.63	....	....	....	....	1,300
Bechtel, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Best & Belcher, Nev	.....	.	6.38	....	6.00	....	....	....	....	....	....	....	500
Brunswick, Cal	....	....	....	....	....	....	.08	....	.08	.07	3,000		
Buffalo Iron Min'g	5.38	.....	6 25	.....	5 13	....	5.00	....	5.00	....	5.50	...	3,000
Bullion, Nev	....	....	1.75	....	....	....	....	....	1 80	....	1.80	..	300
Cashier, Colo	.05	....	.05	....	....	....	.06	.05	.05	....	.06	....	5,800
Castle Creek, Id	....	....	....	....	....	....	....	....	....	....	.04	....	500
Central Arizona	....	....	....	....	....	....	....	....	....	....	....	....	.....
Colchis, N. M	1.70	1.65	1.70	....	1.65	....	1.65	1.60	1.55	....	2.50	....	1,200
Commonw'lth, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Con. Imperial, Nev	....	.....	.82	....	.65	....	67	....	....	....	....	....	2,600
Con Pacific	....	....	....	....	....	....	....	....	....	....	....	....	.....
Del Monte	....	..	....	....	....	....	....	....	....	....	....	....	.....
Denver City, Colo	....	..	....	....	....	....	....	....	....	....	....	....	.....
Eastern Oregon	....	..	....	....	....	....	....	....	....	....	....	....	.....
El Cristo, U. S. Col	.70	.65	.85	.70	.96	.90	1 10	.95	1.20	1.00	1.35	1.15	17,900
Excelsior, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Exchequer, Nev	....	....	1.40	....	....	....	1 50	....	1.55	..	....	..	400
Hollywood, Cal	....	....	....	....	.04	....	.03	....	....	....	....	....	5,000
Huron, Mich	....	....	....	....	....	....	....	....	....	....	....	....	.....
Julia, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Kingst'n & Pemb'ke	1.13	....	....	....	1.00	....	....	....	....	....	....	....	200
Kossuth, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Lacrosse, Colo	....	....	....	....	....	....	....	....	....	....	10	.09	2,000
Lee Basin, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mexican, Nev	....	....	....	....	3 50	....	....	....	....	....	....	....	300
Middle Bar, Cal	.34	...	.35	....	.34	.....	.34	....	.35	.34	.33	....	3,000
Moniter, Colo	....	....	....	....	....	....	....	....	....	....	.04	....	1,200
Mutual Sm. & M, Co	1 40	1.35	1 40	1.35	1.40	1.35	1.45	1 40	1.45	1 40	1 40	....	7,700
N Commonwealth	....	....	....	....	....	....	....	....	....	....	....	....	.....
Nevada Queen, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Phœnix of Ark	....	....	....	....	.10	.....	....	....	....	....	....	....	300
Potosi, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Rappahann'k, Va	.06	...	.07	.06	.07	....	.07	....	.08	.07	.08	.07	6,100
San Sebastian, S'n S	....	....	....	....	....	....	....	....	....	....	....	....	.....
Shoshone, Idaho	.06	....	....	....	....	....	....	....	....	....	....	....	.....
Silver Cliff, Colo	....	....	.04	....	....	....	....	....	....	....	....	....	1,500
Silver Cord, Colo	.90	....	....	....	.90	.85	.91	....	....	....	.95	.93	1,000
Silver Hill, Nev	....	....	....	....	....	....	....	....	....	....	....	....	950
Silver Queen	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sullivan Con	.78	.77	.79	.77	.79	.78	.80	79	.80	.79	81	.80	31,900
Sutro Tunnel, Nev	.09	.07	....	....	.07	....	.07	06	.07	....	....	....	3,800
" Trust Cert	....	....	.59	.58	....	....	....	....	....	....	.56	....	900
Sylvanite M. & M. Co	....	....	....	....	....	....	....	....	....	....	....	....	.....
Tornado, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Union Cons., Nev	....	....	3.10	....	....	....	3.00	....	....	....	3 10	....	600
United Copper	.95	.90	1.00	....	1.05	....	1.20	1.05	1.15	..	1 20	..	2,400
Utah	....	....	....	....	....	....	....	....	....	....	....	....	.....

Ex. dividend. †Dealt in at the New York Stock Ex. Unlisted Securities ‡Assessment paid. Dividend shares sold, 13,450. Non-dividend shares sold, 112,350. Total New York, 125,800

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	Jan. 25.		Jan. 26.		Jan. 28.		Jan. 29.		Jan. 30		Jan. 31.		SALES.
Atlantic, Mich	14.13	13.75	13.50	....	13.50	13.00	13.00	.....	13 50	....	.....	.....	1,225
Bodie, Cal	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Bonanza Developm't	1.40	1.38	1.38	.....	....	....	....	....	1.38	....	....	....	1,000
Bost. & Mont., Copper	55 50	51.00	53.00	52.00	54 00	53.50	52.50	50.25	51.00	48 00	52.25	50.00	5,016
Breece, Colo	....	.....	....	....	....	....	....	....	....	....	27	..	300
Calumet & Hecla	280	275	278	275	274	.....	275	274	273	269½	275	272	524
Catalpa, Colo	.18	.....	.20	.19	.19	.....	.19	....	....	....	....	....	2,000
Central, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Chrysolite, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Con. Cal. & Va., Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Dunkin, Colo	.95	.90	.95	....	.95	....	.95	....	.95	....	.95	.....	1,050
Enterprise	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Franklin, Mich	15.00	14.00	....	....	13.75	.....	....	....	14.00	13.25	14 50	13.50	1,598
Hale & Norcross, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Honorine, Utah	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Little Chief, Colo	....	.....	....	....	....	....	....	....	....	....	.23½	.....	100
Little Pittsburg, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Martin White, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Mono, Cal	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Nams, Cal	3.13	.....	.....	....	.....	.....	3.00	....	3.00	.....	3 25	3.13	1,6 0
Ontario	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Osceola, Mich	18.50	16.00	...	....	17.75	17 25	17.75	....	17.00	.....	17.00	16 50	610
Pewabic, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Quincy, Mich	72.00	70.00	69.00	....	68 00	....	68.00	67.00	68.0	....	68.00	....	526
Ridge, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Sierra Nev., Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Silver King., Ariz	....	.....	1.15	....	.....	1.15	....	....	....	....	1.15	....	500
Standard, Cal	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Tamarack, Mich	148	147	147	...	147	146¾	145¼	145	144	.....	..	..	388

NAME OF COMPANY.	Jan 25		Jan. 26.		Jan. 28.		Jan. 29		Jan. 30.		Jan. 31.		SALES
Allouez, Mich	4.13	3.75	4.00	.....	4.00	.....	4.0	3 63	3.75	.....	4.00	3.75	2,250
Arnold, Mich	.25	.....	.25	....	.25	.....	.25	...	....	.....	....	.....	400
Aztec, Mich	....	.....	....	....	....	.....	....	....	....	.....	....	.....	.....
Brunswick, Cal	....	.....	....	....	....	.....	....	....	....	.....	....	.....	.....
Butte & Boston	26 00	25 00	....	....	....	.....	....	....	....	.....	22.00	.....	335
Canada	....	.....	....	....	....	.....	....	....	....	.....	....	.....	.....
Cashier, Colo	....	.....	....	....	....	.....	....	....	....	.....	.05	.....	1,000
Crescent, Colo	....	.....	.09	.....	.09	.....	.09	...	....	.....	....	.....	4,000
Cusi, N. Mex	....	.....	....	....	....	.....	....	....	....	.....	....	.....	.....
Denver City, Colo	....	.....	....	....	....	.....	....	....	....	.....	....	.....	.....
El Cristo, W. S. C	....	.....	....	....	....	.....	....	....	....	.....	.95	.....	100
Everett	....	.....	....	....	....	.....	....	....	....	.....	....	.....	.....
Hanover, Mich	....	.....	....	....	....	.....	....	....	....	.....	....	.....	.....
Humboldt, Mich	....	.....	....	....	....	.....	....	....	....	.....	....	.....	.....
Hungarian	....	.....	....	....	....	.....	....	....	....	.....	....	.....	.....
Huron, Mich	4.50	4.25	4.25	....	4.38	4.13	4 13	....	4 13	....	4.13	4.00	1,575
Kearsarge, Mich	10 00	9.38	.....	....	10.50	9.00	9.00	.....	9.00	8.00	9.00	8.50	1,977
Mesnard, Mich	....	.....	....	....	35	.....	....	....	....	.....	....	.....	100
National, Mich	5 13	5 00	5.00	.....	6 00	5.00	4.75	.....	4 88	4.75	4.75	.....	2,025
Native, Mich	....	.....	....	....	....	.....	....	....	....	.....	....	.....	.....
Pontiac	....	.....	.40	.....	.35	.....	.35	....	....	.....	.30	.....	300
Rappahannock, Va	.05	.....	....	....	.05	.....	....	....	....	.....	.05	.....	1,300
Rockland	....	.....	....	....	....	.....	....	....	....	.....	....	.....	.....
Santa Fe, N. Mex	2.06	2.00	2.00	.....	2 00	1.88	2 00	1 94	2 00	1.94	2 00	.....	5,520
Security, Colo	....	.....	....	....	....	.....	....	....	....	.....	....	.....	.....
Shoshone Idaho	....	.....	....	....	....	.....	....	....	....	.....	....	.....	.....
South Side, Mich	....	.....	....	....	....	.....	....	....	....	.....	....	.....	.....
St Louis Cop	....	.....	....	....	....	.....	....	....	....	.....	....	.....	.....
Sullivan, Dak	....	.....	....	....	....	.....	.75	....	....	.....	.78	.....	200

Boston: Dividend shares sold, 17,367. Non-dividend shares sold, 21,782. Total Boston, 39,149.

COAL STOCKS.

NAME OF COMPANY.	Par val. of sh'rs.	Jan. 26.		Jan. 28.		Jan. 29.		Jan. 30.		Jan. 31.		Feb. 1.		Sales.
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
American Coal	....	.....	....	....	....	....	....	....	....	....	....	....	....	.....
Barclay Coal	....	.....	....	....	....	....	....	....	....	....	....	....	....	.....
Cameron Coal & Iron Co	....	29¼	29	29¼	28¾	28⅞	28¼	29	28	29⅞	28⅞	29⅜	28¾	4,750
Ches. & O. RR	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Chic. & Ind. Coal RR	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Do. pref	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Col. & Hocking Coal	100	....	....	20	....	....	....	19	....	18½	....	20	....	430
Col., C. & I	100	30⅛	29½	30	29⅞	31	30⅝	30½	....	31½	30⅝	32½	31⅝	4,182
Consol. Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Del. & H. C	100	136½	136¼	136⅜	136	137¾	136½	138⅛	137¼	138⅛	137	137⅞	137½	12,381
D., L. & W. RR	50	140⅛	140¼	140⅝	139⅛	141⅝	140⅛	141⅜	140¼	141	140½	142	140⅞	129,388
Hocking Valley	100	25	.....	25½	25¼	26½	26	....	....	26¼	25½	27¼	26	6,259
Hunt. & Broad Top	....	.....	....	....	....	....	....	....	....	....	....	....	....	.....
Do. pref	....	.....	....	46⅝	....	46⅝	....	46¾	46⅝	....	....	....	....	349
Lehigh C. & N	50	.....	....	52	....	52	....	52	....	....	....	....	....	1,099
Lehigh & W. B. Coal	....	.....	....	....	....	....	....	....	....	....	....	....	....	.....
Lehigh Valley RR	50	54⅝	54½	54⅝	54½	54¾	54½	54⅝	54½	54⅝	54½	....	....	1,150
Marshall Con. Coal	100	....	....	9	....	....	....	....	....	....	....	....	....	100
Mahoning Coal	....	.....	....	43	....	....	....	....	....	....	....	....	....	200
Maryland Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Morris & Essex	100	....	....	146¼	....	....	....	....	....	....	....	....	....	21
New Central Coal	100	....	....	....	....	....	....	....	....	101½	....	101½	....	200
N. J. C. RR	50	97⅞	....	98	97¼	98½	98	98	97⅝	98	97⅝	98¾	99⅞	4,250
N. Y. & S. Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
N. Y., Susq. & Western	100	....	....	....	....	9	....	9	....	9	....	8¾	....	1,115
Do. pref	100	....	....	33	....	33⅞	33⅜	3 0½	....	33⅞	33⅛	34½	32¾	4,176
N. Y. & Perry C. & I	100	30	29⅞	30⅛	30	30¼	30	30⅝	30⅛	30⅜	29¼	31	30⅜	4,450
Norfolk & Western R.R.	100	....	....	....	....	....	....	16⅝	....	17¼	16½	18	17¼	950
Do. pref	50	51½	51	51¾	51⅝	5.⅝	52	52	....	52	51¾	52⅞	5 ⅝	3,154
Penn. Coal	50	....	....	....	....	....	....	....	....	301	....	....	....	18
Penn. RR	50	54½	54	5 ⅝	54¼	54¾	54⅜	54⅝	54½	55⅛	54⅝	....	....	11,597
Ph. & R. RR.**	50	48¼	47⅞	48⅝	47⅝	49	48½	48¾	48¼	48¾	48¼	49½	48½	184,674
Sunday Creek Coal	....	.....	....	....	....	....	....	....	....	....	....	....	....	.....
Do. pref	....	.....	....	....	....	....	....	....	....	....	....	....	....	.....
Tennessee C. & I. Co	100	31½	....	32¼	31½	33¼	32½	33⅜	32¼	34¼	33½	34⅛	33½	4,710
Do. Pref	....	.....	....	95½	95	95½	95	95⅓	.....	.....	.....	95½	95	481
Westmoreland Coal	100	.....	....	.....	.....	71	.....	.....	.....	.....	.....	.....	.....	3
Wyoming Valley Coal	..	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

**Of the sales of this stock, 27,854 were in Philadelphia, and 156,790 in New York. Total sales, 379,987.

San Francisco Mining Stock Quotations.

COMPANY	CLOSING QUOTATIONS. Jan. 25.	Jan. 26.	Jan. 28.	Jan. 29.	Jan. 30.	Jan. 31.
Alpha	....	....	....	....	....	.....
Alta	2.45	2.40	2.45	2.35	2.20	2.20
Belcher	....	....	....	....	....	.....
Belle Isle	....	.45	.45	.....	.40	.40
Best & Bel	5.63	5.75	5.63	5.63	5.75	5.63
Bodie	1.70	.....	1.55	..	1.60	1.65
Bulwer	.55	.....	.50	.50	....	.50
Challar	3.25	.....	3.25	3.25	3 30	3.20
C'm'weal'h	6.00	6.25	5.50	5.38	5.38	5.75
Con. C. & V	8 00	8.00	7.50	7.50	8.38	8.25
Con. Pac	....	....	....	....	....	.....
Crown Pt	5.43	5.13	5.23	5.25	5.38	5.00
Eureka C	....	....	....	....	....	.....
Gould & C	2.70	2.75	2.70	2.70	2.70	2.70
Grd. Prize	....	....	....	....	....	.....
Hale & N	....	.....	4.85	4.85	4.85	.....
Mexican	3.35	3.30	3.35	3.45	3 45	3.25
Mono	.....	1.15	.....	.....	1.10	1.15
Mt. Diablo	....	2.25	3.25	2.25	2.40	.....
Navajo	1.60	1.60	1.65	1.60	1.55	1.55
Nev. Queen	3.60	3.60	3.70	3.35	3.30	.....
N. Belle I	2.45	2.50	2.45	2.45	2.35	2 45
Ophir	5.25	5.25	5.38	5.38	5.38	5.38
Potosi	2.45	.....	....	2.40	2.35	2.40
Savage	3.10	3.10	3 00	2.90	2 95	2.95
Scorpion	....	....	....	....	....	.....
Sierra Nev	3.90	3.00	3.00	3.00	3.10	3.15
Sutro Tun	.....	....	....	.....	.....	.....
Tip Top	....	....	....	....	....	.....
Union Con	2 65	2.70	2.75	2.65	2.75	2 80
Utah	1 25	1.25	1.25	1.25	1.25	1.45
Yellow Jkt	4.40	4.40	4.30	.....	4.30	4.20

DIVIDEND-PAYING MINES

	Name and Location of Company.		Capital Stock.	Shares. No.	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	*				120,000	Jan.	1888	.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	145,000	Feb	1887	.20	800,00.	Dec	[illegible]	25
12	Belcher, G. s	Nev..	10,400,000	104,000	100	2,770,000	Sept	1888	.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	500,000	Sept	1888	.50	1,295,000	Apl.	1885	.50
15	Bonanza Developm't	C & M	3,000,000	300,000	10					135,000	Oct.	1882	.15
16	Boston & Mont, G	Mon.	2,500,000	250,000	10	*				520,000	Jun.	1886	.15
17	Boston & Mont., C. S.	Mon	2,500,000	100,000	25	*				400,000	Nov.	1888	2.00
18	Breece, s	Colo	,000,000	200,000	25	*				2,000	Feb.	1880	.01
19	Brooklyn Lead, L. s.	Utah	500,000	50,000	10					127,000	July	1887	.05
20	Bulwer, G	Cal.	10,000,000	100,000	10	80,000	May	1888	.20	175,000	Jan.	1884	.10
21	Bunker Hill & Sull..	Idah.	3,000,000	300,000	10	*				150,000	Oct.	1883	.06⅔
22	Caledonia, G	Dak.	10,000,000	100,000	100	505,000	May	1885	.15	64,000	Jan.	1889	.08
23	Calumet & Hecla, C..	Mich	2,500,000	100,000	25	1,200,000				31,850,000	Feb.	1889	5.00
24	Carbonate Hill s. L..	Colo.	1,500,000	200,000	10	*				80,000	Apl.	1884	05
25	Carlisle, G	N. M.	1,000,000	200,000	5					175,000	Dec.	1888	.12½
26	Castle Creek, G	Idah.	100,000	100,000	1					51,000	Oct..	1883	.03
27	Catalpa, s. L	Colo.	3,000,000	300,000	10	*				270,000	May.	1884	.10
28	Central, C	Mich	500,000	20,000	25	100,000	Sept	1861	.06	1,930,000	Feb.	1889	2.00
29	Chrysolite, s. L	Colo.	10,000,000	200,000	50	*				1,650,000	Dec	1884	.25
30	Colorado Central, s. L	Colo.	2,750,000	275,000	10	*				361,750	Feb.	1889	.05
31	Confidence, s. L	Nev..		24,960		287,440	Apl.	1887	.50	174,720	Aug.	1888	1.00
32	Cons. Cal. & Va., G. s.	Nev.	21,600,000	216,000	100	108,000	Jan.	1885	.20	2,548,800	Jan.	1889	.50
33	Contention, s	Ariz.	12,500,000	250,000	50					†2,587,000	Dec.	1884	.25
34	**Cop. Queen Cons, C.	Ariz	1,400,000	140,000	10					140,000	Oct	1888	.50
35	Crescent, s. L. G.	Utah	15,000,000	600,000	25	*				228,000	Oct.	1888	.03
36	Crown Point, G. s.	Nev..	10,000,000	100,000	100	2,825,000	Oct.	1888	.50	11,588,000	Jan.	1875	2.00
37	Daly, s. L	Utah	3,000,000	150,000	20					900,000	Jan.	1889	.25
38	Deer Creek, s. G	Idah.	1,000,000	200,000	5	*				10,000	Oct.	1888	.05
39	Deadwood-Terra, G.	Dak..	5,000,000	200,000	25	*				§1,000,000	Nov.	1887	.10
40	Derbec B. Grav., G. s.	Cal..	10,000,000	100,000	100	90,000	Dec.	1881	.10	180,000	May	1887	.10
41	Dunkin, s. L	Colo.	5,000,000	200,000	25	*				360,000	Jan.	1889	05
42	Dunstone, G. s. L	Mont	1,000,000	200,000	5	*				6,000	Nov.	1888	.03
43	Eclipse	Colo.	100,000	100,000	1					20,000	Nov.	1887	.10
44	Elkhorn, G. s	Mont	1,000,000	100,000	10	50,000	July	1883	.50	170,000	July	1887	.05
45	Empire Lt., G	Mont	500,000	100,000	5					71,500	Oct.	1887	.37½
46	Eureka Con., G. s. L.	Nev..	5,000,000	50,000	100	600,000	July	1886	1.00	4,955,000	July	1888	.25
47	Evening Star, s. L	Colo.	500,000	50,000	10	*				1,412,500	Nov.	1888	.25
48	Excelsior, G	Cal..	10,000,000	100,000	100	560,000	Sept	1885	1.00	875,000	Oct..	1880	.25
49	Father de Smet, G.	Dak..	10,000,000	100,000	100	200,000	Nov	1878	1.00	1,125,000	Dec.	1885	.20
50	Franklin, C	Mich	1,000,000	40,000	25	220,000	Jun.	1871		800,000	Dec.	1888	2.00
51	Freeland, G. s. C.	Colo.	5,000,000	200,000	25	*				190,000	July	1886	.10
52	Fresno Enterprise, G	Cal..	5,000,000	100,000	50		Mch	1883	.10	110,000	July	1882	.10
53	Garfield Lt., G. s	Nev.	500,000	100,000	5					85,000	Apl.	1888	.12½
54	Golconda, G. s	Idah.	1,000,000	100,000	10					120,000	May	1888	.60
55	Gould & Curry, G. s.	Nev.	10,800,000	108,000	100	4,369,800	Jan.	1889	.30	3,826,800	Oct.	1870	10.00
56	Grand Central, s	Ariz.	1,000,000	100,000	10					625,000	Dec	1882	.25
57	Grand Prize, s	Nev.	10,000,000	100,000	100	595,000	Oct.	1888	25	495,000	Mar.	1884	.25
58	Granite, s L	Idah.	500,000	500,000	1	*				10,000	Jun.	1888	.02
59	Granite Mountain, s.	Mont	10,000,000	400,000	25					5,200,000	Oct.	1888	.50
60	Green Mountain, G	Cal..	1,250,000	125,000	10	*				212,000	Nov.	1881	.07½
61	Hale & Norcross, G. s	Nev.	11,200,000	112,000	100	5,086,000	July	1887	.50	1,822,000	Aug.	1888	.50
62	Hecla Con., s. G. L. C	Mont	1,500,000	30,000	50					1,257,500	Dec.	1888	.50
63	Hel'a Mg & Red, G. s. L	Mont	3,315,000	663,000	5	*				197,970	July	1886	.06
64	Holmes, s	Nev..	10,000,000	100,000	100	300,000	Sept	1885	10	75,000	Apl	1886	.25
65	Holyoke, G	Idah	200,000	200,000	1					27,000	Feb.	1883	.10
66	Homestake, G	Dak.	12,500,000	125,000	100	200,000	July	1878	1.00	4,318,750	Jan.	1889	.20
67	Honorine, s. L	Utah	500,000	250,000	2	25,000	Jun.	1883		125,000	Sept	1887	.05
68	Hope, s	Mont	1,000,000	100,000	10	*				233,252	Apl.	1888	.25
69	Horn-Silver, s. L	Utah	10,000,000	400,000	25	*				4,000,000	Nov.	1884	.50
70	Hubert, G	Colo.	500,000	50,000	10	*				239,500	Oct.	1888	.11
71	Idaho, G	Cal..	310,000	3,100	100					5,050,900	Jan.	1889	7.50
72	Ideal, s. L	Colo.	1,500,000	50,000	10					15,000	Oct.	1886	.05
73	Illinois, s	N. M.	100,000	100,000	1	*				25,000	Jan.	1887	.25
74	Independence, s	Nev.	10,000,000	100,000	100	340,000	Oct.	1886	.20	225,000	Sept	1879	.25
75	Indian Queen, s	Nev..	250,000	125,000	2					368,750	July	1883	.03
76	Iron Hill, s	Dak.	2,500,000	250,000	10	126,500	Jan.	1889	.03	156,250	Nov	1887	.07½
77	Iron-Silver, s. L	Colo.	10,000,000	500,000	20	*				2,400,000	Dec.	1888	.20
78	Jackson, G. s	Nev.	5,000,000	50,000	100	237,500	Nov	1880	.20	50,000	Oct.	1886	.10
79	Jay Gould	Mont	2,000,000	400,000	5	*				321,000	Dec.	1888	.02½
80	Jocuistita, s	Mex.	2,500,000	250,000	10					1,200,000	Feb.	1885	.50
81	Jumbo, G	Colo	2,000,000	200,000	10					35,000	Oct.	1887	.02½
82	Kentuck	Nev.	3,000,000	30,000	100	342,000	Nov	1881	.30	1,350,000	Dec.	1886	.10
83	La Plata, s. L	Colo	2,000,000	200,000	10	*				610,000	Sept	1882	.30
84	Leadville Cons., s. L.	Colo	4,000,000	400,000	10	*				423,000	Apl.	1887	.05
85	Lexington, G. s	Mont	4,000,000	40,000	100	*				565,000	Jan.	1885	2.00
86	Little Chief, s. L	Colo	10,000,000	200,000	50	*				800,000	July	1888	.10
87	Little Pittsburg, s. L	Colo.	20,000,000	200,000	100	*				1,050,000	Mch.	1880	50
88	Manhattan, s	Nev	5,000,000	50,000	100	250,000	Dec.	1887	1.00	437,500	Feb	1886	.25
89	Marion Bullion, G	N. C	500,000							15,000	Jan	1886	
90	Martin White, s	Nev.	10,000,00	100,000	100	1,175,000	Jan.	1889	25	140,000	Dec.	1886	.25
91	Mary Murphy, G. s.	Colo.	350,000	3,500	100	*				175,000	May	1888	5.00
92	Minnesota, C	Mich	1,000,000	40,000	25	420,000	Apl.	1886	1.00	1,820,000	Mar.	1876	
93	Mono, G	Cal.	5,000,000	50,000	100	641,000	Sept	1888	.50	12,500	Mar	1886	.25
94	Montana, Lt., G. s.	Mont	3,300,000	660,000	5	*				2,190,283	Jan	1889	.06¼
95	Morning Star, s. L	Colo	1,000,00	100,000	10					775,000	Mar.	1888	.25
96	Moulton, s. G	Mont	2,000,000	400,000	5	*				380,000	Dec.	1887	.07½
97	Mount Pleasant, G	Cal.	150,000	150,000	1	*				150,000	Feb	1887	.30
98	Mt. Diablo, s	Nev	5,000,000	50,00	100	137,500	Jun.	1880	2.00	140,000	Feb	1889	.40
99	Napa, Q	Cal..	700,000	100,000	7					280,000	Jan.	1883	.10
100	Navajo, G. s	Nev.	10,000,000	100,000	100	485,000	Apl.	1888	.30	335,000	Jan.	1889	10
101	New Guston, s	Colo.	500,000	100,000	5					100,000	Dec	1888	.50
102	N. Hoover Hill, G. s.	N. C	300,000	120,000	2½	*				30,000	Dec.	1885	.06¼
103	Northern Belle, s	Nev..	5,000,000	50,000	100	425,000	Jan.	1884	8.00	2,400,000	Apl.	1883	50
104	North Belle Isle, s.	Nev.	10,000,000	100,000	100	350,000	Jan	1889	.50	230,000	May	1888	.50
105	North Star, G	Cal..	1,000,000	100,000	10					150,000	Dec	1888	.50
106	Ontario, s. L	Utah	15,000,000	150,000	100					9,800,000	Jan.	1889	.50
107	Ophir, G. s	Nev..	10,000,000	100,000	100	4,109,440	Sept	1888	.50	1,595,800	July	1882	1.00
108	Original, s. C	Mont	1,500,000	60,000	25	*				123,000	July	1888	.05
109	Osceola, C	Mich	1,250,000	50,000	25	480,000	Apl.	1876	1.60	1,172,500	Sept	1888	1.00
110	Oxford, G	N. S.	125,000	125,000	1	*				38,500	Oct	1885	.02
111	Paradise Valley, G. s	Nev.	10,000,000	100,000	100	57,000	Apl.	1888	.15	150,000	Apl	1887	.10
112	Parrott, C	Mont	1,800,000	180,000	10					334,000	Jan.	1889	.10
113	Peacock, s. G. C.	N. M.	2,000,000	200,000	10	*				60,000	Nov	1886	
114	Plutus, G. s. C. L.	Colo.	2,000,000	200,000	10	*				30,000	Feb.	1886	.10
115	Plymouth Con., G	Cal..	5,000,000	100,000	50	*				†2,280,000	Feb	1888	40
116	Quicksilver, pref., Q	Cal..	4,300,000	43,000	100					1,337,575	Oct.	1888	1.25
117	" com., Q	Cal..	5,700,000	57,000	100					151,000	July	1882	.40
118	Quincy, C	Mich	1,000,000	40,000	25	200,000	Dec.	1862		5,170,000	Feb.	1889	5.00
119	Richmond, s. L	Nev.	1,350,000	54,000	25	*				4,312,587	Jun.	1887	1.25
120	Ridge, C	Mich.	500,000	20,000	25	219,939	Mar	1886	.50	99,785	Feb.	1880	.50
121	Robinson Con., s. L..	Colo.	10,000,000	200,000	50	*				585,000	Mar.	1886	.05
122	Robert E. Lee, s. L	Colo	10,000,000	500,000	20					100,000	Dec.	1882	.50
123	Rooks, G	Vt.	500,000	50,000	10	*				61,000	Apr	1885	.30
124	Savage, s	Nev..	11,200,000	112,000	100	6,486,000	Jan.	1889	.50	4,460,000	July	1869	3.00
125	Security L. Mg., Mfg.	Colo.	1,000,000	100,000	10	*				50,000	July	1884	
126	Shoshone, G	Idah.	150,000	150,000	1					7,500	Apl.	1883	.01
127	Sierra Buttes, G	Cal..	2,225,000	122,500	10					1,568,145	Apl.	1888	.12½
128	Sierra Nevada, G. s..	Nev..	10,000,000	100,000	100	6,150,000	Nov	1888	.25	102,000	Jan.	1871	1.00
129	Sierra Nevada, s. L	Idaho	1,000,000	¶	1	*				20,000	June	1888	.01
130	Silver Cord, G. s. L..	Colo.	5,000,000	500,000	10					225,000	Nov.	1883	.25
131	Silver King, s	Ariz.	10,000,000	100,000	100	50,000	Jun.	1888	.50	1,950,000	July	1887	.25
132	Silver Mg. of L. V..	N. M.	500,000	500,000	1					25,000	June	1888	.05
133	Silverton, G. s. L	Colo.	2,000,000	200,000	10	*				80,000	Nov	1886	.02
134	Small Hopes Cons., s.	Colo.	5,000,000	250,000	20	*				3,112,500	Dec.	1887	.20
135	Smuggler, s. L	Colo.	600,000	60,000	10					66,700	Aug.	1883	.25
136	Spring Valley, G	Cal..	200,000	200,000	1	50,000	Oct.	1886	.25	50,000	Jan	1881	25
137	Standard, G. s	Cal..	10,000,000	100,000	100	25,000	Oct.	1884	.25	3,595,000	Jun.	1888	.05
138	Stormont, s	Utah	500,000	500,000	1	*				155,000	Nov	1881	.05
139	St. Joseph, L	Mo..	1,500,000	150,000	10	*				814.00	Dec	1887	.20
140	Surinam, G	D. G.	3,000,000	600,000	5					105.00	Nov	1887	.05
141	Swansea, G	Colo.	600,000	60,000	10	*				9.00	Apl.	1888	.02½
142	Syndicate, G	Cal..	10,000,000	100,000	100	38,729	July	1882	.15	48,308	Sept	1885	.10
143	Tamarack, C	Mich.	1,000,000	40,000	25	520,000	Apl.	1885	3.00	640,000	Dec.	1888	5.00
144	Tip Top, s	Ariz	10,000,000	100,000	100	250,000	Sept	1883	.25	100,000	Nov	1881	.20
145	Tombstone, G. s. L..	Ariz	12,500,000	500,000	25	*				1,250,000	Apl.	1882	.10
146	United Verde, C	Ariz.	3,000,000	300,000	10	*				97,500	Feb.	1884	.20
147	Valencia, M	N. H.	150,000	1,500	100	*				37,500	Apl	1886	2.50
148	Viola Lt., s. L	Idah.	750,000	150,000	5	*				272,500	Oct.	1888	.37½
149	Yankee Girl	Colo	2,500,000	250,000	10					1,275,000	July	1887	.10
150	Yellow Jacket, G. s.	Nev..	12,000,000	120,000	100	5,448,000	Dec	1885	.75	2,184,000	Aug	1871	1.50

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	$657,000	Jun	1888	1.00
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	.50
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..	10,000,000	100,000	100	4,007,000	Aug.	1888	.50
21	Bye and Bye	Ariz.	1,000,000	100,000	10	*			
22	Calaveras, G	Cal..	500,000	500,000	1	*			
23	Carisa, G	Wy.	500,000	100,000	5	*			
24	Carupano, G. s. L. C.	Ven.	200,000	100,000	2	*			
25	Cashier, G. s.	Colo.	500,000	250,000	2	*			
26	Cen. Contin'l, G. s. L.	C. & A	2,000,000	200,000	10	*			
27	Charles Dickens, G. s.	Idah.	1,250,000	250,000	5	*			
28	Cherokee, G	Cal..	1,500,000	150,000	10				
29	Chollar, s	Nev..	11,200,000	112,000	100	1,428,000	Oct.	1888	.50
30	Cleveland, T	Dak.	1,000,000	500,000	2	*			
31	Colchis	N. M.	500,000	50,000	1				
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	177,000	Sept	1887	.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	105,000	Feb.	1888	.25
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	790,000	Sept	1888	1.20
54	Found Treasure, G. s.	Nev..	10,000,000	100,000	100	18,000	July	1888	1.06
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				
69	Highland, C	Mich	500,000	25,000	20				
70	Hollywood	Cal..	200,000	100,000	2				
71	Hortense, s	Colo.	2,000,000	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	25	*			
77	Julia Cons., G. s.	Nev..	11,000,000	110,000	100	1,650,000	Apl.	1887	.10
78	Kearsarge, C	Mich	1,250,000	50,000	100	190,000	Oct.	1887	1.00
79	Lacrosse, G	Colo.	1,000,000	100,000	25	*			
80	Lee Basin, s. L	Colo.	5,000,000	500,000	10	*			
81	Lucerne, s	Colo.	5,000,000	500,000	10	*			
82	Mammoth Bar, G.	Cal..	10,000,000	100,000	10	50,000	Dec.	1881	
83	May Belle, G	Cal..	10,000,000	100,000	100	84,000	Mar.	1884	.15
84	Mayflower Gravel	Cal..	1,000,000	100,000	100	485,000	Jan	1889	.50
85	Medora, G	Dak.	250,000	250,000	10				
86	Mexican, G. s	Nev..	10,000,000	100,000	1	2,725,760	Aug	1885	.25
87	Middle Bar G	Cal.	400,000	200,000	100	*			
88	Mike & Starr, s. L	Colo	1,000,000	200,000	2	*			
89	Monitor, G	Colo.	100,000	100,000	5	*			
90	Moose Silver, s	Colo.	3,000,000	300,000	1				
91	Mutual Mg. & Sm.	W'sh	100,000	100,000	10	*			
92	Native, C	Mich	1,000,000	40,000	1				
93	Neath, G	Colo	1,000,000	100,000	25				
94	Nevada Queen, s	Nev	10,000,000	100,000	10	180,000	Dec.	1888	.50
95	New Germany, G	N. S.	100,000	100,000	100	*			
96	New Pittsburg, s L	Colo	2,000,000	200,000	1	*			
97	North Standard, G	Cal..	10,000,000	100,000	10	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	150	*			
100	Oriental & Miller, s.	Nev..	10,000,000	400,000	4				
101	Osceola, G	Nev..	5,000,000	50,00	25	*			
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	100				
104	Peer, s	Ariz.	10,000,000	100,000	10	135,000	Nov.	1880	.10
105	Peerless, s	Ariz.	10,000,000	100,000	100	345,000	Apl.	1888	.25
106	Phoenix	Ariz.	500,000	500,000	100				
107	Phoenix, G. s.	Ark.	5,000,000	200,000	1	*			
108	Phoenix Lead, s. L..	Colo.	100,000	100,000	251	*			
109	Pilgrim, G	Cal..	600,000	300,000	2	*			
110	Potosi, s	Nev..	11,200,000	112,000	100	1,349,600	July	1885	.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, G. s L	Dak.	500,000	100,000	5	125,000	Dec	1882	.25
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	100	*			
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	120,000	Oct.	1888	.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., 1881, the California had paid $31,320,000 in dividends, and the Con. Virginia, $21,390,000. ** 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.

PITTSBURG. Jan. 31.

From our Special Correspondent.]

Raw iron the past week was the dullest we have experienced for a long time. Buyers have absented themselves from the market and appear very indifferent; one would almost think they had given up the use of raw iron. Prices just now are so unsettled and irregular that reliable figures are very difficult to obtain, and when obtained show a wide range in values. There are a large number of sellers, but comparatively few buyers, and the latter only want limited amounts for use as mixture; so that the market for the present is completely overweighted. And yet there is not the excessive supply which might be supposed from the anxiety to sell; but it is the small surplus that makes all the trouble, and it is that same surplus which will eventually make the price for the entire output. The pig-iron people are certainly in a very unfortunate position, making more iron than can be sold, with the result of increasing stock and lower prices. It is now generally conceded that the only remedy for this condition of affairs is a curtailment of production; but the difficulty is, when shall the curtailment commence? Who are to be the curtailers? All have the same rights to make iron. For instance, large companies would likely object for two reasons: first, they would dislike to see their trade go elsewhere; second, that in many cases certain irons command better prices than those of others. Another class secures business by lowering their prices, which would be all very well if other companies did not follow. A crisis of this kind is at hand. Prices are being shaded in all directions.

The coke question continues very unsettled; the workers are demanding higher wages. The demand for coke has fallen off, while the depression in the iron trade is being felt by coke manufacturers. Taken as a whole, the outlook is gloomy.

Coal and Coke Smelted Lake Ore.

1000 Tons Bessemer, special low phos.	21.00 cash.
1500 Tons Bessemer	16.50 cash
500 Tons Gray Forge	15.00 cash.
500 Tons Gray Forge	14.50 cash.
250 Tons Gray Forge	15.00 cash.
500 Tons Gray Forge	14.80 cash.
250 Tons Bessemer	16.75 cash.
50 Tons Bessemer	16.85 cash
1000 Tons Bessemer, February and March	16.25 cash.

Coke, Native Ore.

50 Tons No. 1 Foundry	17.75 cash.
50 Tons No. 2 Foundry	16.25 cash.
40 Tons Mottled	14.75 cash.
25 Tons Silvery, Extra	19.00 cash.
25 Tons Silvery	17.25 4 mo.

Charcoal.

50 Tons Cold Blast	26.00 4 mo.
50 Tons Cold Blast	27.75 cash.
30 Tons No. 2 Foundry	22.75 cash.

Steel Slabs and Billets.

500 Tons Nail Slabs	27.50 cash.
500 Tons Billets	28.00 cash.
250 Tons Billets	28.20 cash.

Muck Bar.

1000 Tons Neutral, Spot	27.50 cash.
500 Tons Neutral, February	27.75 cash.
500 Tons Neutral, February	27.50 cash.

Old Iron Rails.

500 Tons American Ts	23.75 cash.

Ferromanganese.

500 Tons Imported 80 per cent	56.50 cash.

Steel Wire Rods.

500 Tons American Fines	40.00 cash.

Steel Bloom Ends.

200 Tons Bloom Ends	19.25 cash.

Skelp Iron.

200 Tons Narrow Grooved, per cwt.	1.70 4 mos.

Scrap Material.

200 Tons No. 1 Wrought Scrap, Net,	21.00 cash.
150 Tons No. 1 Cast Scrap, Gross,	15.75 cash.
100 Tons Iron Axles, Net,	28.00 cash.
100 Tons Cast Borings, Gross,	12.50 cash.
100 Tons Wrought Turnings, Net,	13.00 cash.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Feb. 1.

Heavy Chemicals.—During the past seven days a weak feeling has prevailed to a greater extent than before; in fact, one large importer frankly admits that he looks for still lower prices. Dealers may now have the consoling reflection that they overdid their part of the business last fall. At that time their talk of combinations, etc., was so decidedly bullish that, in anticipation of a further advance in prices in 1889, consumers bought very largely at the then ruling prices and created an activity which awakened delusive hopes as to the outlook for this year.

There is more inquiry for carbonated soda ash, 48 per cent, than any other "heavy chemical." Spot supplies continue light, and prices are firm at 1·25@1 27½c. in a large way. Small lots range from 1·30 to 1·35c. Caustic soda ash, 48 per cent, is quiet. Quotations remain at 1·25@1·27½c.

Caustic soda shows no improvement, and the continued dullness is having a depressing effect upon values. Quotations are nominally 2·25@2 30c. for the higher tests, 70, 74 and 76 per cent, but for business of importance the former figure would probably be shaded. For 60 per cent, the asking price is 2·40c.

Sal soda is weak. For some time past there has been little business to test values, although quotations have been nominally upheld at ·95c. This week, however, offers of large quantities have been made as low as ·82½c. The general range according to quantity may be written ·82½@·90c.

Refined alkali is firm, especially for the higher tests. Quoted prices are 1·17½c. for 58 per cent and 1·22½@1·25c. for 48 per cent.

Bleaching powder continues weak. The supply in this city and in Boston together appears to be much too large to allow of any improvement in prices, while the demand continues as light as it now is. The asking prices at the hour of writing are 1.80@1.85c., according to quantity. Shipments may be had at 1·77½@1 80c.

Acids.—We are reported in the aggregate a fair volume of business, with prices ruling firm.

Acetic acid is an exception. The demand is very light. The market may be written 1·87½@2·25c., according to quantity.

Muriatic acid is quiet. Prices are steady and unchanged.

Nitric acid is rather firm at 4½@7c. for 36 degrees and 40 degrees.

Oxalic acid is steady at the advanced prices, 9½@10½c. per lb., according to quantity.

Sulphuric acid is in fair request at unchanged prices.

Fertilizers, etc.—Trade in these articles this week has been rather quiet, the Southern trade having just closed, while the Northern inquiry has not quite commenced. Prices, however, are steady and firm at the following figures: Azotine, $2.75; dried blood (city), low grade, $2.70 per unit; Western high grade, $2.75 per unit for ground material; tankage, high grade, $25@$26 per ton; low grade, $24 per ton, as to quality. Fish scrap, $25 per ton f.o.b. factory. Sulphate of ammonia, $3.37½@$3.42½ per cwt.

Refuse bone-black, guaranteed 70 per cent phosphate, is quoted at $19 per ton. Dissolved bone-black is 95c.@$1 per unit for available phosphoric acid, and acid phosphate 85@90c. per unit for available phosphoric acid.

Steamed bones, unground, $19; ground, $25@$26.

Charleston rock, undried, $5 per ton; kiln dried, $6 per ton, both f.o.b. vessels at the mines. Charleston rock, ground, is held at $10@$10.50 ex steamer at New York.

Muriate of Potash.—Spot supplies are light. Asking prices are as follows: due, 1·85c.; steamer shipment, 1·85c.; sail shipment, 1·82½c.

Double manure salts, basis of 48 per cent, continue scarce. Prices are firm, with an advancing tendency. Quoted prices on the spot are 1·20@1·22½c. High grade sulphate of potash, basis 90 per cent, is held at $2·40c. per cwt. on the spot, and $2·50c. for futures.

Kainit.—All that is obtainable on the spot is in the shape of remnants of from five to thirty tons in store, which are quoted at $10.50@$11 per ton. Arrivals are held $9.75. We are informed of an offer of about 300 tons on the spot that was made early this week, but have not been able to trace it, and that such an offer was made is flatly contradicted by the agent of the syndicate.

Brimstone is quiet at $20@$21 per ton on the spot for best unmixed seconds. Futures are quoted at $20 for seconds and $19.50 for thirds.

Nitrate of Soda.—Small sales are reported at 2·35c. on the spot.

Liverpool. Jan. 17.

[From our Special Correspondent.]

Chemicals.—Messrs. J. P. Brunner & Co. write us as follows: Chemicals are dull and inactive, and in several cases values have given way. Soda Ash: Some makers, finding that they could not get on at the advance, have reduced prices, and for carb. ash 1d. has been accepted for prompt delivery. The manufacturers, who are well filled with orders, hold for full prices, but those who want to sell have to make concessions. On the spot the nearest quotations to day are: Caustic ash, 48 per cent, 3/32d. to 1 1/16d.; high test, 1d. to 1 1/16d. Carb. ash, 48 per cent, 1d. to 1 1/16d.; high test, 1 3/32d. to 1 1/8d. Soda crystals are rather easier, and although £2 10s. to £2 12s. 6d. are still the nominal values, it is reported that the lower figure has been shaded slightly. Caustic soda flat, and resales have been made at £5 17s. 6d. for 60 per cent, and £6 17s. 6d. for 70 per cent, makers holding for 2s. 6d. to 5s. more money.

At the close the market is a shade firmer, owing to a better inquiry, and it is not easy to find sellers for prompt delivery at under £6 and £7 for 60 per cent and 70 per cent respectively. We quote: 74 per cent, £7 10s. to £7 12s. 6d.; 76 per cent, £8 10s. For forward delivery makers decline to go on, except at an advance on spot prices. Bleaching Powder: Sales have been made for the states at £7 12s. 6d., while £7 15s. is generally asked, but has not been paid, and orders can still be filled at the lower figure. Chlorate of potash dull, and prices irregular. Business has been transacted at 5¼d. to 5½d., and it is not easy to find sellers at under the higher figure, while at the same time buyers seem indifferent. Bicarbonate of soda is well maintained at £4 12s. 6d. to £4 15s. per ton for one cwt. kegs, according to brand and quantity, with usual allowances for larger packages.

Minerals.—Geo. G. Blackwell reports as follows: Minerals continue to maintain the firmness reported, in fact a further advance has been experienced. Manganese: Arrivals are nil, and prices are therefore still strong. Magnesite unaltered for raw lump; raw ground, £6 10s., and calcined ground, £10 to £11. Bauxite continues in brisk demand, and brings full prices, especially for Irish Hill brand—20s. for lump; seconds, 15s.; thirds, 12s.; ground, 25s. French Chalk—Although arrivals have come nearer to present demand prices are unchanged and firmer; 95s. for medium, and 100s. to 105s. for best G.G.B. Barytes (carbonate), fair demand. Selected crystal lump scarce at £6 5s.; No. 1 lumps, 90s.; best, 82s. 6d.; seconds, and good nuts, 75s.; smalls, 50s. to 60s.; best ground, £6 5s.; and selected crystal ground, £8 10s. Sulphate in demand; best lump, 35s. 6d; good medium, 30s.; medium, 25s. 6d. to 27s. 6d.; common, 18s. 6d. to 20s.; ground, best white, G.G.B. brand, 60s.; common, 45s.; gray, 32s. 6d. to 40s. Pumicestone continues in request at the advanced quotations, ground being quoted at £10, and specially selected lump, finest quality, £13. Purple ore better at 7s. Spanish manganiferous ore, 20s. to 25s. for best qualities. Emery-stone in fair demand for best qualities, at £5 5s. to £5 15s. for lump; and smalls, £5. Chrome ore firm, strong qualities being in demand. Antimony ore continues firm; £16 to £22 for fair quality. Uranium, 30s. Asbestos: Best rock, £17 to £18; brown grades, £14@£15. Limespar: English manufactured, old G.G.B. brand, brings full prices; 45s. for ground English; German, 50s. Plumbago: Best Ceylon lump, £25@£35; good, £20@£21; chips, £8@£16; best ground, £20, £25 and £30; Italian and Bohemian, £4@£12 per ton. French sand, in cargoes, 16s.@17s. Ferro-manganese firm at last quotations, also spiegel and chrome pig. Bitumen, finest picked, £35; original prime, £18@23; and good, £8. Ground mica, £50. China clay: Fair business doing—common, 18s. 6d.; good medium, 22s. 6d.@25s.; best, 30s.@35s. (at Runcorn).

BUILDING MATERIAL MARKET.

NEW YORK, Friday Evening, Feb. 1.

Building matters are dull, and for the most part uninteresting. The prospect of consolidating the two building exchanges has been lost sight of, it appears, and while it is unfair to conclude that the scheme has fallen through, it is very evident that there was a strong sentiment against such a move.

Bricks.—Cargoes continue to arrive, and receivers apparently find little difficulty in disposing of all that comes. The top price now may be written $8 per M for Hudson River brick. Jerseys may still be obtained at $6.50@$7. Small arrivals of Long Island stock also are reported.

Lime.—Several vessels arrived during the week, but were quickly sold. Sales to arrive are reported.

Cement.—Rail shipments continue at $1.20@$1.25. It is believed that builders are drawing on the stocks laid in before the close of navigation, and that a scarcity will shortly be apparent.

There is nothing to report concerning either building stones or slates.

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