

THE

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ENGINEERING

AND

MINING JOURNAL.

VOLUME XLIX.

JANUARY TO JUNE, 1890.

SCIENTIFIC PUBLISHING COMPANY,

No. 27 PARK PLACE,

NEW YORK.



THE ENGINEERING AND MINING JOURNAL



Entered at the Post-Office of New York, N. Y., as Second-Class Mail Matter.

Vol. XLIX. JANUARY 4. No. 1.

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Cable Address: "Rothwell, New York." Use A. B. C. Code, Fourth Edition.
London: 76 Finsbury Pavement, London, E. C., Mr. Thomas B. Provis, Civil and Mining Engineer, Manager.
Mexico: Mr. R. E. Chism, M. E., Callejon Espirito Santo No. 4, City of Mexico.
Peru, S. A.: Mr. John Newton, No. 2 Calle Constitucion, Calla.
Australasia: Messrs. Moffat, Judd & Co., 11 Bridge street, Sydney, N. S. W.; Mr. W. Forster, 56 Elizabeth street, Melbourne, Victoria; Messrs. J. T. Partridge & Co., 134 Manchester street, Christchurch, New Zealand.

SUBSCRIPTION PRICE, including postage:

Weekly Edition (which includes the Export Edition), for the United States, Mexico and Canada, \$4 per annum; \$2.25 for six months; all other countries in the Postal Union, \$5.

Monthly Export Edition, all countries, \$2.50 gold value per annum.

REMITTANCES should always be made by Bank Drafts, Post-Office Orders or Express Money Orders on New York, payable to THE SCIENTIFIC PUBLISHING CO. All payments must be made in advance.

THE SCIENTIFIC PUBLISHING CO., Publishers,

SOPHIA BRAEUNLICH, Sec'y & Treas. R. P. BOWEN, Pres. and Gen'l Manager.
 P.O. Box 1833. 27 Park Place, New York.

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SOPHIA BRAEUNLICH, who has been connected with the ENGINEERING AND MINING JOURNAL for the past ten years, passing through every department, and who during the last year has taken an active part in the

business management, on January 1st was appointed business manager of the ENGINEERING AND MINING JOURNAL.

"LA GRIPPE" is no respecter of persons, and has laid up our statistical editor at almost the most critical time. The returns had been obtained, but the lessons the returns teach had not been studied. Our readers must, therefore, charge up to La Grippe some of the work which the editor would willingly have done for them had it been possible.

THE ENGINEERING AND MINING JOURNAL enters its forty-ninth volume with greetings and good wishes to its thousands of readers scattered over all parts of the world. Many of these good friends have been our companions now for nearly a quarter of a century, while many others are added to the list every year. Between the JOURNAL and its readers a kind of personal friendship has grown up, the outgrowth of mutual confidence and respect. We have many times experienced in many different countries warm courtesy and hospitality from persons whom we met for the first time, but who greeted us as an old and tried friend, because we had week after week through years written them, through the columns of the JOURNAL, our thoughts and advice upon many subjects which interested them. They no longer looked upon us as a stranger, but rather as an intimate friend, who possessed their entire confidence, and they referred again and again to some benefit derived from these columns or to some lesson of honesty and justice which they rejoiced to see persistently inculcated by their friend the JOURNAL. Our readers have some advantage of us in that they have the opportunity of judging us by our words and acts, while we can only judge them by the sympathy they show to these words and acts in continuing to read these pages. They say they learn to trust and admire the JOURNAL, while we are grateful for their appreciation. Thus a veritable friendship has sprung up between our "constant readers" and ourselves, and in no way perhaps could this feeling be better shown than in the prompt and courteous manner in which, without exception, all the producers of the chief metals each year furnish us not only with the figures showing their production, but also furnish us confidentially the actual amount of the stocks of metals they hold at the end of the year. Assuredly we may be pardoned for feeling a just pride in this continued proof of confidence on the part of the entire metal industry of this country, and of a constantly increasing number of those engaged in these industries abroad also. We warmly thank those friends for their courtesy, and we take especial pleasure in referring to this as a proof of the feeling of friendship to which we have alluded.

THE enormous development of the mining and metallurgical industries in the United States is clearly shown in the statistics given in the following pages. No such rapid growth was ever before or elsewhere witnessed, and it is all the more remarkable because it has taken place under many drawbacks, of high freights, high cost of supplies, labor, etc., and yet these very disadvantages and difficulties which stood in the way of development rendered improvement in old processes and appliances necessary and stimulated invention in labor-saving devices, until American practice in mining and metallurgy has come to lead the world, and has made possible the magnificent results here chronicled. The rest of the world, and more particularly the countries where these industries are in their infancy, naturally turn to us for that experience, knowledge and skill which is best adapted to secure also the development of their resources. Thus it is that in mining and metallurgy the whole world looks to American experts and mechanics for the newest and best practice, and American engineers are now found in the management of great enterprises in every part of the world, while American manufacturers of mining and metallurgical machinery are extending their business with foreign countries so rapidly that some of them have found it necessary to open branch offices, not only in England and France and other European countries, but even in such distant lands as Chili, Peru and Bolivia, in Japan, and in the Transvaal, South Africa.

It is with justifiable satisfaction that we contemplate the important part the ENGINEERING AND MINING JOURNAL has had in promoting this wonderful improvement and growth in the arts of mining and metallurgy, both at home and abroad, and in the extension of American influence and trade in foreign lands.

THE year 1889 has been characterized by a general prosperity in the mining and metal industries throughout the world. The wave of prosperity which commenced in this country toward the close of 1887, after a very prolonged period of depression, was checked during the first half of 1889. This was due partly to natural reaction after the sudden improvement of 1888, and partly to the depression and uncertainties following the collapse of the great French copper syndicate. The second half of 1889, and more particularly the last quarter of the year, has been characterized by activity in nearly every department of business, and by a consumption of metals never before equaled in this country. Moreover, the European markets, which in 1887 and 1888 were listless, with prices still declining,

while our business was active and "booming," have this year felt the revival of trade and have been even more active, and have risen more rapidly in prices than our home markets. This peculiarity has been frequently remarked, that the waves of prosperity and depression strike the European industries about a year later than they do our own, and in accordance with this rule, the present "good times" are likely to last there some time after we have commenced to travel the weary, downward path which we inevitably follow after a period of prosperity. We are happy at this time to feel that the year 1890 promises to be a prosperous one. There are, so far as we can see, none of the usual symptoms which immediately precede a period of depression. At the present time consumption in nearly every kind of mineral or metal product is extraordinarily active, and the process of stocking up has but just commenced. It may well be that we will experience some lull in this abnormal demand, but there are no accumulations of stocks, no excess of productive capacity over consumption that would be necessary to bring about low prices. We consequently look with confidence for a continuance of business prosperity during the coming year.

The only exception to the general increase of consumption has been in coal. The year 1888 witnessed so extraordinary an increase in the quantity of anthracite marketed that a somewhat lessened output in the year following was to be anticipated in the ordinary course of business; but the winter of 1888-9, and the commencement of the present winter, have been of unexampled mildness, and the consumption of coal for domestic use has been far below the average. The production of anthracite, therefore, fell off no less than 3,000,000 tons, or, say 7½ per cent, as compared with that of 1888. This decline in consumption has not been in manufacturing, but chiefly in domestic use and stocks in dealers' hands, which a year ago were very heavy, but are now light. The actual decline in sales is not, therefore, as unfavorable a feature as at first sight might appear.

THE ups and downs, the periods of prosperity and depression, in the mineral industries measure the commercial activity of the world, and are fairly the jolts and jars which mark the path of a never-ceasing progress.

The consumption of coal, iron, and sulphuric acid may be counted as the exponents of civilization. The increase in this consumption indicates development of industry which involves a betterment in the condition of the wage earners, and improved surroundings for the existence of all classes. It is well, therefore, to study the stream of the world's mineral statistics with the object of determining the drift of progress and the direction in which the activities of the world are solving the great problems of civilization. This thoughtful study of these "dry statistics" opens a vista of the future which is wide enough for the exercise of the most brilliant imagination, and they point infallibly the direction in which the laws should guard the rights of men and limit the abuses of power and of avarice.

In the following pages we give the instructive records of accomplished facts, the story of unrivaled progress in the development of the mineral industry in this country, and for comparison we include the figures of production of some of the more important minerals and metals in other parts of the world. At the same time we place upon record, in the carefully prepared reviews of the different metals, the influences which have affected production and markets during the past year, so that he who would learn the pregnant lessons these eloquent figures teach may thus trace effects back to their primal causes, and, forecasting the future from the experiences of the past, may be forearmed against those trade and political crises and reactions which to the thoughtful wayfarer on the road of progress seem to come in the most mysterious manner.

The increase in the production and consumption of the chief minerals and metals in the United States in recent years is quite unexampled in the history of the world. This increase has been due to several causes, chief among which, of course, is the fact that this is a new and undeveloped country rapidly filling up with industrious, energetic inhabitants. Railroads are built in every direction, opening up to settlement new parts of the country, and greatly lessening the cost of living and producing the minerals and metals by the reduction in transportation rates. This in turn greatly widens the markets for these products and brings their cost within the means of whole classes formerly unable to buy. Thus anthracite coal goes now from Pennsylvania to nearly every portion of the Western States, and is carried at rates one-quarter to one-half cent a ton-mile, which formerly would have been considered impossible. Bituminous coal and coke are carried at equally low charges. Over a great part of the country a rate of a half cent to three-quarter cent a ton-mile has taken the place of two to three cents a ton-mile which was in vogue not many years ago.

The vast improvements made in mechanical appliances and metallurgical processes, due largely to the necessity for economizing high price labor, have effected a notable reduction in cost, and this has further extended

the area of consumption, until now, from all these causes, the capacity of our mines and works in the production of coal, iron, steel, copper, lead, zinc, nickel, and manufactures of metals, of cotton, wool, etc., exceeds our home consumption, and except in years of unusual demand we must expect the conditions of an overstocked market. The time has come when we look abroad for a market for many of our manufactures, in order to take the surplus off our own market.

MR. HENRY R. TOWNE has addressed to Mayor Grant a forcible letter, urging the postponement to 1893 of the industrial exhibition connected with the quadricentennial celebration of the discovery of America by Columbus, and suggesting that, instead of getting up in a hurry a "World's Fair," to commence in May, 1892, more than five months before the season when Columbus actually saw land in the western hemisphere, it would be better and more fitting to commemorate that event upon its precise anniversary, October 12, 1892, by the unavailing or dedication of a permanent memorial, accompanied with a suitable celebration throughout the country, and the formal announcement of the industrial exhibition of the following year.

Mr. TOWNE's reasons are weighty. The year 1892 will bring the periodical distraction and excitement of a presidential election, making it specially inconvenient for all parties to unite harmoniously, and with the necessary leisure, in the labors and social entertainments incident to the exhibition. But more important than this is the consideration that the summer of 1892 is already too near to permit the thorough organization and execution of a truly worthy plan. Mr. TOWNE says:

"The newspapers have frequently made use of the word 'hustle' when referring to our ability to accomplish the work of construction with great rapidity. There is no question of our ability to erect by May 1, 1892, or even sooner, all the shedding required; but will mere sheds, however vast or showy, fittingly meet the requirements of the occasion? Shall we deliberately commit ourselves to a programme which involves 'hustling' in every detail; hustled plans, hustled architecture, hustled engineering and hustled essays in decorative art; that is, haste in matters wherein haste is synonymous with crudity if not with failure; or shall we adopt a programme which, without violating the sentiment of the event, will afford sufficient time for our architects and engineers to perfect their plans, both of construction and ornamentation, and to produce the best of which they are capable, and thus insure structures of artistic merit and dignity?"

He reminds the Mayor that the first advertisement for competitive designs for the Philadelphia Exhibition of 1876 was issued thirty-seven months before the date of opening. That the Paris Exhibition of 1889 was similarly begun forty-five months beforehand, and that it would be folly to attempt to surpass the former and at least equal the latter with only twenty-nine months for preparation.

It is, after all, entirely unimportant whether the great industrial display now contemplated shall be opened three hundred and ninety-nine years and seven months (as has been proposed) or four hundred years and seven months (as Mr. TOWNE proposes) after the day when the great CHRISTOPHER discovered a West Indian island. But it is of the highest importance that the display once open shall be one worthy of the land which on that occasion the great CHRISTOPHER did not discover, and which, indeed he never saw.

R. W. RAYMOND.

GOLD PRODUCTION OF MEXICO.

On the authority of Señor SALAS, one of the Mexican Commissioners in charge of the mineral exhibit of the republic at the French Exhibition, the total yearly amount of gold produced by Mexico is valued at about \$3,000,000, of which two-thirds are extracted from gold ores, the balance being produced with silver. The principal gold mines, properly speaking, are in the extreme northwest of Mexico.

The Mulatos Mine, in the State of Sonora, is said to produce about \$500,000. At the Cerro Colorado, in the State of Chihuahua, the production is at the rate of from \$800,000 to \$1,000,000. The Pinos Altos Mines and others in the same district, in the State of Chihuahua, produce about \$800,000, of which about one-half is gold. Near Jesus Maria, also in the same State, the aggregate output of the mines is about \$600,000, of which about one-half is gold. In addition to the foregoing, the production of gold in Lower California is beginning to assume some importance, and to our own knowledge there are many other mines nominally silver, which carry one-sixth to one-fourth of gold value in their bullion.

Mr. SALAS' estimate in two of the most important cases, viz., the Cerro Colorado and the Pinos Altos, we believe to be quite fairly correct, as the amount of ore is very large, and if in the United States the former mine would be producing more than is stated. From the Pinos Altos Mines proper we should put, from personal knowledge, the annual production of gold at about \$300,000, without taking into account anything outside, of which we have no means of forming an estimate. Moreover, the production of gold in the State of Sinaloa amounts to something.

THE COPPER INDUSTRY.

In our review of the copper industry a year ago (ENGINEERING AND MINING JOURNAL, 12th January, 1889) we outlined the history of the origin and rise of the great French syndicate, which was then at the summit of its brief though brilliant career, and we fully warned our readers of the inevitable outcome of the corner and the danger menacing the trade through its operations. After calling attention to the enormous increase in production and stocks of copper, we said: "No barrier or dam can permanently withstand the pressure of rapidly accumulating stocks, and the whole copper producing and consuming world must look on with constantly increasing anxiety as the flood rises, and until an equilibrium is established between production and consumption."

"These remarks may appear uncalled for now when the industry is in so exceedingly prosperous a condition, but post-mortem preaching has little practical value, and the well-known beacon that is lighted only after the ship has been wrecked is worse than useless."

The startling statistics which prompted our warning, and perhaps our remarks thereon, brought about the collapse of the great French syndicate more promptly than any one expected—confidence in the ability to corner the world's copper supply weakened and the failure followed; yet, as we had been at pains to show, the conditions for such a corner were unusually favorable, for the whole world had experienced the first steps in a revival in the copper trade after the most prolonged period of low prices that had ever been recorded. Production had been checked and consumption increased through the low prices, and the stocks or visible supply of copper were rapidly melting away. Higher prices were inevitable, and a long period of unbroken prosperity seemed to be assured to the copper producers. Towards the close of 1887 the French *Société des Metaux* commenced its now historic corner, the course of which up to the close of 1888 was fully described in our review a year ago.

This corner lasted but little more than a year, and its effect upon the trade was highly injurious. Prices of copper were advanced until 17½c. a pound for Lake in New York was reached and £100 to £106 for Chili bars in London in September, 1888. The effect upon consumption of the high prices and the arbitrary control of the markets by the "syndicate" was soon visible in reduced demand for copper. All the old stocks were bought out and some of the large continental works purchased no new copper during the first nine months of the year. Consumers used every expedient to get along without buying copper, and the visible supply increased from 42,301 tons in December, 1887, to 104,000 tons in December, 1888, while there were large stocks in this country and in Spain, which probably brought the entire stock up to 150,000 tons. The natural antipathy of consumers and the public generally to "rings," "trusts," or "corners," arrayed the press of the world against the syndicate, and helped to bring about its failure by withholding orders until the load of stocks became too heavy to carry. When the crash came in February, 1889, its disastrous financial effects were confined to France, where the failure of the *Société des Metaux* brought with it that of the great *Comptoir d'Escompte* bank, and the ruin of many private individuals.

In this country the high prices paid to the producers by the syndicate resulted in a "boom" in the copper stocks, and the large earnings were utilized by several of the companies in making improvements which would enable them to produce at a lower cost when the time of low prices should return.

Prices did indeed decline suddenly in London to £38 per ton for Chili bars or G. M. Bs. on the announcement of the collapse of the *Société*, but in this country an agreement having been entered into between our producers and the syndicate, under which the mines were not to offer their copper to the syndicate during the three months, February, March, April, and this agreement having been loyally lived up to by our producers, even after the failure of the *Société*, prices here were maintained at 16½c. for Lake until May.

Consumption rapidly increased here and in Europe on the reduction in prices, and have since very steadily absorbed our entire production of copper, except one-half of the production of the Anaconda, which Mr. Haggin exported; though toward the close of the year even that could have found ready sale at home. So great has been the demand that the entire syndicate stock of metal in this country has been sold and has gone into consumption. And in December the market so urgently called for more copper than the lake companies could supply, that several thousand tons of the syndicate's stock of Lake were taken at 14 cents a pound to enable manufacturers to fill their orders.

In all these events we have demonstration of the fact that had it not been for the syndicate corner the consumption of copper in 1888 would have been far greater than it was, while production would have been less and prices would have advanced steadily and without the ill effects of the sudden increase caused by the French syndicate. In all probability the producers during the two years 1888 and 1889 would have averaged fully as high or even better prices than they have actually received. Consumption would have been greater, and manufacturers and consumers would have benefited largely.

THE COURSE OF THE COPPER MARKET IN 1889.

The excitement which largely characterized the copper market for some 18 months previously became even more animated early in the past year, and certainly the stirring events of the year 1889 were not calculated to diminish such excitement. During the period now under review has been witnessed the utter break down of one of the most powerful combinations of capital and brains, formed with the object of securing the absolute control of the world's supply of an important commodity, and thereby is again witnessed the oft-repeated failure of attempting to do what is practically an impossibility.

The final collapse of this daring scheme was from the first predicted by many careful and conservative traders, but few, if any, anticipated that the crisis would come as soon as it did. At the beginning of the year we published in our columns certain detailed figures (which were largely supplied to us by the French syndicate) showing the statistical position of stocks, etc., which undoubtedly had the result of confirming the feeling that the task undertaken by the syndicate was doomed sooner or later to result in failure and loss. At that time considerable discussion arose as to what object the syndicate had in view in making these figures public in such a detailed manner, and as the result of this discussion it became generally recognized that the only purpose for adopting such a course could be that the syndicate hoped that by this means they could induce the producing companies to reduce their output, and thus help the combination to carry out their difficult task. Be this as it may, however, certain signs of weakness in the syndicate became apparent early in January; but these indications were then only of momentary influence, and always followed by some other movements, with the evident object of demonstrating that the syndicate were still backed by almost unlimited capital and strength. Only after the final collapse was it discovered at what a cost and to what desperate lengths this policy was continued.

About this time negotiations were resumed with the producing companies throughout the world, with the view of entering into contracts for their entire production for a period of ten years, and at the same time some of the outside companies, who had previously held aloof from the combine, were induced to join with the others, and it is a fact that only about a fortnight before the collapse one of the large smelting works in this city entered into a contract by which they, at the time, secured an advance of about \$250,000 in cash. Subsequent events clearly proved that at this very time the management of the syndicate were then adopting a course of the most daring and reckless character.

Among other incidents it may be mentioned that toward the end of February a comparatively successful "corner" was brought about in the London market for spot Chili bars and G. M. B. copper, by which the speculators who had ventured to sell short were severely hit, and about that time it was announced that a new company, called the "Compagnie Auxiliaire des Metaux," had been organized to support the syndicate's operations with a capital of forty million francs, of which amount 25 per cent. was immediately paid up by the subscribers, and which had power to issue bonds for forty million francs.

Among the directors of this new company appeared the names of M. Secretan, the head of the *Société des Metaux*, and also that of the unfortunate M. Danfert, one of the directors of the *Comptoir d'Escompte*. In the meantime negotiations were proceeding with the producing companies, with the object of bringing about a reduction of 20 per cent. in the output, the result of which negotiations were only partially successful, as the Spanish producers, owing to their special mode of production, were unable to reduce their output quickly. On the other hand, the American producers evinced great willingness to assist the syndicate in these attempts, and pending the ratification of the final arrangement for a general pro rata reduction a preliminary agreement was entered into under which all deliveries to the syndicate under the existing contracts were suspended from March 15 to May 15. This preliminary agreement turned out very disadvantageously to the American companies, as within a few days thereafter the circumstances attending the tragic death of M. Danfert (previously mentioned) showed that the beginning of the end was not far off. Thereupon the principal European exchanges became violently disturbed, and the shares of the *Société des Metaux*, which, in December, 1889, stood as high as 1,150, came down to as low as 26, and the shares of the *Comptoir d'Escompte*, which were at one time quoted 900 francs, dropped to 80. The shares in all copper companies suffered a panic fall, and on the London Metal Exchange Chili bars and G. M. B. copper fell from £75 on March 1 to £55 on March 8.

It soon became known that the *Comptoir d'Escompte*, an institution only second in importance to the *Banque de France*, was seriously involved in the operations of the syndicate, and had, in fact, advanced them enormous sums, largely exceeding its legal powers, and that, therefore, the directors of that institution were personally liable and responsible for these irregularities. Within a fortnight after this the great *Comptoir d'Escompte* was bankrupt, and with the break-down its guarantees to the producing companies became worthless documents. As by far the greatest part of the "bankers' guarantees" came from this institution, and as the *Société des Metaux*, in whose name all contracts were made, had also suspended payment, producers found themselves left without any securities whatsoever for the unexpired quantities of their contracts.

These events naturally produced a feeling of great alarm, and on March 18th, on the London Metal Exchange, G. M. B. copper and Chili bars sold at the lowest figure, viz., £35, while about the same time a thousand tons or so of tough copper changed hands from £41 5s. to £43, the sales being made on account of some banks who had made advances on security of the metal. In the meantime the outlook in financial circles had assumed such an ominous appearance that the government of France felt compelled to interfere, and only by the exercise of great tact and with the assistance and co-operation of the greatest banking houses in France was averted such a serious financial catastrophe as would have shaken credit and confidence to even a much greater degree than had already been done. About this time the annual statistics of the world's supplies were published in London, from which it appeared that while the production in 1887 was only about 225,000 tons (of 2,240 pounds), in 1888 it had increased to 262,000, and it was also shown that at that time the actual stocks of copper had risen to the unprecedented total of 175,000 tons, of which 125,000 tons were included in the statistics of visible sup-

plies, and 50,000 tons were estimated to represent the total quantity piled up in private warehouses in France and America.

Negotiations were now entered into by the liquidators of the Comptoir d'Escompte, of the Societe des Metaux, with the producing companies, to get relieved from the obligations under the contracts for future deliveries, in which they were only partially successful. Some of the companies (including the bulk of the Americans) did release them, but others, under the lead of the Cape Copper Company and the Mason & Barry Company, Limited, commenced legal proceedings with results which have not yet been decided. Naturally those few producers who were fortunate enough to hold guarantees from bankers of unquestionable standing have continued all along, and still continue, to get the benefit of the high prices.

When the collapse came the general body of manufacturers and consumers appeared to realize that they were now at last released from the power of the syndicate, and prices having come down to a comparatively low level, they evidently thought their chance had come again. Already, during the last few weeks of the rule of the syndicate, the usual spring demand had come with the volume of orders rather heavier than in the previous year; they were not slow to come into the market for their supplies, and they did buy heavily at the decline. It also soon became evident that the great bulk of the copper in warehouse (with the exception of some 15,000 to 20,000 tons, was actually in the hands of some of the wealthiest bankers in France, and that they were not likely to throw it recklessly on the market. Consequently, after the first feeling of excitement had passed away, and everything tending to influence values had been carefully considered, a more settled and steady feeling took possession of the market, and by the end of March the London price for Chili bars and G. M. B. copper had rallied to £40.

In the New York market lake copper opened in January at 17½c., and gradually settled down until the end of February, when the quotation stood at 16½. These prices, however, were simply nominal, and only used in connection with settlements on the Metal Exchange, and, as owing to the policy adopted by the syndicate of only dealing with the actual consumers, no lake copper remained in the hands of speculative operators. The speculative business had practically died out before the break came.

During all this time, however, the consumers could readily get all they wanted at 16½c., and at the end of February a new pool sale was made at that price for deliveries over the succeeding three months. Under these circumstances, when the great decline took place in the European markets, the American producers found themselves in a very unpleasant and awkward position. In accordance with the agreement previously alluded to, they had bound themselves to uphold the price of 16½c. for lake copper, and now, as was naturally to be expected, the consumers throughout this country brought to bear on them all the pressure they could command to allow them the benefit of the decline. Here it must be admitted that the Lake companies deserve the highest commendation for the liberal manner in which they met the demands of the consumers. In the first place they agreed to cancel the existing contracts, thus relieving the manufacturers from any obligation to accept deliveries at 16½c., at the same time upholding, however, this price for such quantities as were wanted by the trade.

Now this action could not fully meet the difficulties of the case, and an understanding was subsequently arrived at according to which all copper to be delivered from this time was to be invoiced at 16½c., with the understanding that as soon as certain pending arrangements were concluded the future actual selling price would be definitely fixed, and an allowance would then be made on all the copper invoiced at 16½c. of the difference between that price and the newly fixed price. This mode of procedure was considered necessary in the part of the lake companies so as not to prejudice their legal position in relation to the syndicate.

The period extending from the beginning of April up to the end of October was characterized by a generally steady feeling which was greatly strengthened early in May when the lake companies decided to fix the future selling price at 12 cents per pound, and on this basis to return to consumers the difference of 4½ cents per pound in respect of the deliveries provisionally invoiced at 16½ cents pending this new arrangement. This settlement was generally considered very satisfactory by all parties concerned and had not a little to do with the further revival of confidence of which some signs had already appeared.

Business in general gradually showed unmistakable signs of renewed activity, and this to a much more marked extent in Europe than in the United States. At the beginning of April even the reports from Europe were decidedly encouraging as regards expanding consumption, and the margin of difference between the value of refined copper and the manufactured goods grew larger than for many years past, clearly indicating that trade in general had again resumed a very profitable basis for all concerned. Somewhat in contrast with this condition of affairs in Europe was the rather lagging tendency of our home market, which was, perhaps, chiefly due to the fact that copper values had not previously dropped down to such a low level as on the other side of the Atlantic, and this naturally made our home consumers hesitate about entering into contracts for large quantities; and this feeling of hesitation was aggravated by the fact that it was well known that a heavy stock of copper belonging to the French bankers was still lying in warehouse here, and with European prices considerably below the parity of ours, it was only a natural conclusion that sooner or later these accumulated stocks would come on to our market.

All the while protracted negotiations were passing between the European holders of the warehoused copper and the producing companies, with the object of arriving at some mutually satisfactory arrangement regarding its disposal; but owing to the conflicting interests it soon became clear that any such arrangement was almost an absolute impossibility. The most serious obstacle was that the foreign holders of the warehoused copper insisted that it should be sold for consumption in this country, while the home producers naturally exerted all the arguments and influence in their power to get it exported.

Early in September a crisis was reached when the representatives of the foreign bankers made a sale of 2,000 tons of lake copper to various consumers in this country at 11½c., and this action was taken just at the moment when a more hopeful feeling was apparent, and consumers were more disposed to buy. Hereupon the lake companies, who had really made

large concessions and sacrifices to prevent such action, immediately met it by reducing their selling price to 11c., intimating at the same time to the foreigners that they were prepared to sell at even lower values if the bankers attempted to interfere with the home market.

At this point, when many indications pointed to disaster, fortunately a new and powerful influence began to make itself felt with undeniable force, namely, the generally increased demand, which solved this difficult problem in the most satisfactory manner possible. During the reign of the syndicate and up to the end of March the statistics of stocks (including the visible and invisible supplies) continued to increase very rapidly, but from the first week that the lower prices ruled a decrease began to show itself, and as this decrease was not brought about by any limitation of production, but by *bona fide* expansion of the consumptive demand, it was immediately regarded as a most favorable symptom.

It took some little time before the trade in general recognized the fact that something more permanent and more powerful than speculative manipulation was at work; but ultimately it became apparent to all that the whole condition of affairs had become radically changed. The producers soon found that they had not only the least difficulty in placing their current production, but the demand also cleared off the stocks which they had accumulated at their various works from the time that the syndicate collapsed until they regained their freedom in the disposal of their product.

During the period that lake copper was selling at 12c. casting copper had fallen to an abnormally low level, and at the beginning of August the quotation for such brands stood at 10½ to 10¼, or a difference of more than 1½c. per pound in comparison with lake. This comparatively low price naturally led to a great increase in the demand for this class of copper, and under the influence of this by the end of August the price was up again to 10½c., with only moderate supplies available at that figure. When the lake price was reduced to 11c. the price for casting kinds could naturally not be sustained, and the quotation gave way again to 10c., at which point the feeling became firm again, and prices a little above the 10c. point could be made. In a little time, however, the lake companies found their stocks exhausted, and early in November they were compelled to raise their price to 11½c.

Almost simultaneously with this movement on this side an important rise set in again in the European market, originated and initiated by certain fortunate speculators in iron who seized the opportunity to employ the profits which they had realized in iron to buy up copper, and from our special London reports it will be seen that these operations had the effect of raising the prices of Chili bars and G. M. B. copper, which had for a long time stood at prices ranging from £43 spot and £42 three months to considerably higher figures.

From this point commences what may be described as the third period of this eventful year. Consumers had already seen that the producers were unable to deliver as quickly as they required. The foreign holders had apparently learnt caution from their past experience, and had during all this time kept entirely off the market. When the lake companies advanced their price to 11½c., orders came in at such an unprecedented rate that much larger quantities were contracted for than producers were able to deliver, and a few days later the selling price was again raised to 12c. The strong buying continued, and without showing any weakness prices advanced quickly, and at the end of November 14c. was reached, and the greatest anxiety existed to secure as much copper as was offered. Everybody now recognized the fact that trade generally was in a much more healthy condition than for a long time past, and although some conservative people feared that the rise might prove to be more rapid than desirable, yet it was generally admitted that the improvement was the result of legitimate trade and expanding consumption.

Manufacturers found themselves able to realize good profits on their productions, and under such circumstances did not object to pay a higher price for their raw material, and the producing companies became so pressed for deliveries that they were compelled again to advance their selling price to 14½@14¼ for lake copper and to 12½@13 for casting kinds, without being able even then to meet the demand; and whilst only three months ago everybody denounced the foreigners for interfering with the home markets, it was regarded as quite a relief when early in December they again sold 2,000 tons of lake copper at 14c., at which price they could easily have placed a much larger quantity. At this figure, however, they refused to continue selling, and it is understood that within the last eight days or so they have sold from 500 to 1,000 tons more at 14½c. and later smaller quantities at 14½c., which may be regarded as the closing price for lake copper. Casting copper has not quite kept pace with the rise in lake and stands at the end of the year at 12½@13, while good rolling copper is quoted 13½@14.

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Altogether the indications favor a continuance of prices quite as high, if not higher, than those now ruling for the next year, and this prospect is certainly not diminished by the reports of a serious fire in the Anaconda mine, as to which reliable information cannot at present be obtained, but which must result in some reduction of output.

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the stocks of the old syndicate, yet quite an important quantity of this old stock is sold for export, and is only awaiting shipment.

Never before in the history of the trade have the mining companies had such light stocks, and were it not for the Syndicate's accumulation the country would to-day be absolutely bare of copper, and a copper famine would be threatened.

The manufacture of electrolytic copper steadily increases, and in 1889 amounted to no less than 21,000,000 pounds, as compared with 17,000,000 pounds in 1888. The coming year will still further increase the present production.

THE PRODUCTION OF LAKE SUPERIOR COPPER MINES.

Table with 7 columns: MINES, 1881, 1882, 1883, 1884, 1885, 1886. Lists various mines like Calumet & Hecla, Quincy, etc., with production values.

COPPER PRODUCTION OF LAKE SUPERIOR MINES.

Table with 7 columns: 1887, 1888, 1889. Lists production for Cal. & Hecla, Quincy, etc., and a total for 1889.

COPPER PRODUCTION OF ARIZONA.

Table with 7 columns: 1884, 1885, 1886, 1887, 1888, 1889. Lists production for Copper Queen, Holbrook & Cave, etc.

COPPER PRODUCTION OF MONTANA.

Table with 7 columns: 1884, 1885, 1886, 1887, 1888, 1889. Lists production for Anaconda, Parrott, etc.

COPPER PRODUCTION OF THE UNITED STATES.

Table with 7 columns: 1882, 1883, 1884, 1885, 1886, 1887. Lists production for Lake Superior, Arizona, Montana, etc., and total production.

COPPER PRODUCTION BY STATES.

Table with 4 columns: State, 1888 (Pounds), 1889 (Pounds), 1889 (Long Tons). Lists production for Lake Superior, Arizona, Montana, etc.

THE PRINCIPAL FOREIGN COPPER PRODUCERS. The copper production of the world, 1879 to 1887 inclusive.

Large table with 10 columns: COUNTRIES, 1887, 1886, 1885, 1884, 1883, 1882, 1881, 1880, 1879. Lists production for Europe, North America, South America, Africa, Asia, Australia.

*Compiled by Henry R. Merton & Co., London.

THE PRINCIPAL COPPER SUPPLIES OF THE WORLD.

Table with 4 columns: Countries, 1888 (Tons), 1888 (Tons), 1888 (Tons). Lists supplies for Algeria, Argentina, Australia, etc.

*Estimated. †In English tons of fine copper.

*Compiled by Henry R. Merton & Co., London.

UNITED STATES COPPER IMPORTS.

Table with columns: Bars, Ingots and Pigs. Quantity, Value. Old, fit only for remanufacture. Quantity, Value. Fine copper contained in ores. Quantity, Value. Regulus and black copper. Quantity, Value. Rows from 1867 to 1889.

THE LAKE SUPERIOR COPPER MINES.

The Calumet & Hecla, like most other mines of the district, is no doubt producing all that it can at present. The last fire left the older mine badly crippled, three only of the eight working-shafts of that section being now used for regular hoisting purposes.

Between South Hecla, where, from three shafts, much of the late product has been obtained, and the mine proper several shafts are being sunk. None of these as yet contribute anything toward the returns.

The lower yield of ingot from mineral smelted this year means only that the company considers it advantageous to save and smelt more low-grade mineral, obtained from tailings, than formerly.

Important additions to machinery and general equipment, it is said, are contemplated. These, presumably, are in the direction of economy, and should eventually repay the necessary expenditures.

The Quincy has built a new mill, with two stamps now about ready to run, with space enough for three. Capacity, as at present, probably about 100 tons daily, in excess of old mill.

The Quincy can no doubt increase its production to some extent, and, if the future continues as bright as the present, will probably do so; there will also be opportunity, never before afforded, to handle lower grade rock cheaply.

This year at the Franklin has been its best, the product for 1889 being the largest it has ever made being more than 2,600 tons. This for a mine pronounced, worked-out, by detractors, is at least rather remarkable.

The Pewabic has been idle for years. The mine, as developed, is no doubt poor, but has 160 acres of land, in which comparatively little work has been done, contiguous to both the Quincy and Franklin mines.

If not in the interest of the Quincy, yet in the interest of Quincy parties, objections were made to the re-organization of the Pewabic. The Supreme Court of the United States decides on this soon.

The Osceola has improved of late, the yield of copper for the year being equal to any former one. The south end of the mine is found more productive as depth is reached, and the explorations at Opechee, where the shaft is down to the fourteenth level, are very promising.

COPPER EXPORTED FROM THE UNITED STATES.

Table with columns: Fiscal years ending June 30. Ore. Tons of 20 cwt. Pigs, bars, sheets, and old. Value of manufactured. Total value. Rows from 1867 to 1889.

* Evidently errors in quantities.

AVERAGE PRICE PER POUND OF LAKE COPPER AT NEW YORK.

Table with columns: Year. Jan. cts. Feb. cts. Mar. cts. Apr. cts. May. cts. June. cts. July. cts. Aug. cts. Sept. cts. Oct. cts. Nov. cts. Dec. cts. Year. cts. Rows from 1860 to 1889.

PRICES OF CHILI BARS IN POUNDS STERLING PER TON OF 2240 LBS.

Table with columns: St's k's Tons, Jan, Feb, Mar, Apr, May, Jun, July, Aug, Sep, Oct, N'v, D'c, Yr. Rows from 1866 to 1889.

added several hundred feet to the working length of the mine, and this in itself is important. Production is likely to be increased in the coming year, for preparations are making to equip Opechee shaft with permanent hoisting-plant, rock-house, etc.

Atlantic keeps steady. During the year, for a short time, the mill was not kept quite up to its full capacity. It is remarkable that such steady returns should be kept up from a mine that has no rich ground, and it is quite clear that but for its strict supervision, profitable results could not have followed in ordinary times. A new hoisting plant of the most approved character is being built, and is expected to be the most economical in working of anything in the region. Production cannot be materially increased without additional stamping facilities.

The Huron is looking about as usual. The lode worked here is wide and quite bunchy, and only a more extensive scale of operations can decide at what price copper can be produced. Liberal openings, ample equipment and handling of twice as much rock as in the past would be giving the Huron a fair chance. With copper at a good price the mine is all right, but in spite of good management, if worked on a restricted scale, it cannot be profitable when copper gets below 11 cents. It rests with the owners of the mine to determine the extent of production. To get materially more copper there must be more equipment.

The Allouez, a year ago, had just re-entered the lists as a producer. The mill is now again idle. There is, of course, much difference of opinion, locally, as to the management's wisdom in shutting down. With copper at 12 cents, operations can be carried on, so that the ruling price would afford a fair profit. The management has shown elsewhere what it can do with mines, so it is safe to conclude that the Allouez does not suffer from inattention. The future of the mine cannot be spoken of with certainty, and only a small force is now employed on opening work. Starting the mill again before spring may not be regarded as judicious, but if the outlook is then satisfactory, no doubt active operations will be resumed. To meet a low price for copper, the mine must be worked more extensively, and, if possible, be made to produce more largely. The management, however, must know its capacity.

Kearsarge is still a fair producer, and for the quantity of rock it mines, does well. The weak point here is that below the fifth level no very extensive blocks of stoping ground have been found. The shaft is down to tenth level. The openings are said to be not unpromising, and may at any time show rich ground, but in the interval it is not easy to predict the future. The experience of the deeper mines runs in favor of Kearsarge. Most of them have had poor streaks and got below them into good ground again. The Kearsarge is trying to solve the problem by pushing its shaft down. No increase in product can be looked for under ordinary circumstances.

The Central mine is one of the oldest and deepest in the region. During the summer of this year production was for some months curtailed, to admit of enlarging and retimbering the hoisting shaft. Hoisting facilities are now the best and admit of going deeper easily. Cross-cutting is going on at the mine in search of other productive veins. This work is most commendable, and may at any time be successful. There is no special news from the mine.

Copper Falls Mine, like the Allouez, stopped stamping when the copper situation seemed critical. A small force is now employed in opening. Resuming production is a question which will be governed by the price of copper.

Conglomerate Mine, of Kewaunee County, is now known as the Lac La Belle Mine. The company owns a very large territory, ample equipment, machinery and dwellings, for a great mine. Nothing is heard about resuming work, but it would be strange if the company continued inactive. Beside the conglomerate, there is a very promising amygdaloid, and one or more fissure-veins which deserve attention.

Two mines in Houghton County not producing, and yet deserving of notice, are the Centennial mine and the Tamarack, Jr. Both are looking for copper in the Calumet lode. The Centennial, immediately adjoining the Calumet mine, owns the outcrop of the conglomerate for a mile in length, and active sinking is being done on the course of the lode with satisfactory results to the management. Some surface explorations made recently at the north end of the property show very rich rock.

Tamarack, Jr., is sinking a perpendicular shaft to strike the Calumet conglomerate, at a depth of 2,500 feet, and is now down over 1,400 feet. The objective point should be reached in less than a year, according to reported rate of sinking. In the district, the company's prospects are considered good.

THE COPPER MINES AT BUTTE.

The fire in the Anaconda Mine may be an important factor in the production of copper by that company in the year 1890. It is thought by mining experts to be more serious than is generally believed by the public. The country rock surrounding this property is a metamorphic granite, and the hill has been pretty thoroughly tunneled in different directions for the purpose of exploration. It is thought that the fire in the mine will be fed by air admitted through the crevices, and that it will be very difficult to extinguish it. The mine is still closed, and will probably not be opened for some time. It is hoped that the apprehensions referred to may not be realized.

No material increase in the production of the Boston & Montana is looked for until the new plant is in operation, which is hardly expected before the close of 1890.

The Butte & Boston have a small plant in operation, but it cannot be classed among the large producers as yet.

The Parrot production will probably be about the same in 1890 as in 1889.

Altogether it is not considered probable that the copper output of Butte for 1890 will be much, if at all, in excess of that for 1889.

THE LONDON COPPER MARKET IN 1889.

(From Our Special Correspondent.)

The year 1889 opened without essential change of phase, the French syndicate still dominating the market and pursuing its baneful policy of extending its monopoly and maintaining the artificial and exorbitant

prices of copper by purchasing from time to time. Under the sway of this powerful combination, the legitimate trade had been almost paralysed; consumption was at its lowest ebb, being fed mainly by hand to mouth purchases, and having recourse, as far as possible, to supplies of old metals—already vastly depleted; while in many cases, where other metals, such as steel, were to any extent applicable, they were eagerly substituted for the abnormally costly article, copper.

The syndicate price of G. M. Bs., for prompt delivery, at the close of 1888 was £77 10s. and £78 for three months' prompts, which was also the average price for the month of December.

Manufactured orders were few and far between and eagerly competed for, the trade in this and in refined sorts being in a languishing condition, while the visible supplies of copper in and afloat to Europe were steadily on the increase—the addition for January alone amounting to 5,423 tons, and bringing the total up to 109,328 tons.

Early in January, after the syndicate had been buying anything that offered in spot G. M. Bs. at £77 5s. and considerable quantities of forward at £78, a marked scarcity of the former caused an advance to £78 10s., when the Syndicate, in pursuance of its tactics, relieved the pressure by selling at this price, thus inducing a relapse to its own buying price, viz., £77 5s.

The history of the next few weeks is a history of perpetual oscillations, caused by the apparently capricious action of the syndicate, which alternately supported the market by its presence and depressed it by its absence as a buyer. For example, in the week ending 26th January, after bidding £78 for spot G. M. Bs.—which price it had been paying for forward—it suddenly withdrew its support and three months fell rapidly to £75.

The failure of a slight demand for spot warrants to elicit any considerable offers furnished a passing indication of the extent to which the Syndicate had succeeded in absorbing the supply. The closing week of January saw spot G. M. Bs. recede (during a spell of inactivity on the part of the syndicate) to £73, and an immediate advance to £77 10s. on the resumption of buying by its representatives. The total weekly turnover at this time was quite inconsiderable.

February was not distinguished by any radical alteration, the business in G. M. Bs. being still on a limited scale, and prices still depending mainly on the syndicate's buying. During the month up to £80 was paid for spot G. M. Bs., a little outside buying having reinforced that of the syndicate. All the year in sellers' option had previously been done down to £61 10s., and was offered later 10s. lower still. Three months declined to £66 10s., subsequently recovering to £68. Refined copper, though still stagnant, was in slightly better demand.

The week ending 2d March witnessed a more decisive relapse, £75 being quickly reached for spot cash, £61 for three months, and £55 for all the year in seller's option. Rumors had for some time past been current of financial difficulties besetting the syndicate, and although upheld by some of the leading French financial houses, it was generally contended that there could be but one issue to the strain of so gigantic an undertaking as the attempt to control the copper supply of the world, involving such an enormous lock-up of capital as it must do until the monopoly had been rendered complete and consumers forced into universal buying at the syndicate's artificial prices, and the approach of that issue was assumed to be merely a matter of time. The above relapse in prices proved to be the immediate forerunner of the crisis—the beginning of the end—for in the following week the tragic fate of the Director-General of the *Comptoir d'Escompte* of Paris, which institution had been the backbone of the combination led by the *Société des Metaux*, taken in conjunction with the ensuing disclosures, announced to the trade and to the world the collapse of the syndicate's finances. The same week saw a drop in price to £57, and £49 10s. the remainder of the year. Various schemes were now broached, but not consummated, for supporting the crumbling edifice and for safeguarding the combined interests of the syndicate and the Spanish and American miners, by preventing a rush of metal on to the market. Meanwhile the price had further receded to £50 for spot and £49 for forward, and in the week ending March 23d the inability of the *Comptoir* to take up warrants then maturing demonstrated the completeness of the ruin of the gigantic combination which had been formed in defiance of the economic law of supply and demand. The immediate result was the fall in G. O. Bs. to £35 per ton, the lowest price ever known. Between this figure and £41 10s. spot cash a large speculative business was transacted, while consumptive demand came in with a rush.

As might be expected, however, in the confusion created by the crash, and the uncertainty as to the ultimate disposal of the accumulated holdings of the late syndicate, comparatively little copper was liberated, and the relative scarcity of refined copper made itself felt for a considerable period, until, in fact, the various smelting works had had time to turn round and bring their output into something like proportion to the re-awakened demand. G. M. Bs. and G. O. Bs. were more freely dealt in, but at constantly varying prices, the anarchy in the trade preventing anything like a decided growth of confidence. In the last week of March the value ranged between £42 10s. and £39 7s. 6d. spot cash; tough ingots being held for £46 to £48, best selected for £48 to £50, and strong sheets £52 to £53.

April opened under similar conditions, the value moving within the same range, but declining in the second week to £38 spot cash, and the following week to £36 15s., these lower prices inducing an increased volume of business. Henceforward, for some months, rumors recurred at intervals of negotiations between the French financial houses who had taken over the stocks of the syndicate (now in liquidation) and the mine owners with a view to limit the output of the latter and to regulate the dispersion of the said stocks. The market, at first somewhat sensitive to these rumors, gradually heeded them less and less as they failed of accomplishment. Meanwhile, slowly but surely, the market, rid of the incubus of monopoly, began to recover and return to more normal conditions, producers being better able to meet demand, and the latter coming in steadily from consuming quarters. But the most tangible sign of the revolution accomplished is found in the statistics for this month, which at length showed a turning in the long lane of accumulating stocks. The first fortnight of April showed an increase of 1,825 tons, or a total increase since December of 22,596 tons,

bringing the total visible supply in and afloat to Europe up to 126,701 tons, as shown in Messrs. Henry R. Merton & Co.'s report, dated April 18; but the second fortnight showed a decrease (due mainly to augmented deliveries) of 2,254 tons, and this process of depleting the visible supply has made unbroken progress since then. May was distinguished by unprecedentedly large deliveries, the total being 13,864 tons, and by a gradual advance in prices, in harmony with the general activity in all consuming circles, refiners and manufacturers being everywhere in full operation, while in the speculative market, although inquiry was more or less spasmodic, the value, stimulated by general firmness and by the scarcity of prompt warrants, rose from £37 15s. to £42, the highest point touched since March, closing, however, lower at £40 17s. 6d., and for three months, £40 12s. 6d.

During June, the value of cash G. M. Bs., after rising to £41 15s., moved mainly between that figure and £41, the chief exception being a sudden but momentary relapse in the last week to £40 5s. spot cash and £39 15s. three months. From Chili reports came of restricted production, owing to the lower value of copper, and charters began to show a falling off. From India came an active demand for sheets and yellow metal, a good business taking place at \$50, £50 10s. and £4 7s. 8d. respectively. Transactions in furnace material were materially hampered by the negotiations between mine owners and warranters which were still hanging fire.

July opened with spot G. M. Bs. still scarce at £41 10s., but the huge French stocks still formed the bugbear of the market and exercised a deterrent effect upon buyers, although hitherto the holders had acted with a wise restraint, apparently biding their time, i.e., awaiting a period of higher prices before parting with any considerable quantities. After giving way to £40 15s. there was a rapid rally to a point a trifle higher than the highest touched, the closing figures being £42 2s. 6d. spot cash and £41 7s. 6d. three months. The visible supply had been steadily decreasing and the enormous deliveries of this month, nearly equaling those of May and amounting to 13,289 tons, brought the total decrease since mid-April up to 16,760 tons, a fact which spoke volumes for the revival in consumption.

The first week of August brought with it a rapid spurt in prices, caused by the forced covering-in of bear sales, £43, £43 10s. and £44 10s. being successively paid for spot G. M. B.'s, while forward was dealt in up to £42. These topmost figures were, like the cause which produced them, only transitory, but the market remained firm at between £43 and £43 15s. spot cash for the remainder of the month, with three months about 25s. lower, the market having derived some measure of support from the announcement of a combination on the part of the Lake companies for an all-round augmentation in price, and also from the extensive deliveries, viz.: 13,923 tons for the month, beating any previous monthly record. It must be borne in mind that these figures take no account of large quantities of refined and other copper, which go direct into consumption, i.e., without the intervention of public warehouses.

September was characterized in the main by more or less lethargy, the historic strike of the London Dock laborers throwing the whole machinery of delivery out of gear and seriously interfering with business generally, while the collapse of the Lake "pool," referred to above, accentuated the depression. The demand for bars being almost nil, there was a retrogression from £43 7s. 6d. to £42 10s. The chief inquiry for refined sorts came from the Continent, and was for forward delivery. Furnace material had by this time become much more readily available, demand, in fact, lagging behind supply.

The first three weeks of October passed off quietly, the salient feature being the lessening difference between the value of spot and forward, the latter advancing in consequence of a disposition to buy ahead. Toward the close of this month, however, a new and outside influence began to affect the copper market. This was the merging of the advance in Scotch pig iron (which had by the beginning of October reached 52s., as compared with 42s. 6d. late in June) into a regular "boom," which in about six weeks rushed prices up to 64s. The contagion of speculation spread from iron to copper, and G. M. B.'s sprang, as the result of large buying orders chiefly for German & Scotch account, in the last week of the month from £42 15s. to £44 7s. 6d., three months, and £44 5s., the turnover on the last day alone amounting to 1,300 tons. The animation was by no means confined to the speculative market; for, consumers—who had hitherto been working on comparatively low stocks—were stimulated into vigorous buying when they saw prices during this and the following month steadily advancing without calling for any large quantities of copper, and very extensive sales of refined sorts, as also of furnace material, were made for consumptive account, both home and Continental.

November saw the continuation of the new movement, the speculative market being, however, alternately depressed by realizations and stimulated by bear-covering as well as by a few fresh speculative purchases, and prices were impelled up to £48 spot and £47 15s. three months. This advance was followed by a drop of about £2, caused by the sale of a considerable quantity of copper for account of a firm of French importers who had failed some time previously and by the cessation of speculative buying. This copper was instantly snapped up, however, and the market recovered instantaneously. By the end of the first week in December the advance culminated in the payment of £50 5s. for spot G. M. B.'s refined copper, of which large quantities had been placed, had grown scarce, and consumption being brisk everywhere, the price of tough ingots had risen to £56 to £57, best selected to £57 10s. to £58 10s., strong sheets £65 to £66, India sheets £60 to £62 and yellow metal squares to 6d, a large business having been done with India in the last two articles. At the time of writing (December 17) the position shows no material change, the immediate future of the speculative market depending mainly on the operations of speculators whose prompts fall due between this and February, "bear" covering causing an advance and realizations a decline. In the market for consumption, and indeed generally, things are quieting down in anticipation of the fast approaching holidays, neither producers nor consumers caring to operate to any extent until after the turn of the year. Cash G. M. B.'s stand at £49 10s., ewhile tough ingots are unchanged at £56 to £57; best selected, £57 to £58; strong sheets, £65, and India sheets, £60.

These figures do not take account of the invisible or private stocks in France, the United States, Japan, etc. At the time of the syndicate's col-

	Oct. 31, 1889.		NOVEMBER 30TH.			
	1889.	1888.	1889.	1888.	1887.	1886.
Stocks in England and France.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Liverpool and Swansea, Chili bars	21,230	22,887	27,285	33,149	42,144	20
Chili ingots	188	99	....	5	20	....
" " Chili ores and regulus (fine)	420	81	....	....	....	257
Liverpool and Swansea, other stuff (fine) and English copper	29,647	27,963	17,748	1,209	4,253	6,840
London (including landing)	5,858	5,493	4,741	1,928	....	....
Havre, Bordeaux, Rouen and Dunkirk.	30,675	30,623	28,891	375	977	....
Chili bars	8,922	8,738	10,405	155	780	....
Havre and Bordeaux, other copper	99,940	95,884	89,070	36,821	55,280	....
Advised from Chili by mail and cable, fine copper	2,550	3,600	4,800	7,290	6,600	....
Advised from Australia by mail and cable, fine copper	1,950	500	1,950	1,100	900	....
Afloat from Liverpool to continent, Chili bars	103,540	99,984	95,820	45,121	62,780	....
Price of Chili bars, per ton	£ s. d. 44 2 6	£ s. d. 50 2 6	£ d. 77 10	£ d. 66 15	£ d. 39 15	£ d. 44
" G.M.B., and/or tough cake	44 2 6	50 2 6	77 10	68	....	....

COMPARATIVE STATEMENT.*

	Stock in England and France and afloat thereto from Chili and Australia.		Price of bars.	Price of G. M. B. and/or tough cake in warehouse or at works.	Charters from Chili for the month.	Imports into England and France from			Shipments from Australia to London.	Total supplies in England and France.	Deliveries in England and France.
	Tons.	£ s. d.				North America.	Spain and Portugal (excl. pyrites).	Other countries.			
30th November, 1889.	99,984	50 2 6	50 2 6	2,700	3,060	1,610	1,889	600	9,859	13,815	
31st October, 1889.	103,540	44 2 6	44 2 6	1,350	3,292	4,386	2,133	600	9,859	13,890	
30th September, 1889.	105,609	43	43	1,650	3,199	1,526	2,145	600	9,120	9,436	
31st August, 1889.	105,985	43 10	43 10	1,950	3,575	2,154	3,763	350	11,792	13,923	
31st July, 1889.	108,116	42	42	1,700	3,774	2,158	1,584	500	9,716	13,289	
30th June, 1889.	111,689	41 10	41 10	700	500	1,377	1,481	700	4,758	10,489	
31st May, 1889.	117,400	41	41	1,000	1,239	2,278	1,720	600	6,837	13,564	
30th April, 1889.	124,447	37 15	37 15	2,100	1,712	815	2,803	650	8,080	8,569	
31st March, 1889.	124,876	39 5	39 5	3,800	2,662	1,590	2,433	650	11,135	4,399	
28th February, 1889.	118,140	78	78	2,100	3,372	1,217	2,720	600	10,009	1,367	
31st January, 1889.	109,528	77 10	77 10	1,850	2,778	1,209	3,079	800	9,716	4,293	
31st December, 1888.	104,105	77 10	77 10	2,900	2,588	2,164	2,738	1,000	11,390	5,191	
				23,800	31,751	22,484	28,488	7,650	114,173	112,095	

* Compiled by Henry R. Merton & Co.

LONDON, 16th December, 1889.

The Chili charters for the second fortnight of November were 900 tons, and the total supplies during that period were 3,565 tons. The deliveries in England and France during the same time were 4,393 tons, and the figures now compare as follows:

	15th Nov.	30th Nov.	15th Dec., 1889.
	Tons.	Tons.	Tons.
Total quantity of copper in Europe	98,246	95,884	94,606
" " afloat from Chili and Australia	3,900	4,100	4,550
	102,146	99,984	99,156
Decrease for the second fortnight, first		2,162	828
" " since 31st March, 1889.		25,720	....

lapse the total stocks visible and invisible were in round figures 180,000 tons, which includes the 118,000 tons given in Messrs. Henry R. Merton & Co.'s statistics for end of February. Since then the invisible stocks have, it is estimated, decreased by 28,000 to 30,000 tons, and the visible supply, as shown above, by about 25,000 tons. Taking the lowest figures, in place of 180,000 tons total stocks, visible and invisible in April last, there are now only about 127,000 tons, of which about 30,000 are private stocks. A large proportion of these lie in America.

Messrs. James Lewis & Son, of Liverpool, report that in view of the recent sales of the late syndicate's stock of copper, of the total quantity of copper held by the syndicate at the time of its collapse, viz.: 179,000 tons, about 69,000 tons have now been sold, leaving a balance of 110,000 tons, of which 94,500 tons appear in the public stocks in England and France, having 15,500 tons additional still held by the successors of the syndicate in France, the United States, &c., privately. By the successors we mean the four banks or banking houses who are carrying the late syndicate's stock.

It is stated that the syndicate have recently disposed of further 6,000 tons lying in this country and France. The feeling is decidedly strong, and we look for higher prices ere long.

The following are the Board of Trade returns:

IMPORTS.—JANUARY TO NOVEMBER 30.

	11 months of 1889.	11 months of 1888.	11 months of 1887.
	Tons.	Tons.	Tons.
Pyrites	14,844	14,181	13,308
Ores	18,712	17,204	12,215
Regulals	26,868	18,534	12,439
Precipitates, Spain and Portugal	27,783	30,903	26,095
Wrought and unwrought	35,176	41,666	27,040
Totals	123,383	122,488	91,097

Exports of copper, wrought and unwrought, from Great Britain.
11 months ending Nov. 30, 1889..... 66,319 tons.
" " " " " " " " 1888..... 69,148 tons.
" " " " " " " " 1887..... 62,287 tons.

LEAD IN 1889.

The lead industry has participated in a quiet way in the general prosperity. It has neither "boomed" wildly, nor has it suffered heavy depressions.

The lead production of the country has been reported by every refiner, and, with the exception of a few very small concerns, every soft lead producer in the country. The total amount of refined and soft lead produced was 190,000 tons, of 2,000 pounds each, a large increase over the production in 1888, though the lead made from Mexican ores was fully 6,000 or 7,000 tons less than in the previous year.

While our aggregate is obtained from the direct returns of all the refining and soft lead producers, it has not been possible to distribute this output with absolute accuracy among the several States. It is quite possible that Colorado or some other State may be credited with somewhat less or more than its proper amount, but the total figures, 190,000 tons, can be relied on as substantially correct.

We are indebted to the courtesy of the Director of the Mint for the imports of eleven months of all lead, copper, gold and silver brought in through the Rio Grande ports of entry, Nogales, El Paso and Laredo. A certain amount of Mexican ores came in through other ports also, and of these we have no record, but it is probable that the total amount of lead that came in in Mexican silver ores in 1889 did not exceed 22,000 tons of 2,000 pounds.

The stocks of lead on hand are much lighter than a year ago, and consist chiefly of the inheritance from the old Corwith "corner," which is estimated as follows: At New York, 8,000 tons; Chicago, 7,000 tons; St. Louis, 900 tons.

Outside of this, stocks are very light everywhere. A few of the smelters of base bullion have not returned their stocks, but we can still estimate with substantial accuracy the stock of lead in hands of smelters in transit, and at the chief markets as 25,000 tons.

The consumption of lead has been enormous, especially in the last half of the year.

The Idaho and Montana mines, with their limitless supplies of lead ore, have increased little, if any, owing chiefly to comparatively high rates of freight on ores and concentrates, but this is undoubtedly the future home of the lead production of this country, and these States will continue to increase in importance every year.

The free entry of Mexican silver-lead fluxing ores has been much lighter this year than last. The official returns for eleven months from Laredo, El Paso and Nogales—the frontier ports of entry—which have been courteously furnished us by the government, show that the actual imports of lead were 35,950,830 tons of 2,000 pounds, and of copper 246,732 pounds, adding for December about the amount received in November, and the total is 38,450,830 tons lead and 266,732 pounds copper. It is true, however, that some Mexican products enter through this port and through some other ports, so that 21,000 tons of lead, or nearly 8,000 tons less, entered from this source during the year than in the preceding year. This deficiency has been more than balanced by the steadily increasing make of our own works, which have increased 11,000 tons.

The large consumption demand and light stocks held by consumers have steadied the market under conditions that might well have been expected to cause much more violent fluctuations than actually occurred.

Early in the year the baneful effects of the Corwith corner were felt, and it was constantly feared that the stocks of lead left by that operation would come on the market: but the legal entanglements which surrounded them sufficed to retard or prevent, their sale, and a portion of that lead is still in store and unavailable.

The question of reversing the treasury ruling, which established the classification for duty purposes that a mixed or complex ore is held to be an ore of the metal having the largest market value, and under which not a little Mexican lead came in free of duty in silver ores was agitated, and it was early stated with great persistency that this ruling would be reversed and the Mexican supply be cut off. Such instructions were indeed issued by the Secretary of the Treasury as did for a time seriously lessen the entry of lead ores for treatment in this country. The effect of this was slightly and temporarily to advance the price of lead here and to diminish the price paid for "dry" silver ores, which required the bringing in of such lead ores to flux them, our home supply being insufficient. After a long and careful review of the subject the Secretary of the Treasury decided not to reverse the established rulings, and, though some arbitrary methods of valuing ores at the frontier were, and still are, enforced, the current of ore from Mexico again increased in volume toward the close of the year.

The policy of thus diverting from this country the raw material, which would contribute towards building up our metallurgical industry, and would create here a metallurgical centre for the treatment of the ores of other countries, and which would, as a consequence, greatly increase our exports of manufactured goods to those countries, has seemed to us short sighted and ill advised. Its mere suggestion and the possibility of Congress enacting such laws as will prevent the free entry of those ores has already started foreign projects for building up a formidable rival metallurgical industry in Mexico, and has induced the European (chiefly the German) smelters and refiners to take steps to secure the trade which we reject.

The consumption of lead for pipes used in protecting underground electric wires has assumed an enormous expansion, and the year closes with the smelters in full operation, and the markets practically bare of the metal.

With regard to the general question of production and consumption, it would appear that these two factors now nearly balance each other, and we have reason to believe that of the heavy stocks accumulated during the reckless speculation of the previous year not more than 10,000 tons are left. Part of this is still the subject of litigation, and part is strongly held for higher prices.

From all this it is clear that the position of the metal is sound. However, as we have previously stated, the efforts put forth to raise values from time to time only met with a moderate amount of success, and the highest point touched during the year was a little above 4c., and only on two occasions was the 4c. limit reached. It was found impossible to sustain that figure for any length of time because of the heavy offerings

which always followed an advance in quotations and which naturally induced consumers to hold off.

January opened with the quotations standing at 3'85 to 3'90, and prices afterward gradually settled down to 3'65 in the middle of February, at which point they remained for a little time, and afterward fluctuated between 3'70 and 3'77 1/2, receding again in April until 3'60 was touched, and this was the lowest quotation during the whole year. About this time the first information appeared that the Treasury were about to institute an inquiry on the Mexican ore question, and thereupon prices quickly advanced to 3'95, but quotations gave way as rapidly again to 3'70.

Subsequently, when this ore question assumed a more definite shape, the tendency became firm again, and 4c. was reached. The second half of the year thus commenced with the quotation at 4c. in July, whilst in August prices were down again to 3'80, and in the beginning of September up again to 4'05, and even 4'10 paid, after which values rapidly gave way again to 3'75 in October, and since then the quotations have ruled between 3'80 and 3'90. On the whole, the demand for consumption has been very satisfactory, and it is understood that manufacturers of pipes, etc., have been doing an enormous business. The consumption for pipes, sheets, etc., has been fully as large as in the year 1888.

It will be remembered that in 1887 a combination was formed under the name of the National Lead Trust Company, of some smelting works and also several of the most important white lead manufactures in this country to uphold selling prices and bring to an end the ruinous competition which had hitherto existed in this important industry. We understand that this combination has so far worked very satisfactorily to its members, and that prices have been sustained at a profitable level with at the same time a large output.

Of foreign lead only about 200 tons have been imported during the year, and there can be no doubt that the whole of this quantity was subsequently exported again in a manufactured condition. The stock of

PRODUCTION OF LEAD IN THE UNITED STATES.

Table showing production of lead in the United States from 1873 to 1889, with columns for Year, Arizona and Cal., Colorado, Idaho and Montana, Mo., Kan. Ill. and Wis., Nevada, Utah, Other States, and Total production.

* Including 28,636 tons from Mexico.
* Including 19,000 tons imported in Mexican ores.

AVERAGE MONTHLY PRICES OF LEAD IN NEW YORK, IN CENTS PER TON.

Table showing average monthly prices of lead in New York from 1870 to 1889, with columns for Year, Jan., Feb., Mar., Apr., May, June, July, Aug., Sept., Oct., Nov., Dec., and Year.

UNITED STATES IMPORTS AND EXPORTS OF LEAD.

Table showing United States imports and exports of lead from 1867 to 1889, with columns for Fiscal year ending June 30, Pigs and bars, Sheets, pipe and shot, Old and scrap, Not specified, Total imports, and Total exports.

foreign lead in warehouse in this city amounts only to about 400 tons, part of which is at the present time the subject of litigation in the courts.

Messrs. John Wahl & Co., of St. Louis, give us the production of pig lead in the States of Missouri and Kansas for the year 1889 as 30,700 tons (2,000 pounds), but we have received direct returns of a large amount than this. Possibly Messrs. John Wahl & Co. do not take account of Missouri and Kansas ore smelted at the large refining works. This would account for the difference between our returns.

THE LONDON LEAD MARKET IN 1889.
(From Our Special Correspondent.)

The new year opened with an improvement in the tone of this market, and prices, supported by a moderate trade and some speculative inquiry, quickly advanced from £12 17s. 6d. to £13 5s., alternating during the remainder of the month between £12 17s. 6d. and £13. During February the tendency, owing rather to absence of demand than to pressure of sales, was easier, £12 15s. being the top and £12 10s. the bottom limit; while March markets, with the exception of a temporary rally to £12 17s. 6d., passed off at a still lower range of values, mostly between £12 7s. 6d. and £12 10s. To this period of depression succeeded a firmer feeling in April, and transactions were soon recorded at £12 11s. 3d. up to £13 15s.; but as the month neared its end an increase in the quantities offered determined a relapse to £12 10s.

The ensuing month opened flat, but the tone gradually gained strength, and in the latter half a good business took place in soft foreign and refined sorts, up to £12 15s. being paid for the former.

By the close of May, however, this spurt had died away, leaving the market dull and featureless, and throughout June the lethargy deepened, the value gradually declining to £12 5s. to £12 7s. 6d., but recovering in the course of July, under the spur of a fair consumptive demand to £12 8s. 9d. for actual business. The continuance of this inquiry during the portion of August resulted in sales of soft foreign up to £12 15s., English being held for £13.

In September, deliveries against previous orders, as well as the passing of fresh contracts, were seriously hampered by the memorable strike of the London dock laborers, the various wharves being blocked by the numerous arrivals in the Thames. £12 13s. 9d. was then given for an isolated parcel, but at the close of the month £12 10s. was accepted.

After a brief spell of firmness and better demand early in October, the largely increased Australian shipments caused a temporary drop of 3s. 9d. At this period, lead was drawn under the influence of the strong speculative movement originating in the iron market, and entered upon a vigorous upward movement, which progressed steadily through the whole of November, and culminated in the first week of the present month (December), when £14 17s. 6d. was paid for a parcel of soft foreign in warehouse. Although in the main due to the attention devoted to the article by speculators, the natural influences of vigorous consumption, of the inquiry thus evoked and of the general revival of all industrial branches throughout the country, contributed largely to the improvement described. Manufacturers have been working throughout up to their full capacity, and are still full of orders; in fact, this branch seems to be in a very prosperous condition.

At the close of the first week in December there were symptoms of a slight relaxation of the strong tendency, buyers evincing less inclination to operate, and sellers, on the other hand, being abundant. The price relapsed to £13 17s. 6d., improving, however (on the withdrawal of sellers and the appearance of more inclination to buy), to £14@£14 2s. 6d., soft Spanish, to £14 10s. (nominal) for English, which are the figures at date of writing.

The following are the figures of the Board of Trade returns for the eleven months, January to November:

	1889.	1888.	1887.
Imports.....	131,482	124,468	103,011
Exports.....	49,292	43,843	40,844

TIN IN 1889.

THE COURSE OF THE MARKET.

The fluctuations in values of this metal during the past year have been of a remarkably moderate character, the difference between the highest and lowest point touched having only been a little over 2c. per pound, and these lowest and highest limits were only continued for a very few days. Early in the year it was reported that the production in the East would show a considerable increase over the preceding year, and as these reports did not originate with speculators, but came from parties of well known conservative opinions, they naturally gained a good deal of credence.

Subsequent events proved, however, that while some increase in production was taking place in certain quarters (and during the last few months the supplies from the Straits were rather larger than expected), it was not of such a character or to such an extent as to materially influence the markets, and in fact the increased output was found to be more than counterbalanced by the increased consumptive demand which affected tin along with most other metals. This increase in the consumption of tin is mainly to be attributed to the general activity in business throughout the whole of Europe and also in this country, but no doubt partly also to the fact that the French government early this spring carried a resolution prohibiting adulteration in the manufacture of tin foil. At the end of the year we find, at any rate, that the statistics of visible supplies show a small decrease, as the total stocks in Holland, England and the United States together with the quantity afloat amounted on November 30th, 1889, to 13,303 tons; end of November, 1888, to 13,705 tons; end of November, 1887, to 14,609 tons.

It is greatly to be regretted that up to the present time the production of this metal in this country can hardly be regarded as having commenced. True, encouraging reports as to the progress of affairs have from time to time been made public with regard to the prospects and operations going on at the Harney Peak mines, and these reports have even led to a rather heated discussion in various English newspapers, but nothing more than this appears to have been accomplished as yet. The work done in Virginia and North Carolina has, however, been of a much more important character, as in these States, by the instigation

of Dr. Ledoux, of this city, and under his supervision, prospecting operations have been going on for some time past, and have already resulted in proving the actual existence of tin in paying quantities; and it is to be hoped that ere long the necessary capital will be attracted into this channel.

The comparatively steady condition of the market during the year in this country no doubt had the effect of increasing the consumption of the metal for all suitable purposes. January commenced with quotations standing at 22½ spot and 22¼@¾ futures, and thereafter values gradually settled down with very slight fluctuations, until at the end of April prices stood at 20½ spot and 20¾ futures, and by the month of July the lowest point of the year was reached, with quotations marked at 19½ for both spot and futures. During the first six months of the year the quotations for spot tin usually ruled a fraction lower than for futures, but as the second half advanced this state of things was completely reversed. In August values commenced to improve again, and at the end of that month the quotations were: spot, 20¾; futures, 20¾. About this time a very important movement took place in spot tin prices, which rose within a few days to 21½, and by the middle of September touched 21¾@22, while deliveries for two or three months ahead could readily be bought at 20½.

This unusual condition of affairs resulted from the serious trade disputes and strikes in London, in which the dock companies and their men were concerned, and which led to an almost total interruption of shipments from the London docks for from four to six weeks. As the greater portion of the tin coming to this country is shipped from the east *via* London, and transhipped at the latter port to the United States or actually bought for shipment from London, it is obvious that the regularity of our supplies is greatly dependent on things working in a smooth condition in London. In the early part of the year importers were loud in their complaints that the metal could not be brought over to leave even a moderate margin of profit to them, and in consequence of this discouragement the stocks had dropped down to a low point, so that when supplies were actually cut off suddenly and unexpectedly, an advance in prices was only a natural consequence.

It also became known that some parties were in the unfortunate position of having oversold themselves, and thereupon an attempt was made to bring about a "corner" in September tin. The "bears," however, proved themselves too smart to be caught in this manner, and they covered themselves by buying what they could here, and also by rushing supplies over via Liverpool, and by their activity in carrying out these operations there is no doubt they escaped very serious losses. When the London strikes came to an end values began to give way again, and by the beginning of October spot tin had relapsed to 20¾, with the quotation for futures standing at about 20½.

It soon became evident that the shipments arriving from Europe were inadequate to meet the demand for the fall trade, which was much heavier than for some years previous, and thereupon prices gradually stiffened again until the highest point was touched in the beginning of November, when 22½c. was readily paid for spot and near deliveries. This high level of values naturally attracted larger supplies from the other side, and while for quite a fortnight prices were firmly sustained at about 22c., they subsequently eased off a little, and at the end of November the quotations stood at 21¾c. spot and 21¾c. futures. During the whole period when the above named comparatively high prices were being paid for spot tin, later deliveries could be bought at from ¼c. to ½c. below the spot price, which emphatically demonstrated the extreme scarcity of supplies existing in the market for a long time. In December importations became larger, and a good many parcels having in the meantime got into the hands of rather weak speculators prices commenced to slowly decline again until, at the close of the year, 21½ to 21¼ was reached for both spot and futures. As for the past few weeks the London market has ruled above the parity of values on this side, it is not likely that for the next few months arrivals will be large, and consequently a scarcity of spot supplies may be again experienced early in the new year.

PRICES OF STRAITS TIN IN NEW YORK.

Year.	Jan.	Feb.	Mar.	Apl.	May.	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
1885....	16½	17 45	17½	17 80	18½	20½	22½	21¼	20 95	20 95	20 65	21	19½
1886....	20½	20 70	20 80	20 85	21 30	22¼	22¼	21¾	22 20	22¼	22 40	22¼	21 65
1887....	22 30	22½	22 55	22½	22 95	23¼	23 35	23 30	23½	25½	31 05	30½	24 35
1888....	36 95	36 95	36 70	32 95	21 95	18 05	19¼	20¾	22 45	23 35	22 70	22 10	36 20
1889....	21½	21½	21 30	20½	20½	20 30	19½	20 20	21 30	20 80	21¼	21 30	21 80

THE LONDON TIN MARKET IN 1889.

(From Our Special Correspondent.)

After declining toward the close of 1888 to £96 15s. spot cash, there was a gradual recovery in the value of Straits tin during the final week until £100 5s. spot cash to £101 3 months was reached; but the publication of the statistics for December, showing an increase of over 1,200 tons in the European supplies, spot and afloat, exerted a depressing influence, under which the new year opened, and the value rapidly receded to £97 17s. 6d. The course of the market during the greater part of the month of January was steadily downward, the lowest points touched in the fourth week being £96 15s. spot, English tin following the movement, and being held at this time for £99 10s. common ingots, whilst Australian fetched a premium of 5s. to 10s. over Straits. The Banca sale on January 31st realizing the satisfactory average price of 58½ fl., the effect on our market was seen in a more active tone, resulting in sales up to £98 12s. 6d. spot Straits. Statistics for the month showed a further slight increase.

February was relieved by no feature of interest, the business passing being of a restricted nature and prices experiencing a further relapse in the absence of any stimulus in the shape of improved demand. The third week witnessed the turning point in the downward move, the value rising—after £93 12s. 6d. had been taken for spot—to £95 17s. 6d. at the close, notwithstanding the addition of 1,200 tons to the statistics. Toward the close of March the utter collapse of the Copper Syndicate caused tin (which had in the earlier part of the month been steady at a range of £94 5s. to £95) to drop suddenly to £92 10s.; but this was at once succeeded by a rally to £94, Australian and 3 months Straits being £1 higher and English standing £2 10s. higher. April, under the influence of the first reduction in European supplies during the present year, opened firm, with an advance to £95 2s. 6d., but

this stimulus, drawn from statistics, was but short-lived, and the price gave way to £91 17s. 6d., and, after a momentary rally, still further to £89 15s. Early in May the heavy shipments from the Straits Settlements to an already overstocked market induced great eagerness to sell, and a further decline to £89 5s. was the immediate consequence. After recovering to £93 2s. 6d. and relapsing to £91 12s. 5d., the month closed with sharp cash at £92. The figures for May showed an improvement of 1,040 tons, but the effect on the market was next to nil, and after a very irregular course during the first three weeks of June, with fluctuations between £91 15s. and £90 7s. 6d., there occurred in the closing week a rapid fall to £87 17s. 6d., followed by a partial rally.

July variations moved between £88 and £90 10s. for spot, with forward at a premium of 7s. 6d. to 10s., excepting for a brief interval toward the end of the month when forward was at a discount. The perpetual ebb and flow of the market and the apparent lack of confidence in its near future exhibited by speculators, combined with the inactivity of consumptive demand, sufficiently accounts for the absence of any feature of interest. August brought with it no tangible change in the aspect of things, the course of the article being shifty and transactions comparatively unimportant. After receding to £88 12s. 6d., the value twice rose to £91 10s. on the first occasion, owing to shipments from the Straits turning out 1,000 tons less than anticipated, and in the second instance, in consequence of a trifle more animation in the demand.

The dock laborers' strike in September, and the consequent delay in shipments, caused an acute squeeze in America, where spot values ran high. In consequence of the support derived from the demand thus created, September values ranged in the main above those of August, £89 10s. being the lowest and £91 15s. the topmost limit. The market continued, however, to be at the mercy of every slight variation in the demand, receding or advancing in proportion as sellers or buyers for the moment predominated. When October opened the reports of firmer markets in America and the Straits caused a sympathetic advance in our market from about £88 12s. 6d. to £91 2s. 6d. spot cash, and later on, under the stimulus of a good Chinese demand in the Straits, £92 12s. 6d. was attained. In the last week of this month the excitement bred of the speculation, which, originating in the pig-iron market, spread to most other metals, exerted for a brief space a powerful influence also on tin, which sprang at a bound from £92 7s. 6d. to £98 10s. and £99 spot cash, the volume of speculative business done being very considerable. This extraneous influence, however, soon lost its hold on tin, copper offering greater attractions to speculators, and tin quickly fell to £96 15s., and early in November to £95 17s. 6d., when the coincidence of a demand for spot tin, with apprehensions of a serious recurrence of strikes among lightermen and dock laborers, impelled the value up to £98 spot cash, America being still the leading buyer. Three months Straits was obtainable at a discount of 5s. An improvement of 7s. 6d. was succeeded by a drop of nearly £3 in the week ending November 16th, the subsequent range being from £95 10s. to £96 15s.

During the first fortnight of December the scarcity of spot tin twice caused an advance to from £98 2s. 6d. to £98 5s., three months tin being neglected, and the difference between the value of the two positions increasing considerably. The present prices are, for spot, £97 10s. to £97 15s., and for forward £96 to £96 2s. 6d. From the Straits we hear of increased production, but this is not expected to affect shipments, at least till after Christmas.

The following figures, showing the visible supply of tin in London, Holland, and the United States of America, including quantity afloat, is taken from Messrs. Henry R. Morten & Co.'s report:

1889.	Tons.	Prices.	1889.	Tons.	Prices.
January 1.....	5,879	100 00	August 1.....	13,903	89 10
February 1.....	16,042	97 10	September 1.....	14,939	91 5
March 1.....	17,627	95 00	October 1.....	14,944	89 10
April 1.....	15,263	93 15	November 1.....	14,480	97 00
May 1.....	15,767	89 15	December 1.....	14,802	96 5
June 1.....	14,727	92 00	January 1, 1890.....	.....	.....
July 1.....	14,598	89 10			

For twelve months ending Jan. 30, 1889—					
1889.	1888.	1887.	1886.	1885.	1884.
tons.	tons.	tons.	tons.	tons.	tons.
Shipments from Straits to London.....	16,957	19,400	16,581	11,773	11,773
" " Australia.....	5,617	6,623	5,742	6,370	6,370
" " Straits to America.....	7,925	3,320	5,095	5,211	5,211
" " Australia.....	600	400	1,175	1,225	1,225
Deliveries of tin in London.....	18,245	18,181	14,144	16,173	16,173

BOARD OF TRADE RETURNS.			
Imports, 11 months ending Nov. 30:		Exports, 11 months ending Nov. 30:	
Tons.	Value.	Tons.	Value.
From Straits settlements.....	19,347	Foreign.....	15,995
" Australia.....	6,320	English.....	5,009
" Other countries.....	1,569		
	27,236		21,004

ANTIMONY.

THE COURSE OF THE MARKET.

Although at the beginning of the present year prices for this metal stood at what was regarded as a fairly high level, with Cookson's brand quoted at 13 cents, and Hallett's at 11 cents, the tendency of values has continued during the whole of the year in a decidedly upward direction. In the first four months of the year prices slowly and steadily advanced, until at the end of April Cookson's stood at 13½ cents and Hallett's at 12 cents.

After that date the market assumed a remarkably strong appearance, and prices advanced with great rapidity, owing to two important causes, the first being the continued extreme scarcity of suitable ores, which seriously hampered smelters and rendered it exceedingly difficult for them to secure their necessary supplies of raw material, and in the second place, about the middle of the year the German and French governments gave out very large orders for the metal. Thereupon a continued and important advance in values set in, the result almost exclusively of orders for bona fide trade purposes, as speculative operations are believed to have had little or no influence on the enormous increase in quotations. By the end of June prices stood at 16½c. for Cookson's and 15c. for Hallett's; end of Au-

gust, 18½c. for Cookson's and 16½c. for Hallett's; end of October, 20½c. for Cookson's and 18½c. for Hallett's; while the beginning of December witnessed quotations at the highest point during the whole year, viz., 32c. to 33c. for Cookson's and 21c. to 21½c. for Hallett's. The phenomenal advance in Cookson's was mainly due to the absolute exhaustion of stocks; but some shipments having subsequently arrived, the quotation declined again to 26c. to 27c., at which it now stands. Notwithstanding this great advance in prices, the demand on the part of the consumers has continued satisfactorily all along, and as it may be naturally concluded that no consumer is now buying more than he actually requires for current use, and orders continue to come in very steadily, while the English producers are reported to be sold out for some months to come, it does not appear probable that prices will soon give way. Some new discoveries of antimony ore have recently been made in this country, but up to the present the production of star antimony is quite insignificant.

THE LONDON ANTIMONY MARKET IN 1889.

(From Our Special Correspondent.)

The course of this metal, which during 1888 fluctuated between £50 and £38 and which at the opening of the present year, at £44 to £45, has been distinguished from that of all other metals by the extent and uninterrupted progress of the advance in its value, and which must be mainly ascribed to the great scarcity of raw material, which has made itself felt and to an improved demand, America especially having absorbed large quantities. At the end of January the price was £45 to £47, first hands asking £50; by the end of February nothing was obtainable under £48 to £50, while from end March to early May £49 was the lowest limit. The pace of the advance then gathered momentum, £57 to £60 being reached by the end of the latter month, and the subsequent monthly stages being £62 to £63 by end of June; £63 to £65 end July; £66 to £67 end August; £67 10s. to £68 10s. end September; £70 to £72 end October, and £74 to £75 end November, the last-named price ruling also during the first week of December. At the date of writing (December 16th) the value is £75 to £76. Notwithstanding this striking increase in the value, there has been no falling off in demand; on the other hand, production tends rather to decline, the scarcity of ores and crude having increased.

No statistics of this metal are available.

THE NICKEL MARKET IN 1889.

This article has excited more attention this year than formerly, demand having grown more important in consequence of the increasing application of nickel to various purposes, such as alloying with steel, the breaking strain of which it is said to greatly augment.

The price remains stationary at 2s. per pound in England, but during the last few months the article was scarcely obtainable at all.

The most important event of the year has been the development of the great Sudbury copper-nickel mines which are quite capable of supplying the world's present demand for this metal. It seems to us that the time cannot be far distant when some less expensive method of separating copper and nickel will be found that will permit of nickel being sold at about half its present price. Then the uses of the metal will increase rapidly.

THE PRODUCTION OF CALIFORNIA QUICKSILVER MINES.

Special Report to the Engineering and Mining Journal by J. B. RANDOL.

The following table shows the production of the several mines for six years past:

Mines.	1884.	1885.	1886.	1887.	1888.	1889.
New Almaden.....	20,000	21,400	18,000	20,000	18,000	13,100
" " Aetna.....	2,931	1,309	3,478	2,694	950	950
" " Napa Consolidated.....	1,376	2,197	1,769	2,880	4,065	4,500
" " Great Western.....	3,292	3,469	1,949	1,446	625	550
" " Sulphur Bank.....	890	1,296	1,449	1,890	2,164	2,150
" " New Idria.....	1,025	1,144	1,406	1,490	1,320	1,000
" " Great Eastern.....	332	446	785	689	1,151	1,350
" " Redington.....	831	385	409	673	126	800
" " Guadalupe.....	1,179	35	—	—	—	—
" " Bradford Consolidated.....	—	—	—	1,543	3,848	1,700
" " Various.....	7	392	786	455	992	500

Total flasks.....	31,913	32,073	29,981	33,760	33,250	25,650*
Lowest price per flask.....	\$26.00	\$28.50	\$32.00	\$36.50	\$37.00	\$40.00
Highest price per flask.....	35.00	32.00	39.00	48.00	48.00	50.00
Average per flask.....	30.50	30.25	35.50	42.25	42.50	45.00

Total value at average price, \$975,000, \$970,000, \$1,060,000, \$1,425,000, \$1,415,000, \$1,154,000.

*The total production for 1889 is a near approximation.

The monthly production and highest and lowest prices prevailing during the past year have been as follows:

Month.	Monthly production. Flask.	Highest price per flask.	Lowest price per flask.
January.....	2,270	\$43.00	\$41.50
February.....	1,740	42.00	41.50
March.....	2,125	41.50	40.00
April.....	2,134	41.00	40.00
May.....	1,840	45.00	41.00
June.....	2,225	50.00	46.50
July.....	2,021	47.50	46.00
August.....	2,060	47.50	46.00
September.....	2,030	47.50	46.00
October.....	2,440	47.00	46.50
November.....	2,460	48.00	46.00
December.....	2,305*	48.00	47.00

*December product estimated.

The total production for 1889, 25,650 flasks, compared with the previous year, shows a decrease of 7,600 flasks, and is the smallest quantity in any year since 1873, when the production was 27,642 flasks.

New Almaden's production shows a loss of 4,900 flasks, and is its lowest yield since 1874, when its production was 9,084 flasks.

Napa Consolidated retains its position of second highest producer, and increased its output to 4,500 flasks, a gain of 435 flasks.

Aetna was dropped off the list. Bradford, the third in rank last year,

produced only 1,700 flasks, a loss of 2,148 flasks. Great Western produced 550 flasks, a loss of 75 flasks. Sulphur Bank also shows a slight decrease, 2,150 against 2,164. New Idria had a like misfortune, 1,000 against 1,320. Great Eastern, an unimportant increase, 1,350 against 1,320. Redington, in a last expiring effort, turned out 800 against 123. And various odds and ends of mines gathered 500 against 992 in 1888.

This decrease all along the line (except Napa Consolidated) emphasizes the poverty of the mines; the higher price of quicksilver has failed to arrest the decline in production, and the future outlook is far from hopeful.

Still higher prices must prevail in 1890; and this industry must be protected by a liberal duty—at least ten cents per pound—otherwise we may look for a further decline in production, to a point where the output will be insufficient to pay costs; and then—extinction.

The quotations for Spanish quicksilver in London, as shown by Messrs. Rothschild's prices monthly, were as follows:

January, £9 10s.; February, £8, £7 10s., £8, £8 10s.; March, £7 10s., £7 15s.; April, £7 12s. 6d., £7 15s., £8; May, £8 5s., £8 10s.; June, £8 15s., £9, £9 5s.; July, £9 10s., £9 15s.; August, no change; September, no change; October, £9, £9 5s.; November, £9 10s., £9 15s.; December, £9 15s.

THE SPELTER INDUSTRY IN 1889.

The total production of spelter in the United States in 1889 was 59,500 tons of 2,000 pounds.

We have great pleasure in acknowledging the courtesy shown us by nearly every producer of spelter in this country. Our returns are therefore nearly full and accurate, except the necessary estimates for December, or a portion of that month.

The market has been in a very healthy condition during the whole of the year, and the only time when there were any indications of weakness in prices was early in the spring, when large quantities of ore were being mined and put on the market. In January, the quotation stood at 5 to 5½ delivered in New York, from which point a gradual decline took place until 4.62 to 4.60 was touched in April; but from that time (with the exception of an occasional slight relapse) values have steadily advanced. By the beginning of June prices had again come up to 5c., and at the end of that month the quotation stood at 5.15 to 5.20 and we close the year at the highest point, viz., 5.40 to 5.45.

Consumption has steadily increased, and the greater part of such increase may be attributed to the great activity in the galvanizing trade, which has been in a very prosperous condition throughout the whole of the year. So large has been the demand, that on several occasions during the year some of the galvanizing works have been compelled to shut down for a time for want of the necessary supplies of metal. Without doubt

THE WORLD'S PRODUCTION OF ZINC, IN TONS OF 2,240 LBS.

	United States.	Belgium.	Silesia.	Great Britain.	France & Spain.	Poland.	Austria.	Total.
1880.....	20,749	98,830	64,450	22,000	15,000	4,000	2,520	227,558
1881.....	30,000	110,989	66,497	24,419	18,358	4,000	4,270	258,533
1882.....	30,148	119,193	68,811	25,581	18,075	4,000	5,094	271,302
1883.....	32,921	123,891	70,405	28,661	15,671	3,733	4,672	278,954
1884.....	34,414	130,522	76,116	29,259	15,341	4,164	4,470	294,286
1885.....	36,339	129,754	79,623	23,069	14,847	5,019	3,890	292,571
1886.....	38,072	129,020	81,630	20,730	15,305	4,145	3,760	292,662
1887.....	44,947	130,995	81,375	19,319	16,028	3,580	3,566	299,810
1888.....	49,922	133,245	83,375	26,633	16,140	3,785	3,827	316,927

AVERAGE MONTHLY PRICES OF SPELTER IN NEW YORK, IN CENTS PER POUND.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
1875..	6.56	6.46	6.35	6.75	7.20	7.20	7.30	7.17½	7.17½	7.27½	7.27½	7.00	7.00
1876..	7.50	7.62½	7.08½	7.80	7.87½	7.87½	7.87½	7.12½	8.06	8.68½	8.49½	8.43½	7.25
1877..	6.37½	6.56	6.43½	6.31	6.12½	5.99½	5.74½	5.85	5.81	5.80	5.74½	5.62½	6.08
1878..	5.62½	5.43½	5.43½	5.12½	4.81	4.43½	4.62½	4.68½	4.81	4.66	4.62½	4.31	4.88
1879..	4.37½	4.51	4.49½	4.50	4.37½	4.24½	4.56	5.21	5.81	6.18½	6.06	6.12½	5.03½
1880..	6.18½	6.56	6.62½	6.31	5.81	5.31	4.93½	5.06	4.93½	4.93½	4.77½	4.70	5.51
1881..	5.06	5.18½	4.93½	4.93½	4.93½	4.87½	4.87½	5.06	5.12½	5.31	5.68½	5.93½	5.24½
1882..	5.87½	5.68½	5.49½	5.37½	5.43½	5.31	5.24½	5.31	5.24½	5.24½	4.99½	4.68½	5.32½
1883..	4.56	4.56	4.68½	4.67½	4.62½	4.49½	4.40	4.35	4.45	4.40	4.38½	4.36	4.49½
1884..	4.28½	4.32½	4.50	4.57½	4.52½	4.52½	4.50	4.57	4.56	4.47½	4.35	4.12½	4.44½
1885..	4.31	4.27½	4.21	4.21	4.17½	4.05	4.25	4.50	4.56	4.56	4.52½	4.52½	4.34½
1886..	4.40	4.42½	4.55	4.55	4.50	4.37½	4.35	4.35	4.32½	4.27½	4.27½	4.42½	4.40
1887..	4.65	4.55	4.47½	4.45	4.55	4.55	4.55	4.55	4.50	4.52½	4.77½	5.40	4.62½
1888..	5.42½	5.35	5.10	4.85	4.65	4.55	4.55	4.75	4.97½	5.05	4.90	4.87½	4.91
1889..	5.00	4.95	4.75	4.75	4.97½	5.10	5.20	5.17½	5.10	5.20	5.40	5.02½	5.02½

IMPORTS AND EXPORTS OF ZINC.

Fiscal year ending June 30	Imports.				Exports.					
	Blocks or pigs.	Sheets.	Total value impts.	Ore or oxide	Plates, sheets, pigs.	Total Value exp'ts				
	Pounds.	Value.	Pounds.	Value.	Cwt.	Value	Pounds	Value		
1867.....	5,752,611	\$256,366	5,142,417	\$311,767	\$569,968	3,676	\$32,041	312,227	\$30,587	\$62,628
1868.....	9,327,998	417,273	3,557,448	203,883	622,779	8,344	74,706	1,022,699	68,214	142,920
1869.....	13,211,575	590,332	8,306,723	478,646	1,071,061	.....	65,411	.....	.....	65,411
1870.....	9,221,121	415,497	9,542,687	509,860	947,053	15,286	81,487	110,157	10,672	92,159
1871.....	11,159,040	508,355	7,646,821	409,243	913,964	9,621	48,292	76,381	7,823	56,115
1872.....	11,802,247	522,524	10,704,944	593,885	1,175,077	3,686	20,880	62,919	5,726	26,666
1873.....	6,339,897	221,399	11,122,143	715,706	1,103,918	294	2,304	73,953	4,656	6,960
1874.....	3,593,570	203,479	6,016,835	424,504	676,287	2,550	20,087	43,566	3,612	23,649
1875.....	2,034,252	101,766	7,320,713	444,539	572,635	3,083	20,649	38,090	4,245	25,904
1876.....	947,322	56,082	4,611,330	298,308	372,817	10,178	66,259	134,542	11,651	82,243
1877.....	1,205,894	63,250	1,341,333	31,815	147,561	6,428	34,488	1,419,922	115,122	50,708
1878.....	1,270,184	57,753	1,255,620	69,381	132,026	16,050	83,831	2,545,320	216,580	300,978
1879.....	1,419,791	53,294	1,111,225	53,050	109,718	10,660	40,309	2,132,949	170,654	211,053
1880.....	8,092,620	371,920	4,069,310	210,230	585,721	13,024	42,036	1,368,302	119,264	161,300
1881.....	2,859,216	125,457	2,727,324	129,158	262,218	11,390	16,405	1,491,786	133,650	149,378
1882.....	18,408,391	736,964	4,413,042	207,032	948,936	10,904	13,796	1,489,552	124,638	138,374
1883.....	17,067,211	655,503	3,309,239	141,823	802,932	3,045	11,509	852,333	70,981	83,224
1884.....	5,869,738	208,852	952,253	36,120	249,767	4,780	16,685	126,043	9,576	30,927
1885.....	3,515,840	113,268	1,839,860	64,781	180,103	6,840	22,824	101,685	7,270	35,085
1886.....	3,616,462	115,813	1,037,951	38,359	164,822	8,740	24,951	770,558	64,410	102,110
1887.....	7,432,490	240,535	757,245	26,068	275,319	1,209	44,152	365,199	25,403	83,109
1888.....	4,880,730	171,421	651,672	23,966	203,909	4,704	15,976	48,616	3,231	34,577
1889.....	3,059,242	114,539	1,066,823	42,144	171,454	10,752	25,334	79,867	4,872	54,038

an increase in demand has also to be attributed to the requirements for brass making, and the manufacture of sheets was also very good up to the last six weeks or so, when the prices for the manufactured article did not respond to the advance in raw material.

Although spelter prices in this country may now be regarded as at a moderately high level, they are still comparatively much lower than values now ruling in Europe, where this metal has been exceedingly scarce for some months past, and the London quotations have lately stood at about the parity of 5.12 to 5.15 delivered in London. Owing to the existing import duty of 1½c. per lb. on foreign spelter brought into the United States, importations (which some years ago were on rather a large scale) have now almost entirely ceased, and the total quantity of foreign spelter, imported during the past year, only amounted to about 800 tons, the whole of which was undoubtedly exported again in a manufactured state, by which means the duty originally paid would be returned again as "drawback." Unless all signs prove deceptive, the consumptive demand for spelter is likely to increase still further.

PRODUCTION OF SPELTER IN THE UNITED STATES, 1882 TO 1887, INCLUSIVE, BY STATES

Year.	Illinois.	Kansas.	Missouri.	Eastern and Southern States.
1882.....	18,201	7,366	2,500	5,698
1883.....	16,792	9,010	5,730	5,340
1884.....	17,504	7,859	5,230	7,861
1885.....	19,427	8,502	4,677	8,082
1886.....	21,077	8,932	5,870	6,762
1887.....	22,279	11,955	8,660	7,446
1888.....	22,443	10,442	13,465	9,561
1889.....	24,000	11,000	12,500	12,000

THE LONDON SPELTER MARKET IN 1889.

(From Our Special Correspondent.)

At the close of 1888, the value of good ordinary brands of spelter was £18 2s. 6d. but at the commencement of the present year the confirmation of the prolongation of the convention among Silesian, Belgian and English producers for the restriction of output for a period of 3½ years from June, 1889, caused a transitory advance in price to £18 10s. The latter half of January witnessed the commencement of a retrograde movement which continued, broken only by trifling variations, throughout February and March, only touching its lowest limit in the first week of April, when the value stood at £16 15s. to £17. This proved to be also the lowest limit of the year. It was followed by a firmer tone, the market being upheld by a moderate but steady demands which improved materially after the smash of the copper syndicate, resulting in the cheapening of the principal ingredient of brass and yellow metal, and brought about a revival of these two important industries, the demand proceeding from which forms one of the main supports of the spelter market.

During April and early May the price of G.O.Bs. ranged between £17 17s. 6d. and £17 12s. 6d., but toward the close of May the extensive coal strikes in Germany and the consequent apprehensions of a scarcity of metal gave an impulse to demand and induced an advance to £18 2s. 6d., sheet zinc and yellow metal being simultaneously in good request. After a very slight relapse early in June, the upward movement entered upon a period of vigorous development, stimulated by the steadiness of demand and especially by the comparative dearth of spot stuff, producers having in several cases sold for some months ahead.

Each week in July, August, and first half of September was marked by a fresh stage in the advance, the value having by mid-September reached £22 5s. to £22 10s. These higher prices had, however, ultimately the effect of appreciably restricting transactions, which were confined mainly to the covering by consumers of their immediate wants. By the end of September prices had given way to the extent of £1 per ton. The October range was mainly between £22 2s. 6d. and £21 15s., but in the last of that month a strong dealers' inquiry impelled values up to £22 10s. to 12s. 6d., and despite the dullness in galvanizing circles, the advance continued during November, being reinforced by good buying on the part of brass founders and sheet zinc makers. At the end of November G.O.Bs. stood at £23 to £23 5s., and in the following week the high limit of £23 10s. to £23 12s. 6d. was attained, an advance of 39 per cent. upon the lowest price of the year, or 63 per cent., upon the lowest point of 1888, viz., £14 10s. The advance has continued in the interval, some stimulus being drawn from the fact that galvanizers have at length begun to purchase. Though the chief cause is traceable to the scarcity of the article, which is now held for £24 to £24 5s. ordinaries, and £24 5s. to £24 10s. specials.

The Board of Trade returns for the eleven months, January to November are as follows:

	1889.	1888.	1887.
Imports (raw spelter).....	50,147	54,787	48,835
Exports (raw and manufactured).....	6,232	5,427	9,271

RUSSIAN MINERAL PRODUCTION IN 1887, SPECIALLY REPORTED TO THE ENGINEERING AND MINING JOURNAL BY THE COURTESY OF MR. W. ABEGG.

	Kilogrammes.	Metric tons (2,204 pounds).
Gold.....	34,857.44	15,378.44
Silver.....	4,407.86	1,999.86
Platinum.....	.....	.....
Lead.....	.....	.....
Copper.....	.....	.....
Tin.....	.....	.....
Zinc.....	.....	.....
Quicksilver.....	.....	.....

Gold Production in Queensland.—The production of gold in Queensland for the nine months ended September 30th amounted to 557,570 ounces, against 481,643 ounces for the whole year 1888. Rockhampton, in which district the famous Mount Morgan mine is situated, headed the list with 272,336 ounces; Charters Tower contributing 104,270 ounces; Gympie, 87,326 ounces; Croydon, 42,164 ounces; Etheridge, 13,394 ounces; Ravenswood, 11,499 ounces; Eidsvold, 10,892 ounces; other fields, below 10,000 ounces.

THE WORLD'S PRODUCTION OF GOLD AND SILVER.

[Kilogram of gold, \$664.60. Kilogram of silver, \$41.56. At coining rate in United States silver dollars. 1 kilog. = Troy ounces.]

Table showing the world's production of gold and silver from 1835 to 1888, categorized by country and year. Columns include Country, Year, Gold (Kilos, Dollars), and Silver (Kilos, Dollars).

a G. W. Griffin, United States Consul at Sydney, reports the gold production of Australasia for 1886 at \$25,883,884, and for 1885 at \$27,361,603. b Estimate of the Bureau of the Mint, based upon the production for 1885. c Estimate same as officially communicated for 1886. d Estimate of Dr. Soetbeer for 1888. e Estimate of the Bureau of the Mint, based upon the production for 1883. f Based upon official statistics of exports and coinage for 1887. g Exports of gold and silver through the custom-house at Rio de Janeiro. h Production of the two millions of "El Callao Mining Company." i Estimate of the Bureau of the Mint, based upon the exports of bullion and ore officially reported for 1886. k Estimated same as officially communicated for 1887. l Production of government mines for 1887 and private mines for 1886. m Imports into United Kingdom from West and South Africa, extracted from board of trade returns by A. Sauterbeck, F.S.S. n The product credited Germany is for silver the product of the mines of Germany, including the value of some gold in the ore. The full value of the gold product of the German smelting works is credited, although nearly all of it was obtained from imported ores and copper matte, for the reason that such gold occurs in desultory quantities, and it is believed was not reported to this Bureau by exporting countries. o Imports of gold into Great Britain and British India from China. p Estimated same as officially communicated for 1888. q Rough estimate. r Unofficial reports.

RATIO OF SILVER TO GOLD EACH YEAR SINCE 1837. [NOTE.—From 1837 to 1832 the ratios are taken from Dr. A. Soetbeer; from 1833 to 1873 from Pixley and Abell's tables, and from 1873 to 1888 from daily cablegrams from London to the Bureau of the Mint.]

Table showing the ratio of silver to gold each year since 1837, with columns for Year, Ratio, and Year.

COINAGES OF NATIONS—CALENDAR YEARS (Except for India and Japan for the year 1885).

Table showing coinages of nations in calendar years from 1836 to 1888, categorized by country and year. Columns include Country, Year, Gold, and Silver.

THE PRICE OF SILVER SINCE 1833.

The following table shows that in the past year the lowest price of bar silver in London was 41 1/8%, being within 1/8% of the lowest price on record, viz., 41%, which was the lowest point reached in 1888. The highest price of the year, 44%, was touched at the beginning of December, and was within 1/4% of the highest price of 1888, 44 1/4%, yet the true average taken by days was a little below that of the previous year, being 42 1/4%, against 42 1/2%. The value of a fine ounce in the United States at the average quotation, .93043, was therefore the lowest on record. We are indebted to the Director of the Mint for the five following tables:

PRICE OF BAR SILVER IN LONDON PER OUNCE BRITISH STANDARD, 925 FINE, AND THE EQUIVALENT PER OUNCE, 1000 FINE, IN UNITED STATES GOLD COIN.

Table showing the price of bar silver in London per ounce British standard, 925 fine, and the equivalent per ounce, 1000 fine, in United States gold coin, from 1833 to 1891.

* Rupee calculated at coining rate, \$0.4737. † Fiscal year 1889. ‡ Silver florin calculated at coining rate, \$0.482. § Fiscal year 1889. ¶ Silver ruble calculated at coining rate, \$0.7718.

TOTAL COINAGE OF THE UNITED STATES MINTS FROM THEIR ORGANIZATION.

Table with 10 columns: Calendar year, Gold, Silver, Minor coins, Total, and 5 columns for 1842-1888. Rows list years from 1793 to 1841 and 1842 to 1888 with corresponding coinage values.

PRODUCTION OF GOLD AND SILVER IN THE UNITED STATES FROM 1792.

[The estimate from 1792 to 1873, inclusive, is by R. W. Raymond, Commissioner, and since by the Director of the U. S. Mint. Silver values are at the coinage rate of \$1.29-29 per fine oz.; gold value, \$20.67 per fine Troy oz.]

Table with 6 columns: Years, Troy ounces, Gold, Troy ounces, Silver, Total. Rows list years from 1792 to 1888 and a total row.

VALUES OF FOREIGN COINS, JANUARY 1, 1890.

Table with 5 columns: Country, Standard, Monetary unit, Value in U. S. gold, Values of coins. Rows list countries like Argentina, Austria, Belgium, etc., with their coin standards and values.

IMPORTS OF ORE AND BULLION FROM MEXICO THROUGH THE PORTS OF LAREDO, EL PASO, AND NOGALES, IN THE YEAR 1889 (11 MONTHS OFFICIAL RETURNS, DECEMBER ESTIMATED).

Table with 6 columns: Laredo, El Paso, Nogales, December (Estim't'd), Total. Rows list items like Ore, Lead, Copper, Silver, and Gold with their respective import values.

* Gold the nominal standard; silver practically the standard. † Coined since January 1, 1886. Old half-imperial = \$3.986.

MINERAL PRODUCTS OF THE UNITED STATES, 1882 TO 1887.

Main table showing mineral products from 1882 to 1887. Columns include Quantity and Value in Dollars for each year. Rows list various products like Pig-iron, Silver, Gold, Copper, Lead, Zinc, etc.

Metallic Products of the United States.

Table comparing Metallic Products in 1888. Columns: Quantity, Value, and another set of Quantity, Value. Products include Pig iron, Silver, Gold, Copper, Lead, Zinc, Quicksilver, Nickel, etc.

Non-metallic mineral products of the United States.

Table comparing Non-metallic mineral products in 1888. Columns: Quantity, Value, and another set of Quantity, Value. Products include Bituminous coal, Anthracite, Building stone, Lime, etc.

Résumé.

Summary table showing Total metallic products, Total non-metallic products, and Grand total with their respective values.

REVIEW OF THE IRON MARKET IN 1889.

While during the early part of 1889 there were periods of uninterrupted and even increasing depression in the iron trade, the year, on the whole, must be regarded as probably the most prosperous since 1879, though the year 1888 was also a satisfactory one almost to its close.

Not until the increased consumption, owing, no doubt, in a measure, to the low prices ruling, began to make itself felt, did signs of improvement appear. Shortly after the 1st of June greater activity in all departments became observable, and since then a review of the trade is simply a narration of a continued gain in strength and advance in prices.

and a liberal demand, all of which affords a most encouraging outlook for the future.

MONTHLY AVERAGE PRICES, NEW YORK MARKET.

Table showing monthly average prices for various iron products from January to December. Columns include month names and price values.

Pig Iron.—The year opened with a light demand. Consumers bought from hand to mouth and could not be induced to anticipate future requirements. The possibilities of production, as demonstrated by the experience of the two preceding years, had created an impression in trade circles that only an extraordinary demand could bring about a scarcity; while, in reality, as the ENGINEERING AND MINING JOURNAL has frequently stated, the surplus supply in the entire country rarely exceeds a few weeks' consumption.

With the then existing feeling, however, producers and sellers had little control of the market. The nominal opening prices were \$18 for No. 1 X foundry, \$17 for No. 2 X, and \$16 for gray forge. That these quotations were nominal was generally understood and in February the Thomas Iron Company was forced by Southern competition to lower its prices for gray forge to \$15.25. In March an improvement appeared in the Western market, but the demand in the East did not respond. In May the Thomas Company openly acknowledged the weakness of the market by reducing its prices a dollar and a half a ton to \$16.00 for No. 1 X foundry. It was generally understood at the time that this announcement was intended to force a reduction in railroad freights on ore, coal and iron and also as a notice to the Southern furnaces that their lowest prices would be met here. The company accepted very few orders at these prices.

An improved demand for consumption of finished iron, due partly to the need of extensive repairs after the great floods in May, contributed to a feeling of greater firmness in the market.

A marked feature of the year has been the increasing prominence and influence of Southern furnaces. Southern irons, so long despised by Northern makers, have gradually crept up in price, practically to a parity with the Northern product. A significant tendency of the Southern industry is toward the concentration of the various producing interests of that section of the country in a few hands. During the year several of the great Southern companies have increased their financial strength, the lack of which hampered their progress in previous years, and at present the Eastern markets for Southern irons are largely controlled by the Sloss Iron

and Steel Company, the Tennessee Coal, Iron and Railroad Company, and the De Barleben Coal and Iron Company.

Early in the year the Pig Iron Storage Warrant Company was started, and was at first supposed to aim at controlling the iron markets of the country. The scheme did not meet with a very favorable reception, and its avowed objects, which were to encourage speculation in pig iron by the warrant system and to assist financially furnaces of limited resources, were not developed to any important degree. Late official statements show that the amount of iron in the Company's yards is approximately 35,000 tons.

The trade in the West has been prosperous nearly throughout the year, being characterized by a large consumptive demand, relatively high prices and uninterrupted activity since March.

The market for Bessemer iron during the past five months has been particularly strong, and this article has undergone a much more pronounced advance in value than have foundry and forge irons.

Little or no progress has apparently been made by the basic process during 1889, but the thorough discussion it has received and the extremely favorable results attained in Europe make it highly probable that basic steel will in the near future be an important item in our statistics.

In regard to transportation rates, Pennsylvania furnaces continue to be placed at a disadvantage as compared with their Southern competitors.

According to the latest statistics, there are now about 330 furnaces in blast with an aggregate weekly capacity of 171,000 tons against about the same number of furnaces producing 155,000 tons weekly on the 31st of December, 1888. This shows clearly the tendency to increase the capacity of furnaces, which has been a marked feature of modern blast furnace practice.

Scotch Iron.—The year has witnessed such an advance in price in the foreign market that our relations with Scotch producers have become nominal. Importations during the year aggregate about 150,000 tons, as compared with 197,237 in 1888. The American demand was simply to satisfy the prejudices of the steadily lessening number of founders who still believe in the unequalled softening qualities of the Scotch product. Prices for the most part have been nominal, and those of the leading Scotch brands are given in the accompanying table of average monthly prices:

American brands of so-called "Scotch" irons continue to gain in favor among foundrymen. They have sold at an average price of \$20 during the year.

Structural Iron and Steel.—There was an unusually large consumption of iron and steel shapes of all kinds during 1889, and since the production of steel rails was very light, the advance in value in Bessemer pig iron was due solely to the increased use of steel for structural purposes. Never before has this use of steel been so large and so varied, and as the advantages steel offers over iron become more generally appreciated, its consumption is destined to attain still wider extension. It is noteworthy, however, that while in 1888 the prices of iron and steel shapes were practically the same, the increased consumption of steel in 1889 advanced its price and iron lagged behind. Toward the latter part of the year, therefore, this disparity in prices to a certain extent checked the demand for steel.

Architectural work absorbed a very large amount of iron and steel in 1889, the tendency in all principal cities being toward improving the appearance, durability and fireproof qualities of all large buildings.

The placing of large government contracts for steel plates, forgings, etc., for the new war ships, for guns and armor, materially increased the activity of the year, and will continue for years to come to be an important outlet for our product.

In the East, while the Bar Iron Association succeeded in advancing its prices for refined iron from 1.8 cents per pound in January to 2 cents in December, the activity of other lines of material was not reflected in the bar iron market. This one advance was not possible until the last month of the year, and even then it was made with some difficulty.

The tendency of prices during the year was a gradually advancing one, as is clearly shown by the following statement of ruling prices on wharf, New York, in January and December respectively. Bridge plate advanced from 2c. in January to 2.3c. in December, iron angles, from 2c. to 2.35c.; iron tees, from 2.50c. to 2.80c.; steel angles, from 2.25c. to 2.75c.; beams and channels, from 2.8c. to 3.1c. Steel plates, tank and ship, from 2.37½c. to 2.75c.; shell, from 2.8c. to 3c.; flange, from 3.1c. to 3.25c.; fire box, from 3.75c. to 4c.; iron plates, common tank, from 2.15c. to 2.35c.; refined, from 2.35c. to 2.45c.; shell, from 2.45c. to 2.6c.; flange, from 3.45c. to 3.6c.

Merchant Steel.—The collapse of the combination of manufacturers in January occasioned much demoralization in the trade early in the year, and prices were heavily cut; but since midsummer consumption has been sufficiently large to advance prices naturally to a firmer basis. Even with unrestricted competition, there seems to be a healthier feeling in the trade than there was during the continuance of the combination, when a well-defined suspicion became prevalent that all its members were not adhering to their agreements.

Steel Rails.—The production of steel rails in 1889 was about 1,350,000 tons, or about as large as in 1888, though only about two-thirds as large as in 1887. Nevertheless the mills, which are acting together under a "Board of Control," were able to advance prices from \$25.50 or \$26 per ton in June, the lowest price for the year, to \$35 a ton in December. Until June the market went from bad to worse, the general dullness occasioning cutting of prices on all sides. Competition was naturally sharp, and many of the mills booked orders for forward deliveries at the low prices then ruling.

The consolidation of the North Chicago, Union, and Joliet companies, which was consummated in May, was probably the most important event of the year, and by its competition in the Northwest was, to a great extent, removed. Without this consolidation it is very doubtful if the recorded advance in prices would have been possible. The increased consumption of other steel products naturally strengthened this market in the latter part of the year. There were few new railroad enterprises during the year, and the bulk of the rails purchased was for renewals. The new mileage during 1889 is estimated at 5,000 miles, as compared with 7,284 in 1888.

Speiseleisen.—As will be seen by reference to our table of prices, ferro-manganese nearly doubled in value during the year. The unprecedentedly large demand which brought this about was, of course, due to the increased requirements of steel makers together with the inability of home producers to supply these demands and the great scarcity of manganese ores, both in this country and in Europe, the foreign production being absorbed by the "boom" in iron and steel in England and on the Continent.

Old Rails.—The market for old iron rails during the year was not subject to its usual spasmodic fluctuations. The tendency of values during the year was steadily upward, although for the first six months the market shared the dullness prevailing in all branches of trade. In January, old tee rails sold at \$23, and a few months later at \$23, but from that time on the advance continued uninterruptedly until December, when they became so scarce that holders were able to decline \$27 and \$27.50 for round lots.

Among our iron manufacturers none occupies a higher position or exercises greater influence than Mr. Andrew Carnegie, whose great Edgar Thompson and Homestead works at Pittsburg in a great measure control the markets for steel rails and steel for structural purposes. We have, therefore, great pleasure in giving herewith the views which Mr. Carnegie has sent the ENGINEERING AND MINING JOURNAL on the iron and steel market and its prospects for the coming year. We add also the views of several other eminent masters in the industry.

MR. ANDREW CARNEGIE'S VIEWS ON THE IRON AND STEEL MARKET.

The explanation of the great increase, both in production and in value of iron and steel products in the United States during 1889, is to be found in the fact that prices have advanced so much in Europe as to prevent the foreign producers from seeking a market in this country. American producers and manufacturers have therefore been called upon to supply the entire wants of the country, having for the first time undisputed possession of the home market. Europe has sometimes been able to send to America more than 1,000,000 tons of iron ore and 300,000 to 500,000 tons of finished iron and steel in a year. These imports are now cut off, and our own manufacturers are called upon to supply them. I fear that the strain upon American producers for some time to come will be great, and that prices will materially advance.

The production of Lake Superior iron ore in the United States during 1889 was nearly 2,000,000 tons greater than in any previous year, and next season we are likely to see another million tons added to the extraordinary product in 1889. The production of pig iron has also been greater than ever before, amounting to nearly 8,000,000 tons. In another year the United States will probably be ahead of Great Britain in the production of pig iron, although the high prices ruling upon the other side will stimulate Great Britain's production to its utmost capacity. Even if Great Britain does turn out more pig iron than we do, it must not be forgotten that America consumes all the pig iron it manufactures, while Great Britain exports much. America is by far the greatest consumer of pig iron in the world. We also stand first in the manufacture of iron and steel. For instance, we make about two tons of steel rails for every ton made in England. An idea of our extraordinary progress in steel manufacture may be gleaned from the fact that in 1872 America for the first time made 100,000 tons of steel. Fifteen years later she made more than thirty times that amount. Moreover, the prices of steel products to-day are substantially the same in New York as in London.

The independence of America in the iron trade during 1889 has brought about a revival of the tariff discussion. It has been pointed out that, as the sale of foreign products has been prohibited in this country by the high prices ruling abroad, there is no necessity for a tariff on iron and steel. Doubtless a reduction of the tariff would be advisable, were it not for the certainty of a reaction in prices on the other side, and rather than restrict production, which would increase the cost, the foreign manufacturer will do as he always has done, make America the dumping ground for his surplus.

Much has been said about the injury that is being inflicted upon the Pennsylvania districts by the remarkable development of the iron trade in the South. The South as yet makes only foundry iron, and this certainly competes with the furnaces of Eastern Pennsylvania, which have been placed at a disadvantage on account of the excessive rates of railway freights; but it is likely that these rates will be reduced, as the railroads find the traffic growing less under their exorbitant charges. However, under the most favorable circumstances, I do not look for an increase in the iron product of Eastern Pennsylvania. The iron and steel industry must move westward as population moves. Pittsburg may still be termed its center, but that district is held in the grasp of a great railway monopoly, while the remarkably low rates with which Chicago is favored are giving that city prominence as an iron and steel manufacturing point; and unless Pittsburg can free itself from the grasp of the Pennsylvania Railroad, I look to see Chicago the future center of the iron and steel industry of the country. The South cannot compete with Chicago, Pittsburg or any other northern producing district except Eastern Pennsylvania under present conditions. Eventually, however, the basic process may enable the South to eliminate the phosphorus from its ores, and it may thus become a competitor in the steel industry of this country. As it is, the South is not entirely destitute of ore suitable for steel making. In the Cranberry mines of North Carolina and in some Virginia deposits low-phosphorus ores are found, and we have recently purchased in Pittsburg 2,000 tons of pig iron from Alabama which will make steel, if the lot is equal to the sample we have analyzed.

In conclusion, I look forward to a prosperous year for the iron trade in all sections of the country; in fact, so long as the surplus of the foreign manufacturer and producer cannot be thrown upon our markets regardless of cost, so long will our own industry be prosperous. There is danger, however, which is already apparent, that capital may be tempted into new enterprises, and the productive capacity of the country become greater than its legitimate wants.

It is probable that reaction in prices will be upon us before many of these new projects are ready to manufacture. So far as 1890 is concerned, however, a highly profitable year seems insured.

NEW YORK, December 27th, 1889.

MR. ROBERT W. HUNT ON THE OUTLOOK FOR THE IRON AND STEEL INDUSTRY.

In response to your inquiry as to my views relative to the outlook for the steel and iron industries of the country, permit me to say that I believe a tide of prosperity has set in which will last, at least, through 1892. Of course, there are many conditions of affairs which can arise calculated to upset all calculations. Putting aside the anticipation of any of these uncontrollable and inconceivable events, I cannot anticipate other than a period of the greatest activity and prosperity. The iron and steel producers of the country seem to be fully alive to the danger of inflation; in my experience I have never known a time when the temptation to advance prices has been met with so great a degree of conservatism. A notable feature of the existing status is the fact that, while the production of all kinds of both raw and manufactured materials is large, it is going into the hands of the consumers, and practically none of it held for speculative purposes. At the same time there is not an undue extension of railroads or other enterprises which consume these products. Thousands of tons of iron and steel now enter into constructions in which formerly other materials were used. The failure of the so-called fire-proof structures of the past has been so great that a complete revolution has taken place, and to-day the building demand for metal is one of the most important factors.

The railway practice of the present requires many per cent. of increase in the strength and weight of all its rolling stock and permanent way. Locomotives weigh more tons, and the cars drawn by them require greater weight of parts; the rails over which they pass must be increased in section, and the bridges carrying them constructed of heavier members. The heavier section of the rails alone is an important element in the disposal of the increased production of the rail mills. Instead of 60 pounds per yard approaching the standard section, 75 pounds per yard now more nearly occupies that position.

While various points of our country may be disputing as to which shall be favored with the site of the World's Fair of 1892, there is no question about that fair being held in this country during that year. Let it be located where it may, it will certainly be an important factor in sustaining the present industrial activity. Personally, I believe the best good of the greatest number points to Chicago as being the proper location for this fair. Should it be held there it will mean not only the demand for an immense amount of structural material for the exposition buildings, but also the erection of one or more elevated railroads of considerable length. Moreover, the impetus which it will give to the already active spirit of municipal improvement existing in this city, will lead to the construction of viaducts requiring tons of metal. Holding the fair at an interior point will increase the great activity of the West, Northwest, and Southwest, which, while it may bring a reaction, will certainly prolong the present prosperous conditions of affairs until well into 1893.

I have not the slightest claims to the mantle of a prophet, and may be far from right in my anticipations, but the above presents my firm belief.

THE ROOKERY, CHICAGO, December 26th, 1889.

THE VIEWS OF MR. JAS. BOWRON—THE TENNESSEE COAL, IRON & R. R. CO.—ON THE IRON TRADE.

Your favor of the 16th inst., addressed to our vice-president, is referred to the undersigned for answer.

I think the present position of the iron trade is unique, and that the year of 1890 will be one of very great prosperity on both sides of the Atlantic. There is no large stock of iron in the world available for present use, except that in the warrant yards at Glasgow. The large consumption of iron by the pipe lines, for oil and gas, and the increasing use of iron for structural purposes, has led to the present healthy condition of trade in the United States, without much assistance in the way of consumption by the railroads. The cessation of rate wars, and consequent very large improvement in net earnings of railroads has greatly increased their ability to spend money in iron bridges, side tracks, locomotives and cars, and at the same time has added confidence to the market for railroad bonds. The railroads of the West and South especially are gorged with traffic beyond their ability to handle it, and I look for not only increased construction of short local railroad lines in 1890, but also unusually heavy orders for rolling stock and track material. The ship building trade is for this moment in a condition of the highest possible prosperity, both here and in England, the government requirements in both countries having added largely to the strength of the situation. The movement to substitute steel sleepers for wooden cross-ties is gaining strength, and the same substitution of iron for wood is being noted in the construction of cars, and also in the timbering of mines. It may not be too far fetched to consider the probabilities of railroad construction in China, India and Africa. The prejudice of the Chinese nation seems to have been overcome, and it is manifest that railroads alone can effectually insure the success in Africa of European enterprise. There is a cloud on the future which is growing with some rapidity, but it will not affect the year 1890. Furnace plants are being projected in numerous places, more especially in the South, for the express purpose of buying the surrounding land by the acre and selling it by the foot, and a time will come when these in their struggle for existence, will make the trade unprofitable, at least as to the production of pig iron, until they have been absorbed or have demonstrated their right to live a separate existence.

NASHVILLE, Tenn., December 19th, 1889.

THE LAKE SUPERIOR IRON ORE MARKET IN 1889.

From our Special Correspondent at Cleveland.

The close of the year 1888 witnessed a slight improvement in the prices of iron ore, on account of the early closing of navigation and an anticipated scarcity. Prices advanced from twenty-five to fifty cents a ton in some few instances. This better feeling, however, entirely disappeared in the first two months of 1889.

No sales for future delivery were made in January, the furnace men persistently holding off, and in some instances, it is stated, they resold some ore that they had on hand, at lower prices than they themselves bought in order to bear the market for their next year's purchases. This proceeding and the continued decline in the price for pig and finished iron had its effect on the iron ore market. Ore men, realizing that their position was becoming less advan-

teous, endeavored without success to induce the large ore consumers to make their purchases. Republic and Champion declared they would not sell for from \$6 to \$6.25. Aurora and Ashland, the leading ores of the Gogebic Range, wanted \$5.50. Chapin, the king of the Menominee Range, insisted on \$5. Cleveland No. 1 and Lake Superior No. 1, the leading Red Specular Non-Bessemer of the Marquette Range, wanted \$5.50. Vessel men wanted \$1.40 from the head of Lake Superior, \$1.25 from Marquette, and \$1.10 from Escanaba.

This condition of affairs continued throughout February.

In March, the first transactions were made by the United Chicago Mills, now consolidated into the Illinois Steel Company. As soon as the ore men saw a chance of placing their product, each one was afraid that his competitor would get ahead of him; accordingly, they flocked into Chicago to play into the hands of the shrewd purchasers of the Illinois Steel Company. Large blocks of ore were then contracted for at prices a little less than those which prevailed during the previous year for delivery on cars at the mine. About a month previous to this, however, some very large sales had been made by one of the largest iron ore firms of Cleveland to two large Eastern consumers, and also to one or two of the largest Pittsburg furnace companies.

In this instance the ore men had the upper hand, for if the purchasers had waited two months longer they could have gotten their ore at 25 cents a ton less. The Gogebic Bessemer ore men refused to sell to the Chicago purchasers, as well as to Pennsylvania and Ohio consumers, at prices that their neighbors were accepting. They held firm at \$5.25 for their product, but did not sell.

In April sales became more general. Bessemer ores were in large demand, and non-Bessemer also commenced to go off at about the same prices that prevailed during the previous season. Large charters for Lake freights were made in this month at \$1.25 from the head of Lake Superior, \$1.15 from Marquette, \$1 from Escanaba, the contracts running throughout the season of navigation.

The large sales of the season for lower Lake delivery were made during April and May, and at these prices:

Republic and Champion and Minnesota Bessemer at \$5.50.

Lake Angeline hard and Lake Superior Iron Company's Section 16, which run 66 per cent. in iron and not over .02 in phosphorus, sold at \$6.25.

Shortly after the Republic closed out most of their ore at \$5.50 they immediately advanced the price to \$5.75, and the rest of their sales during this season were made at not less than this last price.

Norrie, the biggest producer of the Gogebic Range, sold all their ore this month at \$4.50.

Chapin sold at \$4.50 to \$4.75.

Cleveland No. 1 and Lake Superior No. 1. Red Specular, \$5.

Second-grade Red Speculars, running from 62 to 63 per cent., \$4.50; non-Bessemer hematites, running 60 per cent. in iron, such as Florence, Dunn, and Iron River, sold at \$3.75.

Market continued to remain quiet throughout May and June, and during these two months the Ashland and Aurora reduced their price to \$5, and sold up without difficulty. Current lake freights were \$1.25 from the head of Lake Superior, \$1.10 to \$1.15 from Marquette, and 90 cents from Escanaba.

In the month of July a change came over the condition of affairs. Ore men began to figure up, and found that most of their estimated product had been sold. They accordingly stiffened up for what still remained unsold. Lake freights were also firmer. It was estimated at this time that the 1889 output of ore would be in the neighborhood of 6,000,000 tons.

At the close of August, we find that the Champion, the Lake Superior, the Republic, the Minnesota district ores, the Pittsburg & Lake Angeline, the Gogebic Bessemer, and all the low grade Bessemer of the Menominee Range, which had sold at \$3.75, were now out of the market. Shipments continued unusually heavy; the prices remained firm.

In September lake freights commenced to advance to \$1.40 from the head of Lake Superior, \$1.20 from Marquette, \$1.05 from Escanaba. The demand for Bessemer commenced to increase. The ore men carefully figured up how much ore there was still unsold, and found that it only amounted to between three hundred and fifty and four hundred thousand tons. This fact becoming known, prices became stronger, and in many instances advanced.

October witnessed, as a trade paper said at that time, "an unaccountable demand for Lake Superior ores, particularly Bessemer." Lake freights continued to advance during this month until they reached \$1.90 from the head of Lake Superior, \$1.50 from Marquette, \$1.25 from Escanaba. This advance checked somewhat the shipments, so that during November lake freights declined to \$1.50, \$1.25 and \$1.10. Shrewd furnace-men during October commenced to buy all the ores that were unsold, even though they did not need any more before the opening of navigation, 1890, knowing that the price would inevitably advance. This month also witnessed the commencing of large purchases for delivery during 1890. The Illinois Steel Company was the first to commence to buy, and the ore men snapped at the hook without hesitation. The Illinois Steel Company bought freely all the good Bessemer they could get, commencing at 25 cents advance over last year's price, and did not stop until they had paid as high as 55 cents advance, all f. o. b. cars at the mine. The market for steel continued to advance throughout the country, and the opinion becoming general that the year 1890 would be most prosperous for the iron and steel trades, prices on ore also advanced, and in November the furnace companies of Western Pennsylvania and Ohio purchased all of the ore that Lake Superior mines expected to produce in 1890 that was suitable for Bessemer purposes. So great was the demand for this grade that ores running as high as .08 in phosphorus got the same advance over the previous year's prices as those which analyzed from .02 to .05 in phosphorus. These sales were made at from \$1 to \$1.25 advance, to be delivered at Lake Erie ports.

When the first week in December arrived, it was impossible to get quotations on 10,000 tons of "Bessemer" ore. This buying was unprecedented, the earliest sales of any previous year for the ensuing season's delivery having been made not earlier than December. After the "Bessemer" ores were all sold out, the demand set in during the first part of December for strictly "non-Bessemer" grades. These ores have sold at an advance of from 75c. to \$1. The year closes with a most confident feeling in the iron ore trade. A great amount of vessel tonnage has

been contracted for at \$1.35 from the head of Lake Superior, \$1.25 from Marquette, and \$1.10 from Escanaba. These figures, however, cannot now be duplicated, and among ore dealers there is considerable uneasiness as to the future course of lake freights.

Estimates of the increased ore production vary between one and two million tons. The new tonnage in the course of construction this winter is 30 per cent. less than it was last winter. A largely increased business in coal is expected next season, as well as in lumber and grain, and no one would be surprised to see lake freights go to at least \$1.25 from Escanaba, \$1.50 from Marquette, \$1.75 to \$1.85 from head of Lake Superior. In the face of these probabilities the non-Bessemer ore dealers are not anxious to sell their product, at certainly less than 75 cents advance over last year's price. The probabilities are great that the price of non-Bessemer will soon advance at least 25 cents over the price now quoted. It is generally conceded this year that the furnace men have scored a point on the iron-ore men, for whereas the price of Bessemer pig has advanced from forty to fifty per cent., the Bessemer ores have been sold at an advance of not over twenty to twenty-five per cent. Present prices on the leading ores are now for Republic, of which there is a few thousand tons left for "fix" purposes, \$7; Champion, Pittsburg & Lake Angeline, Gogebic Bessemer, Menominee Range Bessemer, including Chapin, are all sold up, and consequently not quoted; Lake Superior and Cleveland No. 1 red specular, \$6; Cleveland Scotch and Cliffs Shaft, \$5.50; Chapin has all been sold at \$5.50; Dunn, Florence, etc., are held at from \$4.50 to \$4.75.

It is now estimated that the output for 1890 will be from 8,000,000 to 8,250,000 gross tons, or, in other words, from 1,200,000 to 1,450,000 tons over last year's output. The following figures will show how easily even this outside estimate can be taken care of: According to the statistics published in the *American Manufacturer*, the output of furnaces in blast on December 1st, 1889, was 20 per cent. greater than the average output of all such furnaces during the year ending November 30th, 1889. During this same year there were shipped in round numbers from Lake Erie ports 4,500,000 gross tons of Lake Superior iron ore. Twenty per cent. increase on this to correspond with the increased capacity of the furnaces (and this does not take in the great probability of the present capacity being greatly increased during the ensuing year by the addition of the Carnegie furnaces, the McKeesport furnaces, and the improvements being made in many others) would make the increased demand amount to 900,000 gross tons.

Conservative judges estimate that the increased demand this year over last from Eastern furnaces will amount to over 500,000 gross tons. This, it seems to the writer, is an under-estimate, considering the fact that importations now are almost impossible. The increased demand from Illinois, Wisconsin and Michigan furnaces will be at least in the neighborhood of 500,000 gross tons. According to the above estimate, next year will demand an increased production of 1,900,000 tons of Lake Superior iron ore. It is possible, though doubtful, that Lake Superior mines can produce this increased amount. It is more doubtful if the tonnage on the Great Lakes will carry this at anything less than exorbitant rates. It is still more doubtful whether the docks of Lake Erie can handle this increased amount, unless the railroads almost double the supply of cars that they used in this trade last year.

THE PITTSBURG IRON MARKET IN 1889.

(From our Special Correspondent.)

Sales of pig iron in Pittsburg for the year were as follows:

	1888. Tons.	1889. Tons.
First half.....	370,706	484,527
Second half.....	739,155	1,398,523
Total.....	1,109,861	1,923,050

PITTSBURG CASH PRICE OF BESSEMER AND GRAY FORGE.

	1887.	1888.	1889.
Jan., Bessemer.....	\$21.50	\$19.00	\$16.65
" Gray Forge.....	20.50	16.50	15.50
Feb., Bessemer.....	20.50	18.50	16.50
" Gray Forge.....	20.00	16.25	14.50
March, Bessemer.....	23.00	18.25	16.75
" Gray Forge.....	19.50	16.00	14.50
April, Bessemer.....	22.00	18.25	16.50
" Gray Forge.....	19.50	15.50	14.25
May, Bessemer.....	22.00	17.00	16.65
" Gray Forge.....	19.00	15.00	14.00
June, Bessemer.....	21.00	17.00	16.00
" Gray Forge.....	18.25	14.30	14.00
July, Bessemer.....	21.00	17.00	16.65
" Gray Forge.....	18.50	14.25	14.00
August, Bessemer.....	21.50	17.25	16.85
" Gray Forge.....	18.50	14.25	14.50
Sept., Bessemer.....	20.75	18.00	16.00
" Gray Forge.....	18.00	16.25	15.65
Oct., Bessemer.....	20.50	18.00	16.00
" Gray Forge.....	18.00	16.50	16.25
Nov., Bessemer.....	20.50	18.00	21.50
" Gray Forge.....	17.75	16.00	16.75
Dec., Bessemer.....	19.50	17.25	24.00
" Gray Forge.....	16.75	15.50	19.00

REVIEW OF THE SOUTHERN COAL AND IRON FIELDS.

Special Report by Dr. Wm. B. Phillips, M. E.

It can no longer be doubted that a great and permanent current of interest and of money is setting southward. Scarcely a week or a day passes in which is not chronicled the beginning of some large enterprise or the improvement of an old one in the South. New railroads are being projected and constructed; new mines are being opened, and old ones extended, new furnaces are being built; and, what was perhaps to have been anticipated, new issues are being forced upon the attention of the public. The South is no longer almost wholly agricultural, but has advanced with no uncertain step into the arena of diversified industry. To show what has been done let us examine briefly into the matter. The following table presents a bird's-eye-view of the coal and iron industries of the States of Virginia, Kentucky, Tennessee, Alabama, and Georgia, from 1880, to and including 1888. The statistics for 1889 are not yet to hand. The year that has just closed has been a memorable one in the history of the iron and coal trades of the South in general, and of Alabama in particular.

Whatever doubts may have existed as to the permanency of the great industries begun in this part of the world have been dissipated by the hard logic of facts. There remain, however, a few who still view the situation with something of suspicion. In spite of the wonderful strides which the nation has made within the past few years, in spite of the evidences, multiplied upon every hand, of the enormous increase of taxable property in many of the Southern districts, in spite of rolling mills, blast furnaces, and railroads, they are still, like Oliver Twist, crying for "More." Such people have their places in the world; they serve, perhaps, as the great fly-wheel of the engine of material progress, and as such serve a most important purpose.

PRODUCTION OF COAL AND PIG-IRON IN TONS.

	Virginia.		Kentucky.		Tennessee.		Alabama.		Georgia.	
	Coal.	Iron.	Coal.	Iron.	Coal.	Iron.	Coal.	Iron.	Coal.	Iron.
1880.	100,000	29,934	1,000,000	57,708	641,000	70,873	340,000	77,190	100,000	27,321
1881.	100,000	83,711	1,100,000	45,973	750,000	87,406	375,000	98,081	150,000	37,404
1882.	100,000	87,731	1,300,000	66,522	850,000	137,602	800,000	112,765	175,000	42,440
1883.	225,000	152,907	1,650,000	54,629	1,000,000	133,963	1,400,000	172,465	200,000	45,364
1884.	300,000	157,483	1,500,000	45,052	1,200,000	134,507	2,000,000	189,664	200,000	42,655
1885.	567,000	163,782	1,700,000	37,553	1,000,000	161,199	2,225,000	227,438	133,929	32,924
1886.	684,951	151,250	1,550,000	54,844	1,714,290	199,166	1,800,000	283,859	223,000	46,490
1887.	825,263	175,715	1,933,185	41,907	1,900,000	250,344	1,950,000	292,762	313,715	40,947
1888.	1,073,000	197,396	2,401,132	56,790	1,967,297	267,931	2,900,000	449,492	230,000	39,397

Most people will agree that this is a most remarkable growth in these two industries, and most people will agree also that it presages yet greater changes. Aside from mere production of coal and pig iron, there has not been during the year just passed any very important event in these industries, except the shipment to Pennsylvania of several thousand tons of Bessemer pig by the Talladega Iron and Steel Company, of Talladega, Ala.

Using the brown ores of the Irona belt in Talladega County, this company has been able to make Bessemer pig on a commercial scale, and to ship it to the steel works North. This is the first shipment of such metal from Alabama and may mean more than appears on the surface. It has been shown time and again that the ordinary pig made here is suited for the manufacture of steel only by one of the basic processes. The Talladega Company has shown that Bessemer metal can be made from Alabama ores, and it follows naturally that if one company can make it so can another.

It is said that a steel plant will be built at Chattanooga, and one at Fort Payne.

The Henderson Steel Company, of this city, is still at work on its basic open hearth furnace, and before long we may be permitted to see for ourselves what can be done.

The Vanderbilt Steel and Iron Company is preparing to erect a blast furnace at East Birmingham, with C. A. Meissner as Vice-President and General Manager.

A new iron and steel company has been organized at Greensboro, N. C., with sufficient backing to carry it through to success.

A new charcoal furnace is to be built at once at Middlesbrough, Ky., with J. A. Jardine, formerly of the Katahdin Furnace, as Superintendent.

It matters little in which direction we turn our eyes, it is the same story—an ever growing interest in the manufacture of iron and steel. Some of the companies organized may not get to work for some time, others may not get to work at all, but some will succeed, and their success will induce others to make the attempt.

There is now a healthy feeling in the coal trade in spite of the unusually mild winter. We have had no winter at all so far, and if Nature is to make good her usual average a good time awaits the coal men in January, February and March. The total production in Alabama for 1889 will, I think, not fall short of 3,500,000 tons, if, indeed, it does not exceed this amount.

The plans for exporting coal to Cuba may now be said to be fairly under way, and some interest is now shown in importing Cuban ores for the manufacture of acid Bessemer metal.

The production of pig-iron in Alabama for 1888 of 449,492 tons promises to be largely exceeded. By the end of 1890 Alabama should produce considerably over 500,000 tons. It may be that the figures for 1889 will closely approximate this amount. Considered as a whole the Southern field is now in better shape than ever before. The spirit of progress has come to stay, for it has met with a welcome such as was accorded 'befo' de wah' to everybody who came in the spirit of peace.

Birmingham, Ala., January 1, 1890.

THE COAL TRADE IN 1889.

ANTHRACITE.

We have to review a year in the coal trade which has been distinctly disappointing. Overproduction and mild weather have worked together to prevent the usual seasonable improvement in the trade, and business has steadily lacked the "briskness" which accompanies a normal winter temperature. With this much said, a more cheerful view of the course of the market may be taken, and we may fairly state that on the whole the dullness has not been as bad as it has been represented. The year preceding 1889 was one of abnormal consumption and unusual conditions generally; hence by comparison 1889 has suffered more than would have been otherwise the case. Notwithstanding the mild weather, it is probably true that, with the exception of 1888, as much coal was consumed in 1889 as in any other year in our history. The significance of this may be still better appreciated when it is remembered that the continued high temperature we have experienced more than offsets the natural increase in consumption arising from the growth of the country.

A noteworthy tendency of the year was the inclination of buyers to allow stocks to accumulate in first hands, as will be seen by the table of tide-water stocks published below. Consumers, as a rule, rather overbought in 1888, and this, together with the clemency of the weather, made them indisposed to anticipate their requirements to any extent, a

"hand-to-mouth" policy being steadily pursued. Coal was thus frequently blocked at tide-water, and some of the wholesalers more than once got caught with a large number of cargoes afloat, which, in order to sell, were obliged to be disposed of below circular rates.

The falling off in the domestic demand naturally caused producers to turn their attention to the smaller or steam sizes. These sizes, of course, come into sharp competition with bituminous coal, and to counterbalance the growth of the trade in the latter in recent years, the anthracite sales agents at the opening of the season decided to omit pea and buckwheat from the schedule, leaving their producers entirely free in every way possible to compete with the bituminous product.

In fact, overproduction was the cause of considerable demoralization throughout the year. Various agreements as to reduction of output were made, but every month production exceeded the amount allotted. That all interested were not living up to their agreements was evident early in the year, when statistics of production began to be withheld and the official statistician suspended the publication of the usual detailed statement of the tonnages of the several companies.

Prices varied little during the year. But three official circulars were issued. They were as follows:

Table with 4 columns: Sizes, Opening, April 1, June 1, July 1. Rows include Stove, Chestnut, Egg, Broken.

Actual selling prices on the whole have not varied much from 15 to 25 cents below the first circular. Prices were, therefore, unsatisfactory. It was the original intention to advance circular prices on September 1st to \$1.65 (the closing price in 1889), but too much coal and too little cold on that date forced the conviction that such an advance, under the circumstances, would have been purely nominal, and the idea was, therefore, abandoned.

We have stated that overproduction was largely responsible for the depression in the trade. It is interesting to note the difference between the percentage of tonnage allotted each company early in the year on the basis of the average production of the three months of August, September and October, 1888, and the actual percentage of the tonnage of 1889, so far as the latter may be accurately estimated:

Table with 4 columns: Company, Allotted per cent., Actual per cent. Rows include Reading, New Jersey Central, Lehigh Valley, etc.

We have also prepared an interesting statement, showing the tonnage by months in 1888 and 1889, and likewise the stocks at tidewater at the end of each month:

Table with 4 columns: Month, Output, Stocks, Output, Stocks. Rows for months from January to December for 1888 and 1889.

Total (gross tons)..... 38,145,718 35,871,972

In conclusion and as to the future it is worthy of note that supplies in consumers' hands throughout the country, in consequence of the policy they have pursued, are light, that a severe restrictive policy is now in force, and that by the law of average temperatures, a period of cold weather must be at hand.

The activity in the iron trade and the scarcity of coke also promises a slight increase in furnace consumption, which of late years has fallen off so largely that the condition of the iron trade has had comparatively little effect on the demand for anthracite.

The following tables show the production of anthracite to date both by companies and regions, which have been specially prepared for the ENGINEERING AND MINING JOURNAL, and which have an especial interest at the present time.

PROPORTIONAL SHIPMENTS OF ANTHRACITE BY THE SEVERAL COAL ROADS. Tons of 2,240 pounds.

Table with 8 columns: Year, Shipments, Per cent., Shipments, Per cent., Shipments, Per cent., Shipments, Per cent. Rows for years 1889, 1888, 1887, 1886.

Table with 10 columns: Roads, 1885, 1884, 1883, 1882, 1881. Rows include Read. R.R., Cent. N., Lehigh Valley, etc.

Table with 10 columns: Roads, 1880, 1879, 1878, 1877, 1873 to 1876, 1868 to 1872. Rows include Reading R.R., Cent. N., Lehigh Valley, etc.

ANTHRACITE COAL SHIPMENTS AND TOTAL PRODUCTION OF PENNSYLVANIA.

Large table with 7 columns: Years, Wyoming Region, Lehigh Region, Schuylkill Region, Total shipm'ts. Rows from 1820 to 1889.

BITUMINOUS.

The year in the soft coal trade was opened with the usual "iron-clad" combination of producers, and precedent was adhered to by the violation of the terms of the agreement before the ink on the signatures to it had time to dry. No fines seemed to be imposed upon the transgressors, and before long competition of the sharpest character was the order of the day.

Those companies or individual producers who limited their output of coal to the amount agreed upon soon found that they were doing so simply for the benefit of less scrupulous competitors, and naturally much soreness of feeling resulted. This explains why, in our statistics of bituminous production, some districts show a falling off and others a large increase as compared with 1888, the demand being general and the productive capacity of all the mines the same as in previous years.

The collapse of the combination of course brought about a demoralization of prices for a time, but during the last four months of the year an increased demand, coupled with a scarcity of cars, enabled miners of good coals to obtain the original pool prices with little difficulty.

The trade was greatly hampered throughout the latter part of the year by a scarcity of rolling stock. The pressure of freight traffic of all kinds on the leading roads was enormous, and, as a consequence, coal shippers were somewhat neglected.

For 1890 a trust is proposed. Coal is to be sold through one agency exclusively, and there are other interesting details of the scheme, which will be published in the ENGINEERING AND MINING JOURNAL as soon as they are matured.

In the meantime an agreement has been entered into which is designed to prevent contracts for 1890 being made until the plans now under consideration are carried out. Some of the more aggressive elements in the market, however, are said to be making preparations for even more active competition than before.

Probably the greatest developments of the year were in Virginia and West Virginia, where there was a largely increased production. The Chesapeake & Ohio and the Norfolk & Western producers early in the year assumed great prominence in the market, and throughout were active competitors with miners much nearer to this market. In 1890, West Virginia will undoubtedly be a very powerful factor in the market.

The well-earned reputation of Cumberland coals enabled miners of that district to maintain prices with little trouble, and although lack of transportation facilities somewhat checked production, the year was on the whole satisfactory.

Central Pennsylvania regions yielded a moderate output, and, although troubled by a shortage of cars, producers were able, while maintaining prices, to hold their own in the market. The miners of the Clearfield district secured a particularly large share of the steamer trade.

In the Pittsburg district the competition of Southern coal has been severely felt, and this, together with labor troubles and lack of cars, contributed to make the year rather unsatisfactory.

In Illinois and Indiana a great deal of time was lost by strikes and lock-outs.

REVIEW OF THE BOSTON COAL MARKET IN 1889.

(From Our Special Correspondent.)

The coal market at the port of Boston for the year 1889 has been unsatisfactory. Every one will be glad to welcome the new year, for it is likely to be an improvement. The anthracite trade has not been bad, but for three months the demand has been disappointing. Nothing but the excellent condition of the local retail trade has made the situation tolerable. But, as it is, prices are maintained at retail, and the producers have kept the supply within bounds by curtailing production. Boston dealers have made a little money on what they have sold, at all events. The year will not prove nearly as satisfactory as 1888, which was one of the best years known to the local trade, because sales have been smaller and in a hand-to-mouth way. The division of the business of the Austin C. Wellington Coal Company among two firms, including the new Thompson-Baker Coal Company, has been the only change of importance in the retail trade. The year has been an uneventful one. Prophecies of the disruption of the combination have not proved true, and the outlook for the combine is good. The only concern which has endeavored to break the established price list had a brief and altogether inglorious career. The city contract is made for short periods and continues to pay its participators a living profit, and considering that this business is often done at a loss, affairs are not as bad as they might be. A dull business makes every one feel poor, but it is not so bad as an unprofitable business after all. There is one good retail coal wharf to rent here, but the city is well supplied and no one seems anxious to start in at the vacant stand.

Precise receipts of anthracite coming to this port cannot be stated for several days, but the figure will be very close to 1,750,000 tons. The natural increase in consumption is considerable, but here in the city every dealer, almost, has small stocks. Outside of Boston, in the manufacturing towns, the condition is much the same, only dealers do not run so close to the wind on stock outside of this port. In the wholesale trade the only changes of moment have been the withdrawal of Mr. W. B. Gay, from the Gay & Parker Company, and the admission of Messrs. Rogers and Hanson, and the succession of Mr. Jeffries to the agency of the Lehigh Company, made vacant by Mr. Thompson's retirement. Taken all in all, the anthracite trade is in fair shape: credits are good, and at least one or more firms in this city, which have seen reverses of late years, have been building themselves up to a reasonably strong position again. If we can only have a few weeks of good winter weather in the next two months the season will end very well.

The bituminous coal trade has not been so unsatisfactory for several years as in 1889. Perhaps leading shippers will not lose very much outright, but their customers will lose, and this is always bad business. Then, two or three shippers will undoubtedly lose considerable sums on coal sold delivered. It has been nipped and tuck to keep trade supplied for two months now, and jobbers find it very tiresome. Had it not been for the copious rains, which have made water-power abundant, it

would have been even worse, but it is bad enough. The pool or Seaboard Association prices were cut considerably, but the scarcity of coal put an end to all chance of a demoralized market, until to-day there is virtually no price for bituminous for immediate shipment. Those who are so fortunate as to have coal, can get whatever they ask within reason, say \$2.75 f. o. b. at the lowest. The Conemaugh flood made deliveries at least two weeks behindhand, and this together with the resumption of business, increased activity on the railroads, has put everything back, so that contract deliveries are at least six weeks behind to-day, and one or two leading shippers are even worse off and are compelled to divide up every cargo they receive into various lots, in order to keep their customers supplied. Of course, this is very mean business for all concerned, and complaints against the Pennsylvania Railroad and the Baltimore & Ohio Railroad, long and loud, have been heard for from two to three months. The Pennsylvania people have ordered a lot of rolling stock, and will soon be in better shape, but reports from the Baltimore & Ohio are not so encouraging. That corporation is poor, and has not the means to improve its freight service. All their spare cash is put into passenger service improvements. Coal dealers claim that the Baltimore & Ohio is sadly deficient in its freight motive power and that none but passenger locomotives are bought. There is at least some truth in this. Only those shippers who have rigidly adhered to the f.o.b. standard have made money this season, and some of them have had much trouble in getting freight charters for their customers. Matters are in good shape for a strong pool to be formed for the season of 1890-91, in order that some of the leading shippers may have a chance to recover lost ground. Receipts of bituminous coal at this port will aggregate close on to 1,000,000 tons by water. There is no way of getting at the all-rail shipments of bituminous into New England but they are very considerable, and are growing larger each year.

Gas coal has enjoyed about the same movement as usual this year. More and more water gas is being made, but it is used in admixture with coal gas, and the amount of gas coal consumed has not been materially lessened. Should the Legislature legalize the manufacture of water gas at the coming session a larger amount of it would be at once made.

This has been a year of high coastwise freights, and coal freights have been particularly strong. This is one of the causes which has led to the delay in shipping soft coal. Every one thought last summer that the rates must come down off the high horse, and considerable precious time was lost. It has been, per contra, a harvest for vessel owners, and I have heard of some very handsome profits being made. More vessels are on the stocks in New England shipyards now than at any time for years, it is said, and probably more reasonable freight rates will rule next season.

THE PITTSBURG COAL MARKET IN 1889.

(From Our Special Correspondent.)

The following table furnishes the coal shipments from Pittsburg, by the Ohio River, for the past ten years. It is easy to note the years in which strikes prevailed on the Monongahela River. The shipments by river ought to be at least 100,000,000 bushels. In 1888 there were no strikes, and the shipments reached 109,652,000 bushels; the past year will show a deficiency of 41,000,000 bushels. The coal syndicate has secured the extension of its options till July 1. There is much speculation as to whether the deal will go through.

TEN YEARS' COAL SHIPMENTS ON THE OHIO RIVER FROM PITTSBURG.

	Cincinnati.	Louisville.	Total Tons.
1889	50,360,000	37,895,000	88,255,000
1888	51,339,000	58,513,000	109,652,000
1887	20,770,000	35,973,000	56,743,000
1886	33,223,000	58,435,000	91,658,000
1885	32,590,000	42,334,000	74,924,000
1884	24,631,000	30,801,000	55,432,000
1883	31,533,000	56,462,000	87,995,000
1882	34,460,000	36,679,000	71,139,000
1881	25,490,000	37,396,000	62,886,000
1880	27,909,000	38,311,000	66,220,000

THE WORLD'S PRODUCTION OF COAL.*

Countries.	Tons.
Great Britain (1888)	169,935,219
United States (1888)	126,819,406
Germany and Luxemburg (1888)	81,863,811
France (1888)	22,951,940
Belgium (1888)	19,185,181
Austria and Hungary (1886)	20,779,441
Russia (1886)	4,650,000
Sweden (1887)	300,000
Spain (1887)	977,559
Italy (1886)	243,325
Other countries (1888)	10,000,000
Total	457,705,882
Percentage of the United States	27

THE COAL STOCKS IN 1889.

After the extraordinary production of anthracite coal in 1888, and the consequent boom in the coal road stocks early in the year, it was natural that the heavy decline in this year's coal tonnage, and the unsatisfactory state of the coal market, should have brought about a reduction in the stock market for these securities toward the end of 1889.

Delaware & Hudson reached a higher figure than had been attained by any of the active coal stocks for many years at least. In 1888 the stock of this company sold at 103, while this year it reached 156. This was due to a very good showing for 1888, and perhaps largely to the ability to manipulate the price, from the fact that the stock is largely held for investment by large capitalists who are not tempted to buy and sell the stock for the market fluctuations. This stock, with others of the same class, showed a marked falling off at the end of the year 1889, owing to the smaller business done this year, the lower prices and the demoralization in the anthracite coal trade owing to overproduction. Another very disturbing factor has been the mildness of the present winter and fears that it may be quite as mild as that of 1888-9.

* From advance proofs of the Mineral Resources of the United States, furnished through the courtesy of Dr. David T. Day.

FLUCTUATIONS OF PRICES OF COAL STOCKS IN NEW YORK DURING 1888.

Table with columns for NAME OF COMPANY, months (January to December), and high/low prices (H. L.). Lists companies like American Coal, Buck Mountain, Cambria Iron, etc.

The sales during the year of the companies quoted are as follows: American Coal, 30 shares; Barclay, — shares; Buck Mountain, 100 shares; Cambria, 3,124 shares; Cameron Coal and Iron Company, 72,779 shares; Chesapeake & Ohio Railroad, 20,251 shares; Chicago & Indiana Coal Railroad, 200 shares; ditto preferred stock, — shares; Colorado and Hocking Coal, 12,865 shares; Colorado Coal and Iron, 119,715 shares; Consolidated Coal, 3,749 shares; Delaware & Hudson Canal Company, 201,031 shares; Delaware, Lackawanna & Western Railroad, 2,461,500 shares; Hocking Valley, 141,600 shares; Hunt & Broad Top, 9,386 shares; ditto preferred stock, 12,286 shares; Lehigh Coal and Navigation Company, 67,874 shares; Lehigh & Wilkes-Barre Coal and Iron Company, 11,520 shares; Lehigh Valley Railroad, 64,041 shares; Marshall Consolidated Coal, 1,540 shares; Mahoney Coal, 820 shares; ditto preferred stock, 54 shares; Maryland Coal, 3,194 shares; Morris & Essex, 6,362 shares; New Central Coal, 3,085 shares; New Jersey Central Railroad, 411,644 shares; New York & Susquehanna Coal, — shares; New York, Susquehanna & Western, 53,116 shares; ditto preferred stock, 75,420 shares; New York & Perry Coal and Iron, 29,273 shares; Norfolk & Western Railroad, 25,665 shares; ditto preferred stock, 154,131 shares; Pennsylvania Coal, 621 shares; Pennsylvania Railroad, 253,655 shares; Philadelphia & Reading Railroad, 9,207,593 shares; Sunday Creek, 700 shares; ditto preferred stock, 200 shares; Tennessee Coal and Iron Company, 566,175 shares; ditto preferred stock, 22,530 shares; Westmoreland Coal, 336 shares; Wyoming Valley, 500 shares. TOTAL SALES, 14,035,148 shares.

Delaware, Lackawanna & Western advanced from 123 1/4 early in the year to 151 afterward, breaking considerably for the same reasons stated above. Some of its friends predicted 175 to 200 for it during the year, and many were disappointed with such a comparatively small rise. The indications are, however, that the company will earn something like 9 per cent. for the year, and that no less than 7 per cent. dividends will be paid.

Perhaps the most surprising and at the same time gratifying feature of the market was the resumption of dividends by the Jersey Central Company. This stock advanced to 131, or much beyond the quotation, under the management of Mr. John Taylor Johnston back in the sixties, and when the company was paying 10 per cent. dividends. This stock has had a wonderful career, selling down to 6 per cent. when the company first went into the hands of a receiver, selling up to about 112 in the 1879 'boom,' breaking to nearly 30 on the second receivership, then recovering to the price named above. The company now appears to have a competent management and an assured future.

We have already expressed ourselves pretty freely on the Reading management a year ago, when the company was reorganized. Mr. Corbin's apparent success we showed was by neglecting the dead work in the mines and generally deferring expenditures necessary to keep the property in good working condition. These expenditures have had to be made, and after bringing the mines to the point where their productive capacity was seriously impaired and the cost of production increased it was this year found to be absolutely necessary to make heavy investments to bring the property back to a fair working condition. More experience in the business and an administration that had less confidence in its own ignorance would probably have attained better results. There is no denying that Mr. Corbin's administration has been extremely unpopular with the best men connected with the Reading companies, and its now evident failure to attain success leaves little justification for his management.

The property is a magnificent one, the finest coal property in the world, and it should easily earn the fixed charges on the two companies, and thus escape the disgrace of another receivership, which many think it is now in danger of. The enormous growth of the coal trade should redeem this property under any good management.

The price of the stock of this company was in 1888 as high as 67 1/4, while now it is under 40.

In the Pennsylvania Coal Company there were but a few public transactions. The prices in these instances ranged between 280 and 315.

The fluctuations in the Pennsylvania Railroad were about the same as in 1888, although the very destructive floods upon this company's lines unsettled the price of the stock for a time. The company's coal business has been very good, while its general freight and passenger business has been greatly increased under much better prices.

The Cumberland bituminous coal stocks have been very quiet and without special feature. The 'squeezing' policy of the Baltimore & Ohio Railroad has well-nigh strangled this as it has completely killed nearly all other local industries on its line.

For many years we have advised our readers against purchasing or holding the shares of the Cameron Coal Company. Some years ago this stock sold at \$50 a share under the most barefaced manipulation; later it disappeared at 50 cents per share. A new pool and new blood took hold again and even this year advanced the price to \$34 1/4. Afterward 'the bottom fell out' and it sold at \$4. We can't see how there can be a value to stockholders in this property of even four cents per share after the indebtedness is settled or the interest on it provided for,

Hocking Valley Railroad stock declined to 14 during the year, under the announcement that default would be made in the payment of interest on the company's bonds. This was averted, and it is believed that there is a brighter future for the company under the management of President Waite.

The affairs of the Colorado Coal and Iron Company came to a crisis during the year just ended, and the result was that the stock sold at 21. A new management went into power; Mr. E. J. Berwind, of the Berwind White Coal Company, one of the most successful coal operators in this country, consented to take the presidency, and has surrounded himself with competent and experienced men. Expenses have been cut down in every direction, and the company's finances have been greatly improved, and the business is being energetically pushed. The stock recently sold within a fraction of 40, and much higher prices are predicted for it, especially if the iron and steel trades should be as bright during the coming year as they promise to be.

Tennessee Coal and Iron Company's stock has ranged between 31 and 83 1/4. There is some cause for this in the improved condition of the iron trade and generally increased business activity in the South; but there is a strong suspicion that a pool in the stock has been the main cause. The company has altogether too much 'water' in its securities, and a suit has recently been commenced by the company against Mr. John Inman, its former director, for \$2,500,000, which represents some of this water.

THE NEW YORK AND SAN FRANCISCO MINING STOCK MARKETS IN 1889.

Eighteen eighty-nine in the mining markets of New York and San Francisco was a stereotyped repetition of 1888, save that if anything the year under review eclipsed its predecessors in dullness. No more tangible proof of this is needed than the fact that during 1889 but three new stocks were added to the list.

The condition of the mining industry throughout the year was exceptionally prosperous, and probably more men, money and machinery went into mines than ever before; but, for now quite familiar reasons, this condition of affairs was not reflected in the mining share markets of New York and the Pacific Coast. The public seems to be firmly impressed with the belief that all mining stocks offered on the market nowadays are sold to fill promoters' pockets and not to develop bona fide mines. This feeling, which generally obtains, shuts out new enterprises. As for the old ones listed on the two exchanges, only a few have given much encouragement to investors. The recent firmness in the price of silver temporarily helped some of the better class properties. Ontario and Daly continue to pile up dividends. Homestake pays steadily, although at a lower rate than last year. Horn Silver, after years of bad management, has vindicated its reputation as a mine and has become a dividend payer again. Quicksilver continues its returns on its preferred stock. Among the other dividend payers of the year have been Caledonia, North Star, Aspen Mining and Smelting, Morning Star, Evening Star, Alice, Small Hopes, and the new-comer, the Ward Consolidated.

The market for the Comstock shares during the year, both in San Francisco and New York, was deplorably dull. The magnates of the Pacific Coast gave the market little or no attention, not to say support.

As usual, Consolidated California and Virginia has been the feature of the year, opening at \$10 per share, and steadily declining to \$4.50 in

FLUCTUATIONS OF PRICES OF MINING STOCKS IN NEW YORK DURING 1889.

Table with columns for NAME & LOCATION OF COMPANY, Par val, and months from January to December, plus Sales. The table lists numerous mining companies and their stock prices over the course of 1889.

These companies paid dividends in 1889.

Assessment unpaid.

Dividend

FLUCTUATIONS OF PRICES OF MINING STOCKS IN SAN FRANCISCO DURING 1889.

Table with columns for NAME AND LOCATION OF COMPANY, Par val, and months from January to December. Each month has High (H) and Low (L) price columns. Includes companies like Alpha, Nev., Best & Belcher, Nev., and others.

These companies paid dividends in 1889.

FLUCTUATIONS OF PRICES OF MINING STOCKS IN BOSTON DURING 1889.

Table with columns for NAME & LOCATION OF COMPANY, Par val, and months from January to December. Each month has High (H) and Low (L) price columns. Includes companies like Allouez, Mich., Atlantic, Mich., and others. A 'Sales' column is present at the end.

* These companies paid dividends in 1889.

† Rights.

‡ Cash.

Total sales, \$86,854.

December. The company paid nine monthly dividends during the year, or about 75 per cent. of the average market value of the stock during the twelve months. The decline, it is generally believed, was occasioned by the growing conviction that the ore resources of the mine were being rapidly exhausted. If the company were able to continue monthly dividends throughout the coming year, there is reason to believe that those well acquainted with the condition of the mine—unless a deal is under way—would not allow the shares to be selling at the price they are at present, which would be more than covered by twelve monthly dividends of the usual amount. It therefore seems probable that the so-called "insiders" apprehend possibly a temporary suspension of dividends during 1890. In the East many investors are inclined to look upon the low price of the stock simply as a revival of the old squeezing out process which has become so familiar in the history of the Comstock manipulations.

Confidence tried to keep its good record of 1888, but failed. A dividend of \$1 per share in April was the only return made to the shareholders during the year. Alta has stopped levying assessments, and according to the latest reports, is now, or will shortly be, on a dividend basis.

Other Comstock shares were dull and uninteresting. The table of prices on another page show how narrow were the fluctuations in their values. The condition of the mines themselves does not seem to have improved. A great deal of the ore extracted returns over \$20 per ton, but cost of mining is large, and then when the mill owners take their profit out of it, there is apparently nothing left but salaries for officials and assessments for stockholders.

The tireless investors of the West, however, "never say die," and great confidence is professed in a number of plans for the further development of the famous "Lode," the most important of which are the drainage of the lower levels of the Gold Hill mines and the westward extension of the Sutro Tunnel. On both of these projects it is believed that work will shortly be commenced.

The long talked-of reorganization of the Sutro Tunnel Company has been effected, and the Comstock Tunnel Company is the name of the new organization. Some of the old Sutro Tunnel stockholders, however, are dissatisfied with the manner in which the reorganization has been accomplished, and more litigation is promised.

The Tuscarora stocks during the year have been disappointing, Navajo being the only dividend payer.

The once famous Bodies have fallen into a lethargy, from which the public seems to have little desire to awaken them.

Colorado shares have contributed a large part of the dealings. The Aspen Mining and Smelting Company shares were listed early in the year, and as the company paid seven consecutive monthly dividends, it was hoped that it would prove an exception to the general run of new companies, which in recent years have paid dividends principally to their promoters. The company's ore fell off in value for a while, however, and then came a difficulty in making satisfactory contracts for the disposal of the ore.

These difficulties have prevented dividends since July. There is some hope, however, of their ultimate resumption. The decline in the price of the stock during the year was \$4.00 per share. Leadville shares held their own during the year. Leadville Consolidated opened at 10c. and sold as high as 15c. in March, but from then on to September showed a declining tendency, selling in that month at 7c.; latterly the property has been making money and the stock has advanced to 12c. Small Hopes has been able to pay one dividend; the stock fluctuated from 82c. to \$1.75. Iron Silver has had a rather unfavorable year, and the condition of the company has been reflected by a decline in the stock from \$3.50 in February to \$1.80 in the summer and early fall; latterly, however, a strike of more or less rich ore in the mine has enabled the mine to make a better showing, and the stock has reacted to \$2.40. It has also been a year of disappointment for the Colorado Central Company and the stock has depreciated over 50 per cent. in value. Chrysolite, although the prospects of the company have not at all improved, has advanced from 15c. in April, the lowest price in the year, to 31c. at the close. There has also been a small boom in Breece, although the property of the company was for the most part dormant. Supporters of the Bassick still believe that their property is not worked out, but the stock on limited transactions has shown a slight decline. Toward the latter part of the year, Freeland—an old-timer—has suddenly awakened to activity. From all appearances, a deal of more or less interesting proportions is under way in the stock. Lee Basin, one of the new-comers of 1888, sold only in the early part of the year, and at 70c. to 65c. A large amount of Lacrosse has also changed hands, but the fortunes of the company have undergone no change. Cashier has been reorganized.

The Dakota stocks have attracted a great deal of attention during the year. Calendonia opened at \$3.35, but as the grade of the ore in the mine gradually fell off, the stock sympathetically declined, and after a suspension of dividends in November a sensational break of 50 cents per share occurred. Homestake opened at \$13.50; the reduction of dividends from 10 to 20 cents per share per month in April brought about a decline in stock from which there was a subsequent reaction to \$10. Deadwood Terra paid no dividends during the year, but on the whole, there was no net decline in the stock. A notable advance occurred in Iron Hill. The opening price in January was 10c., and lately sales have been made at 55c. The advance was occasioned mainly by the improvement in the company's prospects on account of the apparently successful application of the new pyritic smelting process to its ores. Father de Smet opened at 44c. and declined to 19c. in October. The decline was apparently caused by manipulation, as the stock then underwent a rapid advance to 65c., which is approximately the closing figure.

Among Arizona shares, Silver King and Phoenix were the most prominent. Silver King sold in January at \$1.30, and in December at 20 cents. The surplus in the company's treasury steadily decreased throughout the year. The minority in the board of directors say they have no voice in the company's management, and altogether the year was a most unsatisfactory one for its stockholders. On the other hand, a number of stockholders in Phoenix have been endeavoring to relieve the property of the opprobrium cast upon it by the questionable deals to which it was subjected by its former managers. Actual work upon the property

has been commenced and with honest and economical management the stockholders now hope to be able to prove the value of the mine.

El Cristo, until within the last month, was quiet throughout the year. Fluctuations in the stock were wide; it declined to 56c. in January, advanced to \$1.90 in March, then gradually declined to 75c. in September, since when there has been a gradual rise to \$1.60. There is no dearth of predictions among those interested that a boom in this stock equal to its former rise in 1887 is underway.

The market for mining stocks in both cities continues to be greatly hampered by the presence on the active list of the exchanges of virtually worthless securities. These "cats," against which the ENGINEERING AND MINING JOURNAL has waged a relentless war of extermination, become disagreeably conspicuous at the signs of any real activity in more respectable stocks and naturally create a feeling of distrustfulness among, if they do not actually drive away, investors. The Committee on Mining Securities of the New York Consolidated Stock and Petroleum Exchange, at the instigation of the ENGINEERING AND MINING JOURNAL, have stricken a number of objectionable stocks from the list. Their work, however, is not yet completed and it is too early to judge of results.

BOSTON MINING STOCK MARKET IN 1889.

From our Special Correspondent.

That the past year has proved a great disappointment to holders of copper stocks cannot be doubted. When the year opened the market for ingot copper was controlled by the French syndicate, and the price of the metal was at a figure which afforded a large margin of profit to all the producing mines, and, consequently, stocks were buoyant, and expectations of large profits and fat dividends were freely indulged in. The collapse of the syndicate, and the consequent decline of ingot copper from 16½c. to 11c., completely upset all the calculations of operators and speculators, and many of the mines which had started up, and which were expected to prove remunerative to the stockholders, were compelled to shut down, while the large companies were obliged to restrict their production and reduce dividends. The highest prices of the year were recorded in January, when everything had a rose-colored hue, and indications pointed to a great success of the copper magnates in their efforts to control the production of the world, and make their own price for the metal. It was not long, however, before it became evident that they had a bigger job on their hands than they had counted on, and rumors of trouble in the camp were freely circulated, which had a demoralizing effect upon the market, and a sharp decline in prices followed, which reached the lowest level in May. From that date a quiet reaction set in and prices gradually began to improve, and the past two months has witnessed a good degree of activity in the market and a recovery in prices, which, although not quite up to the point at which the year opened, are still tending that way. The advance in ingot copper from 11c. to 14½c., owing to the increased consumption of the metal and the short supply this side of the Atlantic, has stimulated the market for the dividend paying mines, and public attention has been attracted to the copper stocks as offering large margins for profit in the near future. These remarks apply to the class of stocks usually dealt in in this market, and which are dividend-paying, but there is a large class which have not begun to be active, but which, we believe, will show handsome profits over prices which may be paid for them now, while the dividend producers will no doubt sell much higher.

In reviewing the market, we find that Calumet & Hecla, which is the leading and highest priced stock in the market, sold down to \$199 during the period of extreme depression in May, and, although seriously crippled by the fire of last year, has nevertheless paid its stockholders \$15 per share in dividends, and its stock has gradually advanced since that time to \$260, or within \$40 of the price at which it sold in January of this year.

Tamarack, next in order of value to Calumet & Hecla, sold down to \$100 per share, but following its near neighbor, it has nearly recovered the loss, and has sold within the past month at \$150. It is one of the great mines of the future. Its offshoot, Tamarack, Jr., has not yet been listed on the Stock Exchange, but we hear that its prospects are very flattering, and that it will soon be in condition to speak for itself.

Quincy, one of the oldest standards, declined from \$85 to \$46, and recovered to \$70 on the recent advance. The stockholders have received \$7 in dividends the past year, and will, doubtless, receive \$2 in February next. Franklin has felt the depressing influence of the market and declined to \$84. Owing to the low price of ingot copper and the failure of the syndicate to keep their contract, the company was obliged to pass the July dividend; but the advance of the past month has enabled them to dispose of their copper at a remunerative price, and pay a dividend of \$2 per share, making \$4 for the year. The stock has recovered the loss and is now selling at \$15½ and dividend, or about the same as last year. Osceola sold as low as \$7½ in May, when the tide was lowest, but gradually worked up as the prospect brightened and reached \$12 in October. Later reports from the mine have been of a very favorable character, and, with the general good tone of the market, the price has advanced to \$24. The company paid but one dividend of \$1 per share the past year, but from the present outlook the stockholders may reasonably expect to receive good dividends upon their investment even at the present price of the stock.

The Atlantic mine was depressed from \$18½ in January to \$8.25 in May, and touched its lowest point in October, viz., \$7½, from which it quickly rallied, and has sold up to \$15 within the past month. Only one dividend of \$2 for shares has been paid this year. The Kearsarge mine, owned largely by the Tamarack people, which was selling at \$12 in the early part of the year, sold down to \$4½ in October. The insiders bought up all the stock to be had at the low price, and when a dividend of \$2 was announced the stock advanced to \$10½, receding, however, to \$6½, ex-dividend. The possibilities of this mine are large, and it would not be surprising if it should prove to be a permanent dividend paying mine in the future.

Central has been inactive; very few dealings in it. The stock is largely held in New York and only occasionally does it find its way into this market. It sold as high \$20 and as low as \$10 the past year.

Boston & Montana has perhaps been the most active stock among the copper past year. It is one of the largest producers in the country and is largely held by Boston people. The stock sold at \$70½ in January last and was one of the first to feel the effects of the fall of the syndicate, selling down to \$29, as its lowest record in May. Its recovery has not been so rapid as its competitors, but it has been enabled to pay \$5 in dividends, and its stock is now selling at about \$47 to \$48 per share. The present year they expect to pay at least \$6 on its 125,000 shares.

Butte & Boston has not come up to the expectations of its friends at the opening of the year. The downfall of the syndicate doubtless had much to do with it; there has been but little trading in it, but the price did not go down below \$19 at any time during the year, and is selling now occasionally at \$20 to \$22.

Among the Lake Superior mines which were expected to do something for their stockholders the past year, but which the decline in ingot prevented, we may mention National, Huron, Allouez, Ridge, &c. National declined from \$7½ to 50c.; Huron from \$6 to 62½c.; Allouez from \$4½ to 50c.; Ridge from \$1½ to 75c. These stocks have all recovered from the lowest prices named, and are now looking for a fair degree of activity and improvement the coming season. Pewabic, a near neighbor to the Quincy and Franklin mines, has lately been in good demand by parties interested in getting control of the property, and its stock, which sold in September at \$2½, is now selling at \$7.

Early in the year the Santa Fe Mining Company, of New Mexico, was put on the market. This company has 500,000 shares at par value \$10, and was started at \$2 per share, and sold up to \$2½. With the rest of the market this stock was depressed, and declined to 50c. in April and to 35c. in October. Since then it has gradually improved, and has sold the past month at \$1½. A reorganization of the company is talked of by reducing the number of shares to 100,000, which is a move in the right direction. The property is said to have great possibilities, and may take a prominent position among the copper producers of the world.

The large army of non-producing mines which gave promise of a good degree of speculative activity when the year opened failed to respond, and very little has been seen of them during the year. With any active speculation in the general list, however, they will be likely to participate and play a prominent part in the market as they have in years past. The silver stocks have been almost entirely neglected. A few like Dunkin silver, Catalpa and Crescent, with Napa quicksilver, are sometimes quoted. The former, which is largely held in Boston, has been the most active of the list, selling as high as \$1½ and as low as 60c. It has paid four dividends of 5c. per share each during the year; but owing to the purchase recently of a new property, requiring more or less money for development, the directors have thought it prudent to pass the January dividend. The stock is now selling at 60 to 65c.

Napa quicksilver has improved during the year, owing to the better demand and higher price for the metal. The company has paid four dividends of 10c. per share, with an extra dividend of 10c. The stock sold in January last at \$2½, and is now selling at \$4 ex-dividend.

The outlook for the coming year may be said to be fairly good for a substantial advance, both in the price of ingot copper and in the value of the shares of the copper companies. The demand for the metal is such that it will task the ability of the several companies to keep up their production to meet it, and the most encouraging part of it is that there is now no combination to force the price up to an unreasonable figure, but the market will be left to follow the natural law of supply and demand. This healthy condition will doubtless stimulate production to a certain extent in those mines which are unable to produce copper at low rates, and so enable them to add their mite to the general product and to the benefit of their stockholders.

THE GOGEBIC MINING STOCK MARKET IN 1889.

From our Special Correspondent.

Since my annual report for 1888 of Gogebic iron properties and stocks there has been a number of material changes, among which I have to note sales of the following properties, most of which have been bought by railroad corporations, viz., the Aurora, Ashland, Germania, Montreal, Pabst, Superior, Section 33 and Windsor. Although shipments of ore are not yet completed for the season, I think it will be safe to say that the entire shipments from the Gogebic range by lake and rail will not be less than 2,200,000 tons, with prospects of much larger shipments in 1890. Shipments from this range since its discovery show a steady and decided annual increase.

They have been as follows in tons: 1884, 1,022; 1885, 120,000; 1886, 750,000; 1887, 1,285,250; 1888, 1,425,000; 1889, 2,250,000. There has also been a healthy and advancing market for stocks, as is shown by the following table:

Comparative price of stocks in 1888 and present time:

	Dec., 1888.	Dec., 1889.
Aurora.....	\$4.50	\$7.00
Ashland (none on the market).		
Anvil.....	1.00	3.00
Brotherton.....	1.00	2.00
Colby (none on the market).		
Germania.....	7.50	10.00
Gogebic Iron Syndicate.....	.25	.40
Iron Belt.....	.75	1.00
Montreal.....	9.50	5.00 nominal.
Metropolitan, comprising Hourli, East Hourli and Pabst mines.....		60.00 bid for these.
Odanah.....	2.00	12.00
Pence.....	1.50	1.50
Superior, capital stock \$100,000.....	.75	7.00 capital stock \$25,000
Section 33.....	1.25	8.00
Ryan (no stock on market).		
Windsor, capital stock \$100,000.....		10.00

During the past 70 days there has been more activity in stocks and a better demand than at any time since 1887. It is now estimated that from the Lake Superior region alone there will be shipped not less than 8,000,000 tons of ore this year—a larger amount than has probably ever been shipped from any other ore-producing district in the world. It may be safely predicted that with no ore in the market, and prices for 1890 delivery having advanced from \$1 to \$1.50 per ton, a prosperous year is before us.

BALTIMORE MINING STOCK MARKET IN 1889.

From our Special Correspondent.

Extreme dullness reigned in the mining stock market during the year 1889. The brokers and operators, though, are not disheartened, but look forward to better times in 1890, arguing that the season of depression cannot extend beyond a decade.

We have not had a really active market since 1881. Since our last annual review nothing has occurred to excite special comment, and prices at the closing of the year, for the most part, show but little change from the opening.

In the "fancies," Baltimore and North Carolina copper shows a loss of nearly 20c. An assessment of 2c. per share, and the probability of another more expensive one in the near future, are responsible for the weakness. The last sale was at 9c. North State dropped to 20c. and some long standing short contracts were covered. We do not hear so much talk now of the large quantity of precious ores "in sight."

Silver Valley also shows a small loss for the year, and can be bought for 35@45c. Its friends continue to give it some feeble support.

A "boom" was attempted in Lake Chrome, based on the fact that a new process for reducing the ore had been perfected, or that the soil had been discovered to be especially adapted to water-melon culture. No matter which report is correct, "the people" did not buy the shares, and the movement soon petered out. The quotation is now nominal.

The coal stocks, though sharing the dullness of the balance of the list, have held their own pretty well, and those that have declared their January dividends make no reduction in the rate.

The earnings of the companies are probably not quite up to last year, and the car movement has been rather lighter.

The mine owners blame the railroad companies for not furnishing them with better facilities in the way of cars.

FLUCTUATIONS IN PRICES OF MINING STOCKS AT BALTIMORE IN 1889.

NAME OF COMP'Y.	Par value	Opening.		Highest and lowest during the year.				Closing.	
		Bid.	Asked.	Bid.		Asked.		Bid.	Asked.
				H.	L.	H.	L.		
Atlantic Coal.....	10.	\$1.25	\$1.50	\$1.40	\$1.00	\$1.90	\$1.40	\$1.00	.....
Balt. & N'th Caro.	5.	.24	.30	.30	.05	.35	.15	.05	.....
Big Vein Coal.....			1.02	1.45	1.10	2.00	1.25	.....	1.50
Conrad Hill.....	5.		.15	.17	.05	.27	1.10	.....	1.50
Consol. Coal.....				.28	.22	.29	.26	.22	.....
Diamond Tunnel.	10.	.37	.45	.47	.30	.50	.25	.35	.....
George's Creek..	100.	100.00	110.00	115.00	100.00	115.00	110.00	.....	112½
Lake Chrome.....	5.	.05	.11	.10	.05	.20	.05	.08	.....
N. State, Balto...	5.	.20	.....	.20	.15	.35	.22	.....	.22
Ore Knob.....		.07	.....	.08	.05	.12	.10	.....	.12
Silver Valley.....	5.	.30	.90	.90	.30	1.00	.45	.35	.....

PITTSBURG STOCK MARKET IN 1889.

From Our Special Correspondent.

The past year has been one of great prosperity within our city. Not only has the population, manufactures, and general business vastly grown, but our people have been uniformly successful and prosperous. With only one serious failure to record among our manufacturing firms during the year, and that one attributable wholly to the most prodigal management, we can feel justly proud of our position financially, and continue to believe that our business interests rest upon a solid foundation. One very important factor in the material progress of the once "Smoky City," is, of course, our wonderful "natural gas," which continues to pour forth from the earth in ample volume.

During the year the prices of gas stocks have declined steadily, notwithstanding the supply of the valuable commodity has not materially fallen off. The volume remains quite as great as at any time, but the pressure is, perhaps, not so strong. The price of the leading stock, the Philadelphia Company, at the opening of the year was \$40, with sales in the last week at \$29, par \$50. The chief cause for this decline was the changing of the dividend from one per cent. monthly to two per cent. quarterly. The year closes with sales at \$30.

The Chartiers Gas Company has fallen to \$42, par \$100, in sympathy with its lessee, the Philadelphia. No dividend has been declared during the year, although one of six per cent. is promised and expected early in January.

The Bridgewater Company, the Ohio Valley and the Manufacturers have all declined, owing to the stoppage of dividends. The reasons given for such a course are without doubt correct, viz., that the cost of maintenance for new wells and extension of pipe lines to same, have exhausted the surplus revenues. The indications are that after the present field operations are completed dividends will be resumed.

The People's Company and Allegheny Heating Company still pay regular dividends, the former one per cent. monthly and the latter quarterly, at the rate of eight per cent., with an occasional extra sum. Both of these companies remain at par.

The Westinghouse Electric and Manufacturing Company, with capital of \$5,000,000, continues to turn out the enormous total of about a half million monthly of its products. Its business has steadily grown, while its stock on the market remains stationary at or about par. At the beginning of the year it sold at \$35, par \$50, and advanced on rumors of consolidation with other companies to \$63.50. Subsequently it sold down to \$45, and has remained steady at and around par, with occasional breaks to \$47 and advances to \$52. Its dividend is quarterly, at the rate of six per cent.

The Westinghouse Air Brake Company stock holds its own and varies but little. Its capital is also \$5,000,000, dividend 16 per cent. quarterly, with an extra dividend declared, payable January 1st, of two per cent.

FLUCTUATIONS IN PRICES OF STOCKS IN PITTSBURG DURING 1889.

NAME OF COMPANY.	Par val.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.			
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.		
Mining.																											
Consignee, N. M.	10							35.00	18.00																		
Consolidated Gold Co.										30.00			31.00				38.00	35.00	38.00		38.00		40.00	38.00	38.00		
Charlotte, Va.		5.00	4.63	5.00																							
Gogebic Ir. Synd., Mich.	25																			2.50		2.13		2.13			
Hidalgo, Mex.																											
Iron City, Cal.	2																										
La Noria, Mex.	25	1.88	1.13	2.00	1.50	1.88	1.50	2.25	1.15	2.00	1.13	1.75	1.25	2.25	1.50	2.00	1.50	1.63	1.25	1.25	.63	1.00	.63	.75	.63		
Lustre Mg., Mex.	25	15.00		10.00														10.00		10.00	4.00	15.00	10.00	25.00	14.00		
New York & Cleveland	50	35.00		40.00	35.00	40.00	36.00	37.50	37.25	37.00	35.00	37.00	35.00	36.00	34.00	30.00		30.00		36.00	4.00	37.00	33.50	37.00	35.00		
N. Y. & Westmoreland	50																										
Silverton, Colo.	10	1.50	1.00	2.00	1.25	1.50	1.00	1.50	.88	1.00		1.75	1.00	1.00	.50	1.00	.75	1.00	.75	1.00	1.00	1.00		1.00			
Yankee Girl, Colo.	25													1.00	.60			6.75	4.00	4.00	2.00	3.50	2.75	4.00	2.50		
Natural Gas.																											
Allegheny (Illuminating)	25	36.25	35.00	36.00		36.00	36.00	36.00		38.00	36.00	38.00	37.00				38.00	38.00	38.00		38.50	38.00		39.00	38.00		
Bridgewater	100	56.00	35.00	60.00		20.00		51.00	40.00	60.00	40.00	50.00	47.00	52.00	35.00	46.00	25.00	45.00	25.00	43.00	25.00	30.00	25.00	29.00	25.00		
Chartiers Valley	100	60.00	50.00	56.00	51.00	56.00	50.00	55.00	50.00	54.00	49.75	52.00	49.00	50.00	47.00	51.00	49.00	51.00	49.00	50.00	45.00	48.25	45.00	48.00	39.00		
East End																		55.00									
Kittanning, Pa.	50					50.00		61.00																			
Manufacturers	50	27.00	20.00							30.00	23.00			40.00	25.00	30.00	20.00	36.00	20.00					25.00			
Natural Gas Co. of W. Va.	100	60.00	55.00					85.00	57.50	70.00	56.00	70.00	67.00	70.00	67.00	85.00	70.00	85.00	78.00	81.00	78.00	78.00		75.00			
Ohio Valley	50	35.00	25.00	34.00		26.00		40.00	35.00	36.00	32.50	35.00	25.00	35.00		35.00	34.00	34.50	39.75	35.00	30.00	31.75		32.67	32.00		
Pennsylvania	50	17.00	13.88	16.00	13.00	20.00	14.00	22.00	16.00	22.00				18.00	14.50	15.25	15.00	17.63	15.00	15.38	15.00			15.25	15.00		
Peoples' Natural Gas Co.																											
Peoples'	50	15.00										18.00	18.00	16.75	17.50	19.00	20.00	17.00	20.00	17.38	17.50	16.25	17.25	16.00	15.50	14.50	
Philadelphia	50	40.50	38.00	38.50	37.13	39.88	36.00	45.00	38.25	42.00	35.38	37.50	36.50	38.00	36.25	37.75	37.00	37.50	35.25	35.75	31.50	33.75	30.00	30.38	29.00		
Pine Run	100							90.00		82.50	100	85.00	100.00	85.00				91.00	90.00	90.00				85.00			
Pittsburg (Illuminating)	50	70.00		62.50	60.50	62.50	61.00	62.50	61.00	62.50	62.00	62.00					62.00		62.00		66.00	64.00	66.00	64.00	80.00	64.00	
Pittsburg (Illuminat'g)	50																										
Royal Ohio	50							26.00		26.00	25.00	26.00	24.00	26.00	25.00	25.00		25.00	25.00	25.00		24.00		24.00			
South Side (Illuminat'g)	25	28.00																			64.00	50.00	60.00		60.00		
Union															60.00	54.00											
West End						66.00																					
Westmoreland & Cambria	50	50.00	33.00					40.00				40.00	15.00	35.00	15.00			28.00	25.00	28.00	25.00	28.00	25.00	28.00	25.00		
Wheeling	50	30.00	27.25	30.00	28.25	31.00	28.50	39.50	20.00	34.00	29.00	32.00	29.00	31.00	20.13	31.50	29.88	30.00	27.00	30.13	25.00	30.13	27.25	27.50	20.00		
OIL.																											
Columbia	10	4.00		3.88	3.50			3.75	3.00											4.00	2.00	3.00	2.75	3.00	2.50	3.00	2.25
Forest	100			90.00								100.00	95.00	400	99.00	103.00	100.00	110.00	102.50	110.00	107.00			115.00	108.00		
Hazelwood	50			42.00	41.00	42.50	41.00											50.75	50.00	51.00	50.00	55.00	50.00	68.00	50.00		
Tuba	50	63.00	61.00	66.50	66.25			68.00	75.00	68.00	67.00			68.00		68.00	67.63	68.00	60.00	68.00				70.00	68.00		
Washington	100	70.00	60.00					75.00		75.00	70.00	74.50	72.00	80.00	72.50	85.00	79.00	90.00	82.50	81.00	77.00			85.00	75.00		
Machinery																											
Westinghouse Air Brake	50	125.00	118.00	121.00	119.50	123.00	121.00	125	119.38	120.00	115.00	120.00	115.00	118.00	115.00	116.00	114.00	116.00	114.00	114.50	112	114.50	112.50	120.00	112.00		
West'house Brake, Ltd.	50	64.00	60.00	63.00	61.00	64.00	60.00	64.25	64.00	64.00		64.00		31.50	17.75	64.00	60.00	64.00	60.00					65.00	62.75		
West'house Electric Co.	40							62.00	56.38	59.63	54.00	56.00	50.00	51.00	49.00	52.75	51.00	52.00	51.00	50.13	44.50	49.50	48.00	47.75	46.38		

It is one of our successful and prosperous companies. The stock is held at \$117; par, \$50; with sales recently at \$114.

Within the year the Westinghouse Machine Company has become a dividend payer at the rate of six per cent., while an extra dividend of five per cent. was declared recently.

The preferred stock of the Union Switch and Signal Company has, during the year, paid dividends at the rate of six per cent., and the Standard Underground Cable Company promises early in the year to take position as a dividend-paying stock.

Pittsburg has completed two cable roads within the past year, the Citizens' and the Pittsburg Traction. Both run to the east end of the city and are paying dividends, the former six per cent. and the latter four per cent. The Central Traction, also running eastward, will be completed January 1st. Stock of Citizens held at \$70 per share, par \$50; Pittsburg, \$47, and Central, \$33. The Pleasant Valley electric road, running between Pittsburg and Allegheny, will also be completed on or about the first of the year, being the first completed electric road within the two cities. Its capital is \$1,300,000, par \$25, and the stock is selling at \$23.50, having gradually increased in value as the building of the road progressed.

The Pittsburg, Allegheny & Manchester Railway Company will commence building their new cable road in the spring, and the Birmingham cable road, to the south side of the city, will also be completed during the summer. The former has declared its usual 5 per cent. semi-annual dividend.

The glass, iron and steel industries of our city have steadily grown and prospered during the year. The steel rail, plate glass factories, and the tube works have all been running full time throughout the year, and the outlook for the future is very encouraging for business in all branches.

Money has been plenty, and discounting liberal at the banks, the usual autumn squeeze having, to any disturbing extent, failed to appear.

The coke trade of our city has been greatly enlarged and extended during the year, and is now numbered among our leading industries. Coke is delivered all over the United States, as far as the mines of the extreme western and northern portions of the continent, while Pittsburg soft coal is shipped to all points, and is manufactured into gas in every portion of the country. Coke stocks and bonds are in demand, and no industry makes a better return for the capital invested. The field is practically exhaustless.

In mining matters we have to record a rapid increase in Lustre mining shares and in Yankee Girl, and a great tumble in La Noria. The first and last companies hold properties in Mexico, while the Yankee Girl mine is in Colorado. Lustre has rapidly advanced from \$5.00 per share, par \$10.00, up to \$40. Yankee Girl has come up from \$1 to \$3, while La Noria which one year ago sold at \$1.25, par \$25, advancing during the year to \$3.00, has sold as low as 50c. per share, and is now held at about 75c. per share. It seems to be a "dead duck." A meeting of the stockholders has been called for January 6th, and perhaps something may be done to rescue it, temporarily, from oblivion.

Total sales of stocks on our exchange during the year, 156,000 shares against sales in 1888 of 128,000 shares.

The sixty-two banks in Allegheny County have a capital and surplus of \$100,000,000, and but one failure, and that a State bank, is recorded during the year. Mismanagement and gross banking irregularity can be charged as the cause. It could not have occurred with a National bank.

For full quotations on all our leading stocks reference is made to our full table of prices to be found elsewhere in this issue.

ST. LOUIS MINING STOCK MARKET IN 1889.

From our Special Correspondent.

Notwithstanding the numerous wrecks of mining companies that mark the course of the year 1889, and the many ventures that have proved disastrous failures, St. Louis is yet one of the greatest mining markets in the country, and gives promise of exceeding previous years by the number and richness of the productive mines listed at the exchange. The business of the past year has been an active one and has exceeded that of the year before by 100 per cent. During the winter and spring, and, indeed, far into the Summer months, when dullness is expected, trading in mining stocks was exceptionally good, and to the surprise and gratification of the brokers, exceeded their most sanguine expectations. During the fall and early winter months, however, business which had succumbed to the midsummer dullness failed to revive to any great extent, and the close of the year witnessed unusual depression. Speculation appeared to have died out completely; the outside public, who had heretofore required little inducement to invest in stocks, refused to be tempted. The fact is they have been bitten so often, and so many of the properties in which they had invested had proven losing ventures, that it has been almost impossible to create an interest in mining stocks. And there has been good reasons for this. Mines that early in the year held out brilliant prospects of becoming dividend payers, have failed to keep their promise. Many have died out completely, while the stocks of those which still continue to drag out an existence have declined steadily, and are now either practically worthless or have depreciated in value to such an extent as to cause a distrust for mining speculations. This depreciation in the value of stocks has not been confined to non-dividend payers; the year has been a bear one for all. Granite Mountain, the greatest silver producer in the country, and which has paid a total of \$8,000,000 since April, 1885, and which sold as high as \$69 per share at one time, dropped, during the year, to \$41, but has again reacted, and is rapidly approaching its old figure. The Mary Murphy, with a record of \$5 a share dividends, and which sold as high as \$1,250 per share, sold recently as low as \$70.50. Hope has declined steadily ever since the dividends ceased. The Adams, Small Hopes and Mountain Key have dropped out of the list of dividend payers, or, as in the case of the two last, pay them only at long intervals. The West Granite, from which great things were expected when it passed into the hands of the Granite Mountain syndicate, has as yet done nothing, nor can anything be expected from it for some time to come, the nature of the development work laid out precluding any returns for a year at least, and, owing to this fact, it has lost much of its reputation as a speculative stock, and is held as an investment. The Ivanhoe, which paid one dividend during the year with a great flourish, has never been able to repeat it. The Silver Age, of which great things were expected, but which it has failed lamentably to keep, is deeply in debt. Of the number of new and old properties in this market, the only one that has fulfilled its promise to its stockholders is the American Nettie, which was located January last, incorporated in March, and paid its first dividend of 10 cents a share the following July. Since then this mine has paid \$30,000 per month or a total of \$150,000 but has been compelled to pass the December dividend on account of the heavy snows preventing shipments. The Bi-metallic is steadily improving and shipping at the rate of 16 cars a month, and will be among the dividend payers

next year. The Mikado, a close corporation, has divided \$500,000 among its owners. The failures have been numerous. Among the stocks that were prominent last year, but which have passed out of existence, are the Mary Foster, San Francisco Consolidated, Golden Era, Rena, Pedro, Grey Eagle and Andersen, but their places have been filled by a number of new mines, which have been organized upon a strong financial basis, and although not dividend payers are large producers, with every prospect of paying before many months.

THE DENVER MINING STOCK MARKET IN 1889.

From our Special Correspondent.

The Colorado Mining Stock Exchange opened in Denver in July. Its avowed object may be said to be to afford the public an opportunity to develop the mineral resources of the State and to allow them to reap the direct benefits of such development. The management of the exchange thus hope to develop legitimate mining enterprises.

Unfortunately, some of the investments offered on the exchange seem to be of doubtful value, and so strongly has the "boom" fever attacked the supporters of the exchange that the enthusiasm aroused by its establishment has blinded the better judgment of many.

There is also a suspicion that the total sales reported to date, nearly 11,000,000 shares, are not composed entirely of bona fide transactions in the full sense of the term.

It is to be hoped that honesty and good sense will so prevail in its management that past errors may be corrected and in the future the exchange may be a real benefit to the mining industry, and not an institution of so pronounced a "boom" character as to provoke distrust of the genuineness of its pretensions.

FLUCTUATIONS IN PRICES OF MINING STOCKS AT DENVER, COLO., IN 1889.

Table with columns: NAME OF COMPANY, July, August, September, October, November, December. Each month has H. and L. sub-columns.

SALES.—Allegheny, 346,600 shares; Amity, 1,174,450 shares; Aspen Mutual, 1,686,400 shares; Big Indian, 322,100 shares; Brownlow, 474,602 shares; Calliope, 151,250 shares; Claudia, 650,500 shares; Clay County, 168,000 shares; Hard Money, 187,800 shares; Legal Tender, 1,042,700 shares; Matchless, 499,500 shares; May Mazzeppa, 2,226,425 shares; Mollie Gibson, 120,200 shares; Morning Glim, 1,165,600 shares; Puzzler, 242,600 shares; Silver Cord, 27,400 shares; Whale, 169,300 shares. Total, 10,957,427 shares.

FLUCTUATIONS IN PRICES OF SOUTHERN COAL AND IRON STOCKS IN 1889.

Table with columns: NAME OF COMPANY, Opening (B, A), Highest and lowest during year (B, A, H, L), Closing (B, A).

* Bonds.

KANSAS CITY, MO., MINING STOCK MARKET IN 1889.

From our Special Correspondent.

The mining stock market has by no means been lively throughout the year. Speculation has been dragging along slowly with the market featureless and not of any particular interest.

There is a fairly active interest taken in mining in general. Several properties have been placed here in Kansas City in the past year. The interest is more in the line of investments in properties than speculation in stocks. The outlook for the next year is quite flattering, as, in all probabilities, we shall have some producing and paying properties owned

by Kansas City parties. The properties listed upon our board have, in the main, been "prospects." Had we some good dividend payers, the speculative tendencies of our people would be more apt to be made manifest.

Ruby Silver, in the spring, was our most active stock, some 35,000 shares of the treasury stock being sold at from \$1 to \$1.30, and used for development purposes. This property is now confidently looked forward to as being a dividend payer in the near future. Burch lead and zinc of Joplin attracted considerable attention for a time, and several thousand dollars worth of the stock changed hands at from 25 to 75 cents per share.

Templar was in bad repute, but is looking up now. Some 100,000 shares of this stock were sold at from \$1 to \$1.50 per share. Minnequa Zinc, of Joplin, has attracted a little attention lately. About 20,000 shares have been sold at 25 cents. This property, it is expected, will be a dividend payer within the next six months. There has been no attempt to boom any particular stock. Every mine and its stock has stood upon its own merits.

The Mining and Stock Exchange of this city is getting along nicely, and very materially helping to advance the mining and financial interest of this Western country.

FLUCTUATIONS IN PRICES OF MINING STOCKS AT KANSAS CITY, MO., IN 1889.

Table with columns: NAME AND LOCATION OF COMPANY, Par value, Opening July (Bid, Ask), Highest and lowest during the year (H, L, Bid, Asked), Closing December (Bid, Ask).

FLUCTUATIONS IN PRICES OF MINING STOCKS AT LONDON IN 1889.

Table with columns: NAME AND LOCATION OF COMPANY, Par value, Opening, Highest and lowest during year, Closing.

* These companies paid dividends in 1889.

FLUCTUATIONS IN PRICES OF MINING STOCKS AT PARIS IN 1889.

NAME AND LOCATION OF COMPANY.	Opening.		Highest and lowest during year.		Closing.
	Francs.	Francs.	Francs.	Francs.	Francs.
Boleo, Mex.	440.00	440.00	200.00	275.00	
Belmez, Spain	540.00	550.00	540.00	550.00	
Callo, Bis., Ven.	6.00	12.50	4.00	4.00	
El Callao, Ven.	67.50	111.25	58.00	93.75	
East Oregon, Ore.	45.00	49.00	18.25	19.00	
Forest Hill Divide, Cal.	390.00	400.00	220.00	220.00	
Golding River, Cal.	400.00	410.00	350.00	390.00	
" parts	62.50	80.00	60.00	65.00	
Lexington, Mont.	105.00	142.50	103.00	125.00	
" parts	4.25	5.00	4.25	4.00	
Ouay, Colo.	2.50	5.00	19.00	10.00	
" parts	5.00	5.60	4.25		
Rio Tinto, Spain	637.50	641.25	250.00	518.75	
Tharsis, Spain	151.25	152.50	85.00	119.50	

THE CHEMICAL AND MINERAL MARKET IN 1889.

HEAVY CHEMICALS.

Eighteen hundred and eighty-nine, in the market for the so-called "heavy" chemicals, was an eventful year. When the ENGINEERING AND MINING JOURNAL began the work of encouraging the development of the American chemical industry, it did so with the conviction that the supremacy of the English alkali makers using the Leblanc process was at an end, and that those engaged in this process of manufacture would, sooner or later, be obliged to fight desperately for existence.

The greater part of the past 12 months, particularly the latter half, in England has been occupied in vain endeavors either to prolong the existence of or to newly organize combinations of manufacturers to offset the sharpness of competition and the rapidly decreasing margin between the cost of production and market prices. The Parnell-Simpson and other processes for recovering sulphur from alkali waste will undoubtedly prolong the struggle with the ammonia process and enable the Leblanc to survive for a time, but it would seem as if its days were numbered, unless a revolution should take place in the cost of sulphur, of which there are no signs.

The ruling prices at the opening of the year were as follows: Caustic soda, 70-74 per cent., 2.30c. per pound; 60 per cent., 2.50c.; carbonated soda ash, 48 per cent., 1.30c.; alkali, Brunner Mond or Solvay, 58 per cent., 1.17c.; caustic soda ash, 1.35c.; bleaching powder, 2c.; sal soda, .95c. Up to about December 1st these prices were the highest for the year, and this is still true at the close for bleaching powder.

During the closing months of 1888 the demand for consumption was very active, but it soon became apparent in the first month of 1889 that consumers had liberally supplied their wants. Matters were made still worse by dissensions among the English makers, and before the end of January the supply of bleaching powder grew so large that importers were unable to sustain the market, and its price, which had been slowly weakening, dropped rapidly to less than a cent and three-quarters a pound.

Throughout the next few months trade continued light and prices low. It was learned that English manufacturers, members of the caustic soda and bleaching powder combinations, were not adhering to their agreements. Restriction of production was ordered, but the order had little real effect.

Various plans for new combinations were proposed during the summer months. The last and perhaps the most feasible one was based upon a proposition to allow each alkali manufacturer a fixed quantity of salt to decompose, but even this ultimately failed.

Bleaching powder was practically depressed during the year. Several causes were contributory to this depression. Consumption, owing to the growing use of substitutes for bleaching purposes, seemed to be somewhat checked.

The situation in the New York market was further aggravated by a fight between two leading importers for the control of certain brands which has brought about some very low quotations.

The weakness and collapse of the bleaching powder combination was, and is, still something of a surprise to those engaged in the importation of this article. The career of the "combine" began early in 1883, thus extending over six years. Prior to its formation, excessive competition had forced prices down to about £4 a ton, or about 25 per cent. less than those now ruling. Inasmuch as present prices are now claimed to be unprofitable, it can be readily understood how urgent was the call for a combination in 1883. Since then there has been every reason to believe that the combination was both satisfactory and profitable. There were various curtailments of output ranging from 10 to 20 per cent.; prices were advanced to an average of about £7 10s, with occasional advances to even higher figures. Moreover, despite the efforts of the United States and of Germany to establish the industry at home, the English exports increased from 6,890,000 hundredweights, valued at \$1,732,600, during 1878-82, a period of unrestricted competition, to 7,848,000 hundredweights, valued at \$2,745,000, during the five years of combination, 1883-87. At last, however, this artificial regulation of the trade went the familiar way of all other trade combinations. The large profits stimulated production, then came internal dissensions, and now has come the collapse, accompanied by a drop in price of about 40 per cent., from £7 to £5 per ton. As to the future, there is much uncertainty.

Bleaching powder is not strictly a by-product of the Leblanc alkali process, but is usually made in conjunction with it; thus, during the depression in alkali, makers have relied on their profits on bleaching powder to balance their accounts on the right side. Now that this support is gone, the struggle will be severe, if brief.

Alkalis, with the exception of caustic soda, were in better demand during November and December. Carbonated soda ash early in December advanced about 20c. per cwt. in New York.

It is most gratifying to note the progress of the American industry in 1889. The alkali makers of this State, using the modern ammonia process, were obliged to increase largely their capacity, and have made im-

provements that will enable them to produce at lower cost than heretofore. The quality of the American article has always been the very highest in the market.

The importations of heavy chemicals during 1889 compare with 1888 as follows:

The United States Bureau of Statistics reports the following importations for the first ten months of 1889 and 1888.

Article.	1889.		1888.	
	Quantity, lbs.	Value.	Quantity, lbs.	Value.
Bleaching powder...	79,565,922	\$1,260,206	80,403,166	\$1,287,670
Soda bicarbonate.....	1,115,742	17,487	1,354,525	21,045
Soda Ash and Sal Soda...	250,270,100	2,386,838	240,909,391	2,336,545
Brimstone—tons.....	120,064	1,823,497	97,015	1,554,269

ACIDS.

In this, as in so many other markets during recent years, excessive competition has brought about a violent reaction in the shape of "combination" to control prices. A review of the New York acid market during the year just closed must be mainly a history of the formation of such a combination with its antecedent causes and immediate effects.

During the first six months of the year very few of the 12 or 15 manufacturers located in this and neighboring States were running their works to full capacity. The advisability of some action to relieve the situation was freely discussed, but on account of the frequent failures of similar measures in the past and the antagonisms which had so long existed in the trade, it was thought by many impossible to agree upon terms of combination.

Some of the more energetic makers at length resolved that waiting for the growth of consumption was likely to exhaust their resources, and in July all the manufacturers agreed upon a uniform schedule of prices, varying according to quantity, which was based on a small advance over the prices previously ruling. This schedule continued in force until the end of the year without change.

From the outset the combination in one important direction was favored with good luck; it is a singular coincidence that no sooner was a uniform price agreed upon than consumption, probably from outside and legitimate causes, began to increase. The combination and the improvement in business being coincident, the latter was naturally attributed to the former and thus the perfecting of the combination was greatly facilitated.

At first the agreement on prices was mainly a verbal one, and the last six months were spent principally in effecting an organization of a permanent character. As soon as this idea was broached several manufacturers protested against having their hands tied, to use a favorite expression. The result is that 12 manufacturers out of the 15 in this vicinity united to form the New York Chemical Club. Out of this grew the Knickerbocker Chemical Company, which was legally incorporated in November under the laws of the State of New Jersey, and which will have the general control of the policy of 12 makers already referred to.

The three manufacturers who are in no way included in the "combine" profess to be adhering to schedule prices, but it is apparent that they constitute a menace to the maintenance of prices and are the "little acorns from which great oaks do grow" to break such combinations.

The articles nominally under control are sulphuric, nitric and muriatic acids and aquafortis.

The price of acetic acid, which is manufactured by only a few makers, is regulated by a smaller combination composed of the manufacturers interested. The price of this acid during the year was particularly depressed, and owing to the advance in the cost of acetate of lime the margin between cost of production and selling prices was very narrow.

The depression in the nitrate of soda market during the last half of the year, on the other hand, cheapened the cost of nitric acid.

Sulphuric acid makers were also fortunately situated in having cheap brimstone, which went down to about \$18 for thirds—as low a price as has ever been reached in this market, and one which, with freights deducted, touches cost of production in Sicily or Japan.

FERTILIZING CHEMICALS.

The market for crude fertilizing materials during 1889 was not up to expectations. The preceding year had been one of largely increased consumption, which the capacity of many manufactures was required to supply. The year, therefore, opened with a feeling of confidence as to the future, and preparations were made by many for a continued increase in business. The more conservative members of the trade claim not to have shared in these sanguine feelings, but it is generally admitted that a larger demand was looked for than that which the year developed. Consumers in the last few months of 1888 had evidently more than supplied their wants for some time to come, and consequently a falling off in demand was observable in the early part of the year under review.

In fact, throughout the year an over supply of crude material was the principal cause of depression, and the excessive competition and cutting of prices that occurred were attributable to this cause. Under these circumstances the market naturally continued dull throughout both the spring and fall seasons. Ammoniacal material during the latter part of the year was particularly depressed, with the exception of sulphate of ammonia itself, which, owing to decreased production and a larger use for purposes other than the manufacture of fertilizers, was maintained at firm prices.

There is very little of interest to note concerning the various potash salts during the year. Under the arbitrary ruling of the Stassfurt syndicate natural causes had little effect upon the market excepting so far as the general falling off in demand produced a surplus supply despite the restrictions of the syndicate. Muriate of potash appeared to be the article particularly favored by the German producers, as prices of both kainit and sulphate of potash were kept at figures sufficiently high to divert a great deal of the demand to muriate.

The importations of kainit during the year aggregated 12,600 tons. This compares with the receipts during the three preceding years as follows: 1888, 17,500 tons; 1887, 6,000 tons; 1886, 16,900 tons. The syndicate price throughout the year has been \$10 per ton actual weight, and \$9.75 per ton foreign invoice weight.

The importations of muriate of potash during the year aggregate 28,445 tons. This compares with the receipts for the two preceding years as follows: 1888, 27,922 tons; 1887, 17,905 tons. The importations at the port of New York for the three years were respectively 18,030, 16,560 and 9,945 tons. The syndicate price averaged \$1.80 per 100 lbs.

Early in the year a prominent firm of importers endeavored to secure the free entry of high-grade sulphate of potash, claiming that the duty enforced upon it practically prohibited its use in this country, and therefore was prejudicial to the interests of importers and consumers. The matter received a thorough discussion in the columns of the ENGINEERING AND MINING JOURNAL in our issue of April 20th. A final decision has not been reached on the subject as yet, and it is expected that when Congress next considers the question of the tariff it will be formally asked to place sulphate of potash upon the free list.

A notable feature of the year was the falling off in the Southern consumption of Northern fertilizers. This indeed is inevitable. THE ENGINEERING AND MINING JOURNAL has frequently pointed out the anomaly of Charleston rock being shipped to this city and treated with sulphuric acid, and then reshipped to South Carolina and the neighboring States for distribution. Acid factories are being established all through the Southern States, and there is certainly no reason why the South should be dependent upon the North for its fertilizers. During 1889 the consumption of acidulated phosphate rock in the South materially increased, but Northern dealers had little or no part in it. It is, therefore, apparent that Northern manufacturers cannot hope to retain much of their Southern trade, and to compensate for this loss they must concentrate their efforts in the North to widen the market for their goods in their own section of the country.

As to the trade in complete fertilizers, we have obtained the following criticisms from a prominent manufacturer:

"While sales of fertilizers in 1889 have been heavy, collections in many cases have been slow, demonstrating the necessity of more care in granting credits, and a lesser desire to augment the volume of business regardless of the reliability of purchasers. In many cases where competition has been keen, the sellers have shown a lack of wisdom by their desire to overreach their competitors, and they are reaping their reward with bills receivable unmet. The opening year manifests on the part of the manufacturers a more conservative feeling than has been shown for several years, the situation presenting itself at the close of the year demonstrating the necessity of greater care in credits.

The idea that any one concern can monopolize the business has received a set-back.

An attempt was made during the session of the Legislature of the State of New York in the spring of 1889 to establish a system of taxation of the fertilizer trade through the New York Experiment Station at Geneva, but as before attempted, having a license or tax clause in the bill, the consideration was laid over and no action taken.

The reputable manufacturers who have manufactured goods of merit prefer a just law, and would aid in its passage; but they are opposed to any bill that levies a tax on their business for the support of an experiment station that receives \$20,000 annually already from the State funds, and in view of the fact that the United States Government appropriates \$15,000 yearly to each State for its experimental station. They claim that the cities where the manufacturers reside pay a very large proportion of the State tax, and as of this tax they pay their prorate, it is unfair to tax again for the support of an institution that receives public funds so largely. It is beneath the dignity of the Empire State to turn backward in its onward march, and especially as States that have levied taxes on this industry have repealed the tax clause but maintained their experiment station from the public funds. New Jersey has the model experiment station of the country, and there has never been a tax imposed on the fertilizer industry in that State, and no station has done any more effective work.

THE SOUTH CAROLINA PHOSPHATE ROCK MARKET IN 1889.

From our Special Correspondent at Charleston.

The price of kiln-dried land rock in January, 1889, was \$6 f. o. b. vessel; February, March, April and May, \$6.25; June, July and August, \$6.50, and September to December, inclusive, \$6.75; a deduction of 10 cents per ton was allowed on some of the sales during November and December; wet rock, \$1 less per ton. The free on board cars prices were made 25 cents higher than on vessels.

Ground rock, which is about 99 per cent. of land rock, was \$8 f. o. b. vessel in January, and advanced to \$8.50 May, June, and is about that price now. Sales f. o. b. cars for the year have been pretty uniform at \$7.75. Water shipments have decreased materially, while rail shipments have increased; but as the railroads report them as fertilizers it is impracticable to state the quantity.

River rock, kiln dried, for January, February and March, was \$5.50 f. o. b. vessel at Beaufort, S. C.; April, May, June, \$6 to \$6.50. Prices continued improving, and in December an offer was made for a cargo for foreign shipment at 31s. per ton on basis 57 per cent. f. o. b. vessel.

SHIPMENTS OF PHOSPHATE ROCK FROM CHARLESTON, S. C., FOR 1889.

Domestic.	Crude.	Ground.	Total tons
Baltimore.....	62,496
Philadelphia.....	23,028
New York.....	7,845	1,289	9,134
Newtown Creek, N. Y.....	3,036	275	3,311
Weymouth, Mass.....	15,520
Richmond, Va.....	4,740
Wilmington, Del.....	9,435
Mantua Creek, N. J.....	4,795
Elizabethport, N. J.....	550
Barren Island, N. Y.....	6,888
Seaford, Del.....	1,290
Wilmington, N. C.....	6,802
Orient, L. I.....	2,550
Milford, Conn. (Welche's Point).....	610
Newcastle, Del.....	585
Union Landing, N. J.....	702
Alexandria, Va.....	725
Total coastwise.....	153,074

Railroads.....	8,521	.....	8,521
South Carolina.....	36,721	.....	36,721
Charleston & Savannah.....	365	.....	365
Northeastern.....	.....	.....	.....
Total by railroads from Charleston.....	.....	.....	45,607
Foreign.....	.....	.....	.....
United Kingdom.....	.....	.....	1,400
Liverpool.....	.....	.....	300
Bremen.....	.....	.....	170
Belfast.....	.....	.....	2,000
Glasgow.....	.....	.....	700
Consumed at Charleston, estimate.....	.....	.....	4,570
Total coastwise from Charleston, crude and ground.....	.....	.....	80,000
" by railroads from Charleston.....	.....	.....	153,074
" foreign.....	.....	.....	45,607
.....	.....	.....	4,570
.....	.....	.....	283,351

FROM BEAUFORT, S. C.				
	Foreign.	Coastwise.	Railroads.	Local.
Total for eleven months.....	151,333	68,661	475	.....
Consumed at Beaufort, estimated.....	.....	15,000	.....	.....
Recapitulation.....	Foreign.	Coastwise.	Railroads.	Local.
From Charleston.....	4,570	153,074	45,607	.....
Consumed at Charleston (estimated), 1889.....	.....	.....	.....	80,000
From Beaufort, eleven months.....	151,333	68,661	475	.....
Consumed at Beaufort, 1889 (estimated).....	.....	.....	.....	15,000
Grand totals.....	155,903	221,735	46,082	95,000
Total production, tons.....	.....	.....	.....	423,720

Shipments from Charleston are land rock, and from Beaufort river rock.

SEMI-ANNUAL REVIEW OF THE NITRATE OF SODA MARKET.

Written for the Engineering and Mining Journal by F. B. Nichols.

The market in July was fairly active at \$1.85, and has, for the most part, steadily improved, with a continual reduction of spot stock, closing at \$1.92 to \$1.95, and an exceptional demand at the end of the year. A larger advance would have been justified by the remarkable movement of the last half of the year. In July, the stock here was over 60,000 bags, and although the arrivals were 60,000 bags in excess of the last half of 1888, the stock to-day in warehouse is only about 20,000 bags.

The consumption of the year shows a large gain, and the depletion of spot supply indicates that while the business for forward delivery has been active throughout, consumers had to provide for unexpected wants. The detention of three cargoes in distress had something to do with the state of the market, yet the fact remains that a large increase of consumption has raised the value.

For forward delivery there has been a good demand at \$1.75 to \$1.82 in a large way, and contracts have been signed extending to May shipment. Perhaps the most conspicuous movement of the year is that directed to Southern ports. The quantity is not large, but the increase is momentous. At last the cotton planter has found, since he lost the high-grade Peruvian guano, its substitute, and nearly equivalent, in nitrate of soda, at less cost. Our statement last September is now maintained by the Department of Agriculture of South Carolina. When it is considered that nearly 20,000,000 of acres are under cultivation for cotton in the States, we may well consider the probability of a large number of planters availing themselves of the experience recently published.

The movement in Europe is interesting and has an important bearing upon the future value. Valparaiso until lately has dictated and shipped as if the world would take its supply, but the steady decline in price, which dealers were forced to accept, finally aroused the producers to the fact that they were overdoing it, and the latest knowledge we have is that they are resolving or have resolved to curtail the production. This is timely, and it is hoped that the production will be cut down to the world's possible needs until a new and attractive field of consumption, such as is offered in this country, is cultivated by the producers. It is a question whether the present low cost will enable the European dealers to dispose of the augmented supply, but it is a stimulant to consumption that may be fairly relied upon. If, however, the consumers do not take the large stock, the dealers will be enabled to carry the surplus if the producers act honestly in protecting them.

The situation so far as we are concerned is that while nitrate can be bought at a concession, we are confronted with a scarcity of tonnage that has carried freights from 24s. to 30s.

The shipments to the Atlantic ports were light in December, and are likely to be small for the first two or three months of the year. The increase of deliveries at San Francisco is due partly to the development of the artificial guano trade where bone phosphate is used, which admits of a larger percentage of nitrate of soda in the compound. It is an interesting fact in this connection that the Sandwich Islands are in the market for supplies, presumably for sugar culture.

The shipments to Europe, including the estimate by cable from Valparaiso for December, will be 842,000 tons, against 657,500 tons last year, and 600,000 the year before. The movement of beet sugar during the year, together with the present low cost of nitrate, make it possible for an absorption of the increased supply.

The shipments to the States were 667,500 bags against 517,500 the year before; 555,000, in 1887; 522,750, in 1886; and 270,323, in 1885.

The quantity to arrive for Atlantic ports is 320,000 bags against 224,000, in 1889; 239,000, in 1888; and 238,500, in 1887. The total visible supply is 371,726 bags against 310,000, in 1889; 301,940, in 1888; and 311,266, in 1887.

The quantity to arrive in Europe is 2,835 in bags, making the visible supply then 4,312,500 bags against 3,112,000 last year and 2,927,500 in 1888.

The deliveries at San Francisco in 1889 were 80,000 bags, making total deliveries in this country 618,358 bags against 515,000 in 1888; 534,347, in 1887; and 454,760, in 1886.

In Europe, the deliveries were 4,920,000 bags, making total for the

world 5,538,358 bags against 5,227,000 in 1888; 4,164,347 in 1887; 3,522,260, in 1886; and 3,278,686, in 1885.

Table with multiple columns showing stock arrivals, exports, and deliveries for various locations like New York, Philadelphia, and Europe from 1885 to 1889.

REVIEW OF THE PETROLEUM MARKET FOR 1889.

Sp.ially Reported by Messrs. Watson & Gibson, New York.

The year 1889 opened with a dull market in petroleum, at something of a decline from the latter days of 1888. The highest price during the first week of this year was 85 1/2 cents. The total net stock on the 31st day of December amounted to 18,595,474 barrels. Early in the month of January a conference took place between the representatives of the Standard Oil interest and the organized producers, resulting in a harmonious agreement between them.

The price during the early part of July held around in the vicinity of 90 to 92, but on July 20th it rose to 95 1/2 cents and on July 27th to 102 1/2, having on the latter day advanced from 95 1/2 cents. These higher prices naturally resulted in an increase in development work in the field, which gave a larger production during the autumn months than had previously been turned out.

The growth of the Russian oil business and its successful introduction on an enlarged scale in the far East, and the completion of a pipe line across the Suram Pass, which lies between Baku and Batoum, are important features to be considered in estimating the value of American oil.

Secondly, the existence of a large field in Ohio, the visible supply of which equals the visible supply of Pennsylvania oil, selling at about one-sixth the price of the latter, exercised a bearish or at least deterrent influence on would-be buyers. It is not an established fact that Ohio oil can be economically refined, but it is stated to be a fact that its refining is chemically possible, and, as the production is now at the present low price fully half the production in Pennsylvania, and its pos-

sibilities of increase are very great whenever its price shall be advanced, it remains a constant menace to the prices of Pennsylvania oil. The oil dealt in on the exchanges is Pennsylvania oil, and since the new oil coming out of the wells of Pennsylvania commands a premium of about 25 cents, none of the fresh oil goes into the tanks covered by the certificates dealt in on the exchanges.

The oil now in the custody of the pipe line companies, which is a good delivery on the exchanges, is the old Bradford and Allegany oil and it is deteriorating by age. We believe that Ohio oil will be utilized for the production of illuminating fluid and the Standard have for some time had a large refinery at Lima. It may be feasible to blend Ohio with the Pennsylvania oil. In view of all the conditions surrounding the business, the utter and complete absence of all speculative desire on the part of the public, and the interest which the Standard must have, as the chief consumer of petroleum for conversion into refined, we cannot see our way to recommend purchases of Pennsylvania oil at current prices, notwithstanding the apparently strong and bullish complexion of statistics. We think that the price of Pennsylvania and Ohio oil must be more closely approximated and we predict that within the year 1890 the Standard will openly admit what they now deny, that Lima oil can be successfully and economically refined.

FLUCTUATION IN PRICES PER BARREL (40 GALS.) OF PETROLEUM DURING 1889. (Consolidated Stock and Petroleum Exchange.)

Table showing fluctuation in prices per barrel of petroleum during 1889, including months, opening, highest, lowest, closing prices, and sales.

The net stocks of oil held by the National Transit Company at the end of each month in 1889 were as follows:

Table showing net stocks of oil held by the National Transit Company at the end of each month in 1889.

THE BUILDING MATERIAL MARKET IN 1889.

The year in the building material market was one of moderate prosperity. Prices ruled relatively low, and an unusual amount of inclement weather greatly interfered with building operations, which, however, were very numerous, and the consumption of material remarkably large. Statistics of buildings projected show that during the twelve months plans were filed for 3,455 buildings, to cost \$70,000,000, as compared with 2,877 buildings, to cost \$45,000,000 projected in 1888.

The year was fairly exempt from labor troubles; in fact, no serious difficulty occurred until October, when the old contest between the trades unions and Peck, Martin & Co. was renewed. The men employed on a number of large downtown buildings, for which this firm was supplying material, quit work for a few days. Much inconvenience was occasioned to the builders, but no embarrassment resulted to the firm supplying the material.

The most important result of this strike consisted in the perfection of an organization for the mutual protection and benefit of building material dealers. Such an association had been contemplated for some time, but it required this strike to bring it about. For a month or six weeks past a committee consisting of President James Rogers, of the Building Material Exchange, Col. George Moore Smith, of Candee & Smith, and R. C. Martin, of Peck, Martin & Co., have had plans for the association under consideration and it is probable that they will soon be matured.

Wages showed comparatively little variation during the year, and rated at about \$4 per day for bricklayers and \$3.50 for carpenters.

The long talked of project of consolidating the Building Material and the Mechanics' and Traders' Exchanges was brought up in the spring, but the negotiation fell through, owing to the unwillingness of the former Exchange to consolidate.

Bricks.—It was not a year of uninterrupted prosperity in the brick trade. Excessive production, when fine, and stormy weather combined brought about an unsatisfactory condition of affairs more than once during the year, and, in fact, throughout the greater part of the season, the margin of profit was narrow.

The year opened with unseasonably mild weather, and sellers were not able to advance prices until the close of Hudson River navigation, which occurred in the first week of February. Values then advanced to about \$3.25 per M. for good quality Haverstraw brick. Before the end of March the ice broke up in the Hudson, thus affording makers along the Hudson an opportunity eagerly seized to resume shipments from the stocks in their yards.

In a few weeks the weather permitted the resumption of production, and then new brick began to crowd the market. The advent of May witnessed the natural result of this policy in a gradual weakening in prices, which finally dropped precipitately to \$7 per M. The early demand

for brick for various reasons did not prove as large as was expected, and the accumulation of stock on the market forced prices down another dollar per thousand, or to about \$6 at the close of May.

This made producers restrict output, and early in June, without any formal agreement, a more conservative policy was pursued in reducing production.

The market was temporarily improved, and sellers were enabled to advance prices fifty cents per M, but production soon increased again and values settled down to an average of about \$6 for good grades of Hudson river brick, at which figure they remained until October.

The monotony of a rather over-supplied market was broken early in the Fall by a slight attack of the "Trust" mania. The trade was slightly roused by an inquiry from English sources as to the practicability of monopolizing the production of brick in this section. The idea, however, was nipped in the bud when the clearer heads in the trade ridiculed the possibility of a "Trust" in a business with so many sources of supply and with so many conflicting interests as there are in the brick trade.

During the last three months, the expected advent of cold weather and the stoppage of production brought about a gradual advance in values, the closing prices being for Haverstraws, \$7; Uprivers, \$6.50; Jerseys, \$6; Pale, \$3.50.

Lime.—This market was devoid of interesting features throughout the year. The trade was kept pretty well under control by the various associations of producers. The shipments of Maine lime from the Rockland, Rockfort, and Thomaston districts were judiciously regulated by the Knox County Lime Association, and the schedule prices of \$1.20 per bbl. for finishing and \$1 for common lime were maintained with little or no variation. The New York State lime all passed through one selling agency in this city, and prices were not subject to wide fluctuations, the average quotation for the year being from 85c. to \$1.10 per bbl., according to grade. The receipts of St. John, N. B., lime at this port were not large.

Cement.—The cement trade in the Rosendale District during 1889 was marked by large production, and consequently depressed prices. Manufacturing was begun in March, a month earlier than usual, and continued steadily throughout the year. The closing of navigation on the Delaware & Hudson Canal, on which most of the cement manufacturers are located, on December 11th, put a stop to water navigation, and all shipments since then have been made by rail, thus increasing cost to consumers. The mild weather of the past few weeks, however, has facilitated deliveries, and thus stocks at the end of the year are lighter than they would otherwise have been. Owing to the long season of production the output of Rosendale in 1889 was about as large as in 1888, viz., 2,262,984 barrels. In 1887 2,238,744 barrels were made. Stocks at this time are estimated to be about as large as they were a year ago at this date. The trade during the year has been marked by no special features of interest. Some of the more energetic makers continue to agitate the "combine" idea, and at one time some little excitement was created by inquiries from English sources as to the practicability of monopolizing the industry in the Rosendale district.

Despite the experience of previous years, importers of foreign brands of cement have brought to this market a good deal more than was required to supply the consumptive demand. Prices were, therefore, rather depressed throughout the year. Importations are estimated at about 1,700,000 barrels against 1,795,000 barrels in 1888.

Roofing Slate.—When it is remembered that the stock of black slate at Pennsylvania quarries on January 1st was estimated to be 80,000 squares less than usual, and when it is borne in mind that consumption more than kept pace with production during the year, the cause of the continual scarcity of black slate can be easily understood. The prices named by the Bangor Slate Association last January for the year were at an advance of 25 cents over those ruling in 1888. The quarries were steadily taxed to the limit of their capacity to meet the demands of the builders.

In June, a further advance of 25c. per square was made. In the early part of the year, the scarcity of black slate diverted some of the demand to the Vermont green product, but during the summer the consumption of the latter fell off again, and the Vermont State Association was forced to order a reduction of output amounting to 33 1/2 per cent. No advance was made in the price of Vermont slate during the year.

The export trade in roofing slate which reached such proportions in 1888, was very limited during 1889. The Australian market which had taken most of the 1888 shipments, was over supplied with slate all the year. Closing prices in New York are as follows: Purple and green roofing, per 100 feet, \$7 to \$7.50; red roofing, per 100 square feet, \$12; black roofing, per 100 square feet, \$4.25 to \$5.50.

Stone.—The year was one of activity in the building stone trade. The increase in the number of projected buildings in New York City in 1889 probably affected stone more than brick, as many of the structures erected were far above the average in size and cost, and of a character requiring granite, marble and limestone. This is evidenced by the relatively large increase in the estimated cost of the buildings for which plans were filed.

The most popular stones of 1889 have been granite and limestone. The gray granite of Maine has met with a much larger consumption than usual, while the use of Scotch red granite for pillars and monuments has been very limited.

The importations of marble are estimated to be twenty-five per cent. larger in 1889 than in 1888.

Limestones and sandstones have steadily grown in favor both for residences and the upper stories of office buildings. Some of the stones that have come into use in consequence of the fashionable craze for "something new" have not stood the test of wear, the short period that they have been exposed. In some instances the very objections to their use which were suggested by the ENGINEERING AND MINING JOURNAL early in 1889, have made themselves apparent.

While the use of the time-honored brown stone has decreased in New York City during the year, it is only fair to state that the agents of the Connecticut quarries which are the chief source of supply claim that the falling off in New York in its use has been fully compensated for by an increased consumption in other sections. An interesting feature of the year was the formation of a Trust of quarrymen in Illinois under the name of the Western Stone Company, with a capitalization of \$2,000,000.

Most of the quarries of Lemont and Joliet, Ill., are understood to be included.

In 1889 the Joint Association of Quarrymen and Stone Cutters listed the blue stone of the Chattanooga Marble and Stone Company, and the limestone of the Indiana Oolitic Stone Company, of Stinesville, Ind.

Some trouble was occasioned early in the year by the refusal of the stone cutters' association—a trades union, not the association of employers—to allow a number of imported Scotch stone cutters to work in this city.

DIVIDENDS PAID BY AMERICAN MINES IN 1889, WITH TOTAL UP TO DATE

Table with 5 columns: NAME OF COMPANY, Location of mine, Amount of dividends paid in 1889, Total amount of dividends paid to date, Present market value of the company. Lists various mining companies and their financial data.

* Stocks not quoted on any exchange. The above table includes dividends paid in cash only from mines located in the United States, and the figures given are almost all from official sources. There are also a large number of dividend paying properties worked and owned by private individuals or "close corporations," of which it is impossible to secure an accurate record.

ASSESSMENTS BY MINING COMPANIES IN 1889.

Table with 6 columns: NAME AND LOCATION OF COMPANY, Total levied in 1889, Total levied to date, NAME AND LOCATION OF COMPANY, Total levied in 1889, Total levied to date. Lists mining companies and their assessment data.

PERSONALS.

Mr. Charles H. Gibson, mining engineer, of New York, sailed for London on the 2d inst. He is about to visit the Transvaal gold fields, Africa.

Mr. Wm. Allen Smith, mining engineer, of New York, sailed for Galveston to-day, for a month's absence in Texas and other Southern States.

Mr. Andrew Carnegie has notified Cyrus Elder, Esq., of Johnstown, to draw on the firm of Carnegie Brothers & Co. for funds to restore the Cambria Library Association's building at Johnstown.

Mr. William H. Symington having been elected vice-president of the St. Louis Smelting and Refining Company, has left New York to reside in St. Louis, where he can be addressed at 421 Olive street.

Mr. Frank Nicholson, mining engineer, and connected with the Yuma Copper Company, of Arizona, is at present in New York City with the officers of the company, Messrs. Charles W. Prange, J. E. McFaul and Wm. H. Quernheim.

Mr. R. J. Frecheville, M. Inst. C. E., F. G. S., Mem. Am. Inst. M. E., late H. M. Inspector of Mines for Cornwall, Devon, etc., who has had mining experience extending over the last twenty years, both in managing and examining mines in England, the United States, South America, South Africa and other countries; and Mr. Wm. Frecheville, F. G. S., Mem. Am. Inst. M. E., who has had experience during the last fourteen years in managing and examining mines in the United States, Mysore, South Africa and other countries, have taken offices at 33 Broad street, Avenue, New York, as consulting engineers and mine managers.

OBITUARY.

Horatio Allen, the well-known civil engineer, under whose direction the first locomotive brought to America was built and run, died at his home in Montrose, N. J., on December 31st. He was born at Schenectady, N. Y., in 1802, and was graduated from Columbia College in 1823. For many years he was the chief consulting engineer of the Erie Railway, and at one time was President of that road.

Joseph G. Fox, A. M., professor of civil and topographical engineering, at Lafayette College, Easton, Pa., died suddenly on the 26th ult. from paralysis, aged 57 years. He had held the position since 1872. For 10 years prior to that he was engaged in teaching in Cooper Institute, New York, and in the University of New York. He was engineer of the Sixth Brigade, Second Division, New York State Guard, on Gen. Hamilton's staff, in 1863-64.

We have to announce the death of Mr. Hut on Vignoles, the second son of the celebrated Charles Blacker Vignoles, which took place on the 14th inst. at Hereford, England. Mr. Hutton Vignoles was born in November, 1824. When he was twenty-five years of age he was elected an Associate of the Institution of Civil Engineers, and became a member in 1854. For some years he had lived chiefly at his residence, the Château Rouge-mont, Tours, France, and was in his 66th year at the time of his death.

Mr. Edward Petit of the firm of Parsons & Petit, the well-known importers of nitrate of soda and brimstone, died suddenly at his residence in New York City on December 31st, 1889. Mr. Petit had been ill five days. He contracted a cold on Christmas day which resulted in pneumonia. The firm of Parsons & Petit have been in existence for thirty or forty years. It was originally composed of Messrs. John J. Petit, a brother of the gentleman whose death we now record, and Mr. William B. Parsons. Mr. John J. Petit died on December 31st, 1887, and Mr. W. B. Parsons on October 25th, 1886. It is a noteworthy coincidence that the brothers Petit should both have passed away on the last day of the year. For some time past the business had been carried on by Messrs. Edward Petit and Schuyler L. Parsons, son of William B. Parsons.

INDUSTRIAL NOTES.

The Thomas Iron Company, Pa., has raised the wages of its employes ten per cent., the advance to take effect Jan. 1.

The Sheldon Axle Works in Wilkesbarre, Pa., employing a large number of hands, have been purchased by an English syndicate.

The Coleraine Iron Company's furnace, at Redington, Pa., which was idle for three months, and remodeled at an expense of \$50,000, has been re-lighted.

The furnaces of the Chestnut Hill Iron Ore Company, at Columbia, Penna., which has been idle or three years, are being repaired to be put in blast at once.

The Ingersoll-Sergeant Rock Drill Company, of New York, has just taken a large order for air-compressing machinery, boilers, etc., for the St. Clair Tunnel, at Hamilton, Ontario.

Robert A. Cook has sold the exclusive rights for the Wenstrom Magnetic Separator for Essex County, N. Y., to Messrs. Witherbee Sherman & Co., who have it in operation for the past six months.

The Aluminum Brass and Bronze Company, manufacturers of the Cowle's Aluminum and Silica Copper Alloys, has removed its offices from 261 Broadway to the Stewart Building, 53 Chambers street, New York.

The Wainwright Manufacturing Company of Boston, Mass., is doing a large business with its corrugated copper tube feed water heaters, and has furnished the same to some of the largest companies in this country.

The sheet mill of the Brooke Iron Company, at Birdsboro', Berks County, Penna., closed January, 1, in consequence of the strike of nailers for the restoration of the ten per cent. reduction made in their wages, some time ago.

Mr. W. B. Pearson, commencing January 1, 1890, will represent the Ball Engine Co., of Erie, Pa., in Chicago; office, 403 Home Insurance Building. His territory will be Illinois, Iowa, Northern Indiana, Wisconsin and Michigan east shore.

The Carpenter Steel Works, at Reading, Pa., have just secured the contract from the Brown Sectional Gun Company, of New York, to furnish the steel for the new 30-ton gun which the latter company had contracted to make for the United States Government.

The Pennsylvania Railroad Company has contracted with the Baldwin Locomotive Works for fifty-five heavy freight engines, which will soon be finished. The railroad company received twenty-two locomotives from the Baldwin works last month. The freight traffic of the road is very large and is increasing daily.

The direct cause of the failure was the protesting of paper to the amount of \$80,000 in New York. The mills of the firm did not stop running an hour. The failure was announced in the afternoon of January 15th, and next morning everything was running at all the works of the company as usual. This has been the case ever since.

The Bucyrus Foundry and Manufacturing Company, of Bucyrus, O., on January 1st, 1890, changed its name to the Bucyrus Steam Shovel and Dredge Company. The organization and management will remain the same, the change being one of name only, except that the capital stock will be increased to \$150,000, to accommodate the constantly increasing business, and allow the necessary extension of the company's plant.

The Oliver Iron and Steel Company, of Pittsburg, Pa., will discharge the last of its obligations in February next. On Jan. 15, 1885, the firm failed. At a meeting of the creditors held a few days after the Olivers asked for time, promising to pay the entire amount of indebtedness in five equal payments of \$300,000 each, the proposition was promptly accepted by the creditors, and has been kept to the letter.

A competitive trial of flour milling machinery will take place in September of 1890, in Santiago, the capital of Chili. A premium of 20,000 francs will be awarded for the most approved system and other premiums for such systems as, without filling the prescribed requisites, most nearly approach them. Freight on the machinery, building, etc., and passage to Chili and return of the operators, will be defrayed by the parties in charge of the exhibition. For further particulars address the Legation of Chili, Washington, D. C. Fredk. A. Beelen, Consulate General of Chili, 15 Cortlandt St., New York.

The Jeffrey electric coal mining machines are now in successful operation at Shawnee, Ohio; Jobs, Ohio; Thurmond, W. Va., and Canelton, Pa. Other plants are in process of erection at Fairmont and Parkersburg, W. Va. This is the only electric coal mining machine now offered to the public which is in daily operation, and the manufacturers, the Jeffrey Manufacturing Company, of Columbus, Ohio, are to be congratulated upon the success they have achieved. Their electric haulage system is also said to be a perfect success, and is in constant operation at Shawnee, Ohio, and Thurmond, W. Va.

The Valley Steel Company, formed to operate the plant known for years as the Western Nail Works, at Belleville, Ill., has been chartered under the laws of Missouri, with \$150,000 of capital stock. The incorporators are Chas. A. McNair, George O. Carpenter, Jr., George S. Engell, George J. Plant, B. S. Adams, F. W. Oliver, and T. A. Meysenburg. The works will be started up in January with about 300 hands. Col. T. A. Meysenburg states the product will be soft steel in the form of slabs and billets, together with nails. The Tudor Iron Works, of East St. Louis, are intimately connected with the enterprise, and will be supplied from the Belleville plant with billets for the manufacture of light rails, etc. The office of the new company is in St. Louis.

CONTRACTING NOTES.

The Westinghouse Electric Company has just closed an important contract with the Wellamette Light Company, of Portland, Ore. The company is to furnish 10,000 incandescent and 100 arc lamps, together with the wire and machinery necessary for operating the same. The current is to be carried twelve miles before being distributed, a thing never before attempted in this country. For that purpose a specially constructed machine, capable of producing 4,000 volts, is to be used. The cost of the entire plant, including the distributing station building, will be in the neighborhood of \$200,000. The completion of this plant will be the inauguration of electric lighting in that city.

MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

If any one wanting Machinery or Supplies of any kind will notify the "Engineering and Mining Journal" of what he needs, his "Want" will be published in this column.

Any manufacturer or dealer wishing to communicate with the parties whose wants are given in this column can obtain their addresses from this office.

No charge will be made for these services.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning American goods of any kind, and forward them catalogues and discounts of manufacturers in each line, thus enabling the purchaser to select the most suitable articles before ordering.

These services are rendered gratuitously in the interest of the subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

GOODS WANTED AT HOME.

469. Machinery for band mill. Texas.
470. Rails. Two miles of 16 or 20-pound T rails. Mississippi.
471. Wheel, gears, etc. Fly wheel, 18 feet in diameter and weighing about 12 tons. Two gears, 9 feet in diameter and one pinion gear. Four 13-inch pillow blocks; two nine-inch pillow blocks. Sole plates and anchor plates. New Jersey.
472. Light locomotive. Mississippi.
473. Engine. Mississippi.
474. Self-feed rip saw. Mississippi.
475. Drill for a coal machine to bore a hole in coal, 3½ inches in diameter and 4 feet deep. Illinois.
476. Tools. Prices on small lathe 10 inches × 8 feet. Large lathe 30 inches × 12 feet. Plane 24 inches × 24 inches—8 feet. Upright drill. Hand feed and back geared 24-inch hand shaping machine. Bolt and milling machine. Also tools for above machines. North Carolina.
477. Grist Mill. Bids on machinery for grist mill with a capacity of 30 or 35 bushels of corn per hour. Florida.
478. Pump to supply water to brick yard tank. West Virginia.
479. Elevator with small engine, boiler and hoist complete, to hoist brick and other material on buildings as they are put up. West Virginia.
480. Electric power. Estimates on transmission of power by electricity a distance of two miles. Tennessee.
481. Water Wheel. Cost of turbine water wheel, everything complete, of say 50 horse-power, to work under 26 feet head. Tennessee.
482. Gun with barrels 36 inches long; the bore of one barrel of proper size for No. 10 brass shell, and the other No. 16 shell. Weight about 10 pounds. Mississippi.
483. Ax handle, pick handle, broom handle and spoke handle lathes. Mississippi.
484. Excelsior machines for new plant. Mississippi.
485. Gas engine three or four horse-power. Mississippi.
486. Wood-working machinery; full line. Tennessee.
487. Foundry and machine shop supplies. Tennessee.
488. Brick machinery for manufacturing about 25,000 brick per pay. North Carolina.
489. Wood-working machinery; hand saw, blind stile mortising and boring machine, shaper and carving machine. Tennessee.

AMERICAN GOODS WANTED ABROAD.

449. Dry lubricant for the journals of the bearing rolls of a revolving calcining furnace. The journals are 6 inches × 3¾ inches, resting in half brass; the movement is a very slow one, only about 1½ revolutions a minute. South Australia.
450. Turning lathe with bed long enough to turn a stick of timber 30 inches long; also a frame for circular saws, one rip saw and one cross-cut saw, each 10 inches in diameter. West Africa.
490. Teal hoists. Australia.
491. Cigars; good line to represent. Australia.
492. American goods on consignment. Australia.

- 493. India rubber goods, mechanical. Australia.
- 494. Cutlery. Australia.
- 495. Watches; cheap grade. Australia.
- 496. Wire cables. Australia.
- 497. Blasting powder. Australia.
- 498. Safety burglar alarms. Australia.
- 499. Gas works; especially gas water system. Australia.
- 500. Electrical supplies; full line. Australia.
- 501. Crackers. Queensland.
- 502. Spades, shovels, &c. Queensland.
- 503. Sweat collars. Queensland.
- 504. Large line of various boxes. Queensland.
- 505. Trunks. Queensland.
- 506. Tin-working machinery; especially a machine that will do folding, grooving and turning, all in one, for canisters. Queensland.
- 507. Lighting by electricity for railway cars. Queensland.
- 508. Lighting by oil for tram cars. Queensland.
- 509. Blasting and sporting powder. New South Wales.
- 510. Milk. Queensland.
- 511. Shooks. Quotations for white pine and spruce shooks, 1/4-inch dressed one side, f.o.b., in the following quantities and sizes: 2,000, 10 inches wide and 15 inches long; 2,000, 10 inches wide and 12 inches long; 4,000, 2 inches wide and 12 inches long; 2,000, 10 inches wide and 18 inches long; 2,000, 10 inches wide and 14 inches long; 6,000, 2 inches wide and 14 inches long. West Indies.
- 512. Portable houses. South Africa.
- 513. Coal cutter. South Africa.
- 514. Agency wanted for mining and other machinery. South Africa.

GENERAL MINING NEWS.

ARIZONA.
COCHISE COUNTY.

BEER MINING COMPANY.—At the annual meeting of stockholders in San Francisco, December 26th, the following officers were elected: W. S. Lyle, President; C. H. Fish, vice-president; J. B. Low, A. B. Clute and E. Gauthier, directors.

COMBINATION MINING COMPANY.—At the annual meeting in San Francisco, December 26th, the following officers were elected: W. S. Lyle, president; C. H. Fish, vice-president; J. B. Low, A. B. Ruggles and A. B. Clute, directors.

PEERLESS MINING COMPANY.—At the annual meeting in San Francisco, December 26th, the following officers were elected: W. S. Lyle, president; C. H. Fish, vice-president; J. B. Low, A. B. Ruggles and E. Gauthier, directors.

WELDON MINING COMPANY.—At the annual stockholders' meeting in San Francisco, December 26th, the following officers were elected: W. S. Lyle, president; C. H. Fish, vice-president; J. B. Low, A. B. Clute and A. B. Ruggles, directors. Aug. Waterman was reappointed secretary, and William Pickett superintendent of the four companies.

COLORADO.
GILPIN COUNTY.

GOULD SILVER MINING COMPANY.—The Joe Reynolds' silver mine, belonging to this company, of Boston, Mass., and leased and bonded to Mrs. William O'Hea and Prof. S. W. Tyler, says the Central City Register Call, is now looking exceedingly well, with a fine showing of mineral, lead intermixed with zinc blende, recently struck in the breast of the longest east level. It is intended to sink the east shaft and connect with the east level, which, when completed, will open up a large body of stoping ground, besides developing ground heretofore unexplored. Sinking of the engine shaft is to be resumed shortly. Eastern capitalists have been looking at the property with a view to the purchase of it should it prove such as it has been represented.

SPRINGDALE.—A. S. Pettit has sold a half interest in this mine at Central City for \$15,000. It is in the Russell district, and is one of the oldest patents on the hill. There has been some ore got out, says the Denver News, but attention has been given mainly to developing. Just at the present time a shaft is being put down as fast as possible to head off the Denbigh people who are coming in below. It is not expected by Mr. Pettit that there will be any trouble, legal or otherwise, over the matter.

LAKE COUNTY.

BIG SIX MINING COMPANY.—The next mining stock to be listed on the Denver Exchange is that of this company. The capital stock is \$500,000, of which \$100,000 will be placed on the Exchange. It will open on January 7th. The mining operations of the company, says the Denver Republican, are carried on at Leadville, on the northwestern slope of Breece hill, at the head of Stray Horse gulch and adjoining the Breece Iron Mine. The claims of the company consist of the Big Six, Little Prince, Nettie Morgan and Tootie Gaylord, which are all patented, and the title of the company is good. They cover an area of 21 acres, and are well and favorably known by many miners in the great carbonate camp. Three shafts, averaging about 350 feet each, have been sunk on

these claims, through the porphyry to an iron carbonate and quartzite contact, carrying gold and silver. Three other shafts have also been put down, one of which is 280 feet, and the other two 100 and 125 feet respectively. Some pay ore has been exposed, on which drifts have been already run. A large body of iron has been uncovered in the Nettie Morgan and Big Six lodes, and that in the latter is similar to the ore in the Breece mine. The officers are: S. C. Houck, President; C. A. Thompson, First Vice-President; A. B. Case, Second Vice-President; A. B. McGill, Secretary; J. H. Aller, Treasurer.

COLONEL SELLERS.—Very little, comparatively, smelting ore is being mined and shipped—only what is taken out in running the different drifts and upraises, particularly those now in operation on the smuggler ore chute, as met with on the joint upraise, and the working in the immediate vicinity. This upraise is made on the line of the Sellers and Minnie claims, and is connected with a body of ore from six to eight feet in thickness, which is of high grade, running well in silver and lead, and carrying some gold.

As the north line of the Sellers is reached, the ore body diminishes slightly in thickness, to resume very shortly to its normal condition where opened in the Willard ground of the Silver Cord property. About 1,000 tons only of this class of ore is mined and shipped to the smelters monthly, the balance of the output going to the mill on the premises, which is now treating about 2,000 tons per month, working night and day. The trouble with the water has been obviated by making connections with the Moyer tanks, and by fluming the gulch to permit the water, which is much affected by the tailings from the Antioch mill, to pass over the Colonel Sellers and Minnie ground without interfering with the present clear supply.

DUNKIN MINING COMPANY.—It is reported that this company's accrued surplus or reserve on December 1st amounted to \$28,451.55. Recent purchases of new mining claims is the cause assigned for the passage of the usual quarterly dividend, as announced in last week's ENGINEERING AND MINING JOURNAL.

VENUS.—This property is under lease to Messrs. Carson and Diekey. The shaft has been thoroughly retimbered and sinking resumed. This claim is bounded on three sides by the Mikoda, R. A. M. and Devlin, and a deal of good ore has been extracted from the property, says the Denver Mining Industry, taken from the upper contact, the ground immediately about the shaft having been very rich. It was stoped out all about the shaft, causing the present lessee an immense amount of work, as the timbers came in, in a number of places, from lack of back support. When the station at the 350-foot level is completed, as is nearly the case now, the shaft will be carried down to a certain depth and drifting begun.

DAKOTA.

LAWRENCE COUNTY.

DULUTH MINING COMPANY.—The regular annual meeting was held at Deadwood recently. Robert McShane, Julius Rebsamen, Frank M. Mills, Wm. Naddy and Sol D. Burns were elected directors. Reports from the treasurer, secretary and superintendent showed the company owns four full claims in Bald Mountain district, on each of which the full amount of representation work required by law has been done. The company is free from debt. After stockholders adjourned directors met and elected officers as follows: President, Julius Rebsamen; vice-president, Frank M. Mills; secretary, John A. Gaston; treasurer, D. LaChapelle; superintendent, Wm. Naddy.

MICHIGAN.

IRON MINES.

The Wisconsin Central Railroad, which has recently purchased several mines in the Gogebic range for the purpose of controlling shipments of ore over their route, has now bought the Palms mine, which adjoins the Colby.

MISSOURI.

(From our Special Correspondent.)

JOPLIN, Dec. 3.

The following is the output of the mines in Jasper, Newton and Lawrence Counties from January 5th, 1889, to December 28th, 1889, inclusive: Lead ore, 12,000 tons, valued at \$504,000; zinc ore, 88,740 tons, valued at \$2,218,500; total value from the lead and zinc mines for the entire district, \$2,722,500. Metal products—Spelter, 30,950 tons; pig lead, 8,400 tons.

JASPER COUNTY.

In reviewing the lead and zinc mining industry for the calendar year ending December 28th, 1889, we find by referring to the statistics of former years that there has been a steady increase in the production of zinc ore. This is due to the fact that a great number of capitalists have come and made investments in mines and mining lands during the past year. Among the many that come we may mention the Lehigh Zinc and Iron Company, of Bethlehem, Pa., who came here last April and purchased about 2,500 acres of mining lands around Joplin, then

organized the Empire Zinc Works Company, with a capital of \$500,000; in the meantime they purchased the Pat Murphy zinc smelters. As soon as all details were arranged they commenced a systematic plan of operation by the erection of a \$25,000 concentrating plant on one of the developed tracts of land included in the purchase. It is the intention of this company in the spring to double the capacity of the present smelters and add a zinc rolling mill with a capacity of producing 20,000 pounds of sheet zinc per day. This will be the first rolling mill west of the Mississippi river.

The following is a list of the principle mining companies in operation during the past year: Joplin District.—Oswego Mining Company, Empire Zinc Works Company, Taylor & Billingsley Thacker Mining Company, Granby Mining Company, Sterling Lead & Zinc Company, Byers, Murphy & Connors, Jackson Land, Grimm & Loyd, Ruby Lead and Zinc Company, Interstate Mining Company, Consolidated Company, Whitsett Mining Company, Roaring Springs Company, Ferguson Land, E. D. Porter Land, Modoc Mining Company, Tuckahoe Company, Mahask Lead and Zinc Company, Pinkard Mines, Bay State Mining Company, Webb City—Canter Creek Mining Company, Webb City Mining Company, Nevada Mining Company, Steelman & Co., Houghton & Sons, Bradley & Co., Joseph F. Lewis, Casterville—Tracey Mining Company, Casterville Company, Dougherty, Davey & Co., Motley Mining Company, Victor Mining Company, Eleventh Hour Mining Company, Jasper County Mining Company. Zincite.—McClelland Land, West Hollow Company, Standard Company, Holden Land, Hostetter & Co., Baker Land, Hovner & Co., Lehigh—Lehigh Drainage Company, Johnson & Sturkey, Leekie Land, Knight Land, McAvee & Co. Galena, Kan., Southside Mining Company, Windsor Mining Company.

The above is but a partial list, as it is impossible at this time to obtain the name of each company in operation. In the past nine months over \$700,000 has been invested by outside parties in developed and undeveloped mineral lands. A number of large sales are now pending, which will be closed up soon after January 1, 1890. One great feature during the past year has been the great demand for zinc ore; in fact, the demand has been greater than the supply. Fourteen zinc smelters are depending on this region for their supply of ore.

MEETINGS.

Aspen Mining and Smelting Company, 54 Wall street, New York. Adjourned meeting January 10th, at 11 A. M.

Negaunee Concentrating Company, 29 Broad street, New York, January 8th, 12 to 1 P. M.

DIVIDENDS.

Coal Creek Mining and Manufacturing Company. Coupon No. 5 for six months' interest on the debentures of this company payable at the office of Messrs. Moore & Schley, 29 Broad street, New York.

Columbus and Eastern Coal Company. Coupons on the first mortgage bonds due July 1st, 1890, will be paid on presentation at the Bowery Bank, New York.

Consolidated Electric Light Company. Coupons maturing January 1st, 1890, payable on and after January 2d, 1890, at the American Exchange National Bank, New York.

Delaware, Lackawanna & Western Railroad Company dividend of 1 1/2 per cent., payable January 20th. Transfer books close December 31st, at three P. M.

Julien Electric Traction Company. Coupons maturing January 1st, 1890, payable January 2d, by the Mercantile Trust Company, 120 Broadway, New York.

Tennessee Coal, Iron and Railroad Company. Coupons due January 1st, 1890, on the Birmingham Division bonds of this company, payable after that date at the Hanover National Bank, New York.

Virginia Mining and improvement Company interest due on January 1st, 1890, on the trust mortgage 6 per cent. bonds, payable at the Boston Safe Deposit and Trust Company, Boston, Mass.

ASSESSMENT.

COMPANY.	No.	When levied.	D'l'ng't in office.	Day of Sale.	Amn't per share.
Belle Isle, Nev.....	13	Dec. 4	Jan. 8	Jan. 30	.15
Bodie.....	11	Nov. 11	Dec. 7	Jan. 22	.25
Bullton, Nev.....	35	Dec. 4	Jan. 7	Jan. 24	.25
Con. Imperial.....	26	Nov. 22	Dec. 27	Jan. 15	.05
Cons. New York Nev	2	Dec. 11	Jan. 15	Feb. 5	.15
Exchequer, Nev....	28	Dec. 16	Jan. 21	Feb. 11	.25
Grand Prize.....	23	Nov. 21	Dec. 24	Jan. 15	.30
Monc.....	29	Nov. 18	Dec. 23	Jan. 24	.25
Mongold, Cal.....	29	Nov. 18	Dec. 23	Jan. 24	.25
Palisade, Nev.....	2	Nov. 1	Dec. 16	Jan. 9	.05
Ruby Hill, Nev.....	18	Nov. 12	Dec. 16	Jan. 16	.01
Russell, Cal.....	5	Nov. 11	Dec. 16	Jan. 8	.05
Summit.....	11	Nov. 14	Dec. 20	Jan. 14	.05
Trinity River, Cal..	2	Nov. 27	Jan. 6	Jan. 28	.50

MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Baltimore, Denver, Kansas City, St. Louis, Pittsburg, Birmingham, Ala.; London and Paris, see pages 581 and 582.]

New York.

FRIDAY EVENING, Jan. 3d.

In the words of a well-known trader, the "month of liquidation" has closed, and January, which, according to tradition, is a "month of profits," has begun. Logically, therefore, they reason, an improved market for mining shares is likely to ensue, and members of the committee on mining securities of the Mining Exchange, with commendable persistency, continue to predict the boom which they have been looking for and prophesying at the first of every year for the last half decade. As another broker expresses it, "We have had seven years of famine and now we are looking for seven years of plenty." To those who have followed the market year after year, and who have heard these confident predictions uttered over and over again, all of this will naturally seem simply one of those New Year resolutions which fate decrees must inevitably be broken. However, it is to be hoped with all seriousness that the introduction of new and meritorious mining properties on this exchange, the honest management of those already on the list here and the exclusion of those whose presence is objectionable, will combine to bring about a healthier interest in mining investments and enlist attention in the industry, the profits of which under proper management, are as great as any other in which capital may legitimately engage.

Perhaps the most interesting news of the week is the "Approximate statement of the financial condition and prospects" of the Comstock Tunnel Company, which was issued yesterday, bearing date of December 1st, and signed by the president and the secretary and treasurer of the company. This statement, which is published in full in our mining news columns, is rather indefinite, but apparently a more complete one will be forthcoming later on. The company is stated to have a cash surplus in its treasury amounting to the sum of about \$115,000, and there are due uncollected royalties from some of the Comstock mines amounting to about \$34,000. Except its bonded indebtedness it is stated that the concern has no obligations of any kind. It is figured that the net income for the coming year will be \$181,000. The only reference that is made to the suits brought against the Union Trust Company by Mr. Frank J. Symmes and others of San Francisco, is that this litigation is "without foundation or merit and will probably be of short duration." It is to be hoped that a more complete statement of the expenses of the re-organization of the Sutro Tunnel Company, and that an explanation of the process of re-organization, will be issued shortly. Even if the old Sutro Tunnel Company has lost its property, the company is still in corporate existence and it would seem that its stockholders have a right to demand an early explanation of what has been done to protect their interests by those who were intrusted to do so. Comstock Tunnel stock was active during the week at 17@16c. The scrip sold at \$30@34 in \$100 lots.

Comstock Lode shares during the week were generally quiet. Consolidated California and Virginia showed a fair degree of steadiness, with no new developments concerning the condition of the property. Sales are reported at \$4.85@5.13. The closing price this afternoon was \$4.50 bid, \$5 asked. Among the other sales of these shares were Crown Point at \$1.90; Alta, \$1.50; Bullion, 75c.; Exchequer, 60c.; Oriental & Miller, 6c.; Mexican, \$2.80@2.55; Overman, 95c.; Occidental, 80c.; Potosi, \$2.15@1.95; Ophir, \$3.50; Chollar, \$3.50; Sierra Nevada, \$2.15; Yellow Jacket, \$2.15; Julia, 30c.

Sales of Tuscarora shares included Nevada Queen at \$1.05. The market is destitute of news from the mines of this camp.

The solitary representative of the mines of the Bodie district on the sales list is Standard Consolidated, which sold on Monday at 70c., displaying some firmness.

Astoria is still reported to be changing hands at about 10c. Insiders apparently have their hands full with a number of other schemes, and are rather neglecting this stock, except so far as daily quotations go. It is probable, however, that if all the plans now in contemplation are carried out, this enterprise will be revived again. Its career so far has not been brilliantly successful. There is nothing doing in Brunswick. There is a good deal of hesitancy among the stockholders about entering the re-organization scheme on the plan proposed. We have already discussed its advantages and disadvantages in our mining news columns, to which we advise all stockholders who have not heretofore done so to refer. The idea of locking up all the stock except the 100,000 shares held by the re-organizers is a sticking point with most of the shareholders. Probably this mine has occasioned as much disappointment among investors in mining shares as any other that has been active on the list of the local exchange within the past few years. Many who had bought it at a low figure were at the point of selling out when it reached \$1.70, when the untimely death of Charles

Adler brought a sensational collapse in its value. Encouraged by the statements of the management of the company, however, many of these continued to buy even as it declined. Their feelings, when the shares were finally quoted at a cent each and the property seemed hopelessly in debt, can as well be imagined as described. One stockholder, who was met this week, had purchased his holdings at \$1.60; he said emphatically that this was his last experience in mining share speculations.

Plymouth Consolidated is quoted at \$4 asked this afternoon. Sales were made early in the week at \$2.90@2.95, a slight decline from previous quotations.

Silver King sold at 35@33c. Stockholders should remember that the annual meeting will be held in San Francisco on January 4th.

Phoenix and Arizona showed a gradual hardening tendency, selling as high as 46c. yesterday.

A moderate degree of attention was devoted to Colorado stocks. Sales included Laerose, at 7c.; Little Chief, at 30c., and Freeland at from 42c. to 56c. Leadville Consolidated is held at 12c., asked. The best bid is not so high as it was a fortnight ago, but still there is a steady demand for the stock at low figures. The reorganization of the Cashier Mining Company into the Brooklyn Mining Company is reported to be progressing satisfactorily. The period during which stockholders may enter into the reorganization expires early in February. A meeting of the Aspen Mining and Smelting Company will be held at the office of the company, 54 Wall street, on January 10th. The regular annual reports of superintendent and officers of the company which were not ready for presentation at the December meeting will then probably be read. Stockholders seem to be inclined to take a more optimistic view of the prospects of the company, and a report showing quite a balance in the company's treasury is anticipated. Nothing is doing in the stock, asking prices being nominally \$7 per share. Beginning with the first of the year the Colorado Central Company starts out under new superintendency at the mines. The prospects of the company seem to be clouded with a great deal of uncertainty. Ward Consolidated sold at 65c. The dividend on this stock in December was something of a surprise to outsiders, but was of course an agreeable one to all interested in the success of mining speculations.

Horn Silver has shown a stiffening tendency, sales being made at \$1.80 last Saturday and \$2 yesterday, closing to-day at \$2 asked. No sales of Ontario are reported.

There has been less actual business in the Dakota shares than in any of the other standard securities on the list. Homestake is quoted at \$8.75 bid; Deadwood Terra at \$1.45 bid, \$1.60 asked; Iron Hill at 40 bid, 60 asked; Father de Smet at 40 bid. Alice is steady at \$1.15 asked. No sales of Moulton were made.

There has been to a certain extent a renewal of interest in El Cristo, although quotations have not materially changed. It seems to be generally believed that the stock has not received the support from the public that was expected, but nevertheless those on the inside say that eventually it will advance to the figures they have predicted. It must be confessed that waiting for "the good time coming" is apt to be monotonous.

Treasurer Harpending's voice continues to resound through the exchange with bids of \$1.60 for any part of 5,000 shares, buyer 60 days. As there is frequently a difference of 10c. per share between the cash and 60-day quotations, the room traders take the opportunities thus afforded to get \$10 for the investment of \$100 for 60 days.

Among the sales of miscellaneous shares during the week were: Rappahannock, at 6c., and Mutual Mining and Smelting, at \$1.65.

Boston.

Jan. 2.

(From our Special Correspondent.)

The new year opens with a strong and active market for copper stocks, which gives promise of a large business in this class of securities the coming season. Ingot copper at 14 1/2c., with prospects of being higher in the near future, the absence of any combination to keep up prices above the legitimate basis, and an active demand for the metal will no doubt stimulate speculation in the copper stocks, and higher prices will prevail.

The market opened this morning with an active demand for Boston & Montana, large orders having been received, which carried the price from \$48 to \$50 1/2 in a short time, with sales of about 3,000 shares. Osecola was also in active request, the news from the mine being of an encouraging nature, and the stock sold up to \$23 1/2, although but little was to be had at that figure.

Tamarack was firm at \$150, with very little offering.

Quincy was also strong at \$70, and Franklin sold up to \$16 ex-dividend. Atlantic advanced from \$13 1/2 to \$14 1/2 on sale of 50 shares only.

Kearsarge steady at \$8@8 1/2, ex-dividend. Huron advanced from \$3 to \$3 1/2, and National sold at \$2 1/2.

Allouez has taken quite a jump the past week, owing to reports that the mill was to be put in operation again and the mine worked for all it is worth. Price advanced from \$1.05 to \$2 1/2, with reaction to 1 1/2.

Sante Fe dropped to \$1.30, with later recovery

to \$1.52 1/2, with sales of over 20,000 shares for the week.

Butte declined from \$22 to \$15, with recovery to \$17. We cannot hear of any adverse reports concerning the mine, and can only account for the decline from an absence of orders to purchase and a forced sale of stock in order to depress the price. Pewabic sold at \$7. Bonanza at 87 1/2 @ 90c. Mesnard at 50c. Calumet & Hecla has been very quiet this week. It sold up to \$260 on the 27th for a lot of 40 shares. A few shares sold later at \$255@256. Dunkin silver declined to 65c. on small sales.

3 P. M.—At the afternoon call Boston & Montana was firm at \$50 1/2 @ \$50 1/4. Butte declined to \$16; on sale, 300 shares. Santa Fe fell off to \$145. Osecola strong at \$23 1/2 @ \$23 1/4. Kearsarge and Franklin steady at \$8 for former and \$15 1/4 for latter.

Denver.

The following call has been issued to the members of the Denver Mining Exchange:

An adjourned meeting of the members of the Colorado Mining Stock Exchange will be held on Monday, January 6th, at 7:30 P. M., in the Chamber of Commerce. The objects of the meeting are: First—To formally vote in the fifty extra members to whom certificates were issued under the \$150 rate. Second—To decide the question of issuing another 100 certificates at either \$400 or \$500 each for the purpose of realizing sufficient funds to purchase a site upon which to erect a building for the exchange. Third—To vote upon the adoption of the revised constitution and discuss such other matters as may come up.

Lake Superior Gold and Iron Stocks.

(Special Report by David M. Ford, Houghton, Mich.)

The prices of the gold and iron stocks show but little change, but continue to be in demand.

GOLD MINING STOCKS. Dec. 28.

Name of Company	Par value.	Lowest.	High.
Grayling Gold & Silver Co.	\$25.00	\$9.50	\$1.00.
Michigan Gold Co.	25.00	2.50	3.50
Peninsula Gold & Silver Co.	25.00	.75	.90
Ropes Gold & Silver Co.	25.00	2.25	2.50

IRON MINING STOCKS.

Name of company.	Par value.	Bid.	Asked.
Ashland Iron Co.	\$25.00		\$65.00
Aurora Iron Co.	25.00	7.50	8.00
Champion Iron Co.	25.00	\$100.00	110.00
Chandler Iron Co.	25.00	44.00	45.00
Chapin Iron Mining Co.	25.00	25.00	33.00
Chicago & Minn. Ore Co.	100.00	125.00	130.00
Cleveland Iron Co.	25.00	19.00	20.00
Germania	25.00		11.00
Jackson Iron Co.	25.00	100.00	110.00
Lake Superior Iron Co.	25.00	62.00	66.00
Millwaukee Iron Co.	25.00	4.00	6.00
Minnesota Iron Co.	100.00	80.00	85.00
Montreal Iron Co.	25.00		5.50
Norrie (Metropolitan)	25.00	62.00	65.00
Odansh Iron Co.	25.00		15.00
Pittsburg Lake Angeline Co.	25.00	150.00	160.00
Republic Iron Co.	25.00	48.00	49.00

PIPE LINE CERTIFICATES.

(Special Report by Messrs. WATSON & GIBSON.)

The oil market is destitute of all features. Owing to floods and muddy roads the usual amount of work was not done in the field in December, hence the report of development work was bullish, but speculation is dead in this commodity.

NEW YORK STOCK EXCHANGE.

Dec. 28	Opening.	Highest.	Lowest.	Closing.	Sales.
28	103 1/4	103 1/4	103 1/4	103 1/4	66,000
30	103 1/4	103 1/4	102 3/4	103 1/4	43,000
31	103 1/4	103 1/4	101 5/8	102 3/4	211,000
Jan. 1	102 3/4	102 3/4	102 3/4	102 3/4	72,000
2	102 3/4	103 1/4	102 3/4	103 1/4	164,000
3	102 3/4	103 1/4	102 3/4	103 1/4	558,000

Total sales in barrels. 558,000
* New Year's.

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

Dec. 28	Opening.	Highest.	Lowest.	Closing.	Sales.
28	103 1/4	103 1/4	103 1/4	103 1/4	21,000
30	103 1/4	103 1/4	102 3/4	103 1/4	195,000
31	103 1/4	103 1/4	101 1/4	102 3/4	375,000
Jan. 1	102 3/4	102 3/4	102 3/4	102 3/4	395,000
2	103 1/4	103 1/4	102 3/4	103 1/4	215,000
3	103 1/4	103 1/4	103 1/4	103 1/4	1,201,000

Total sales in barrels. 1,201,000
* New Year's.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Jan. 3.

Statistics.

In our annual review of the anthracite coal trade in 1889, on another page, will be found the latest statistics of production both by companies and by regions, including the output to the last day of the year.

PRODUCTION OF BITUMINOUS COAL for week ended December 28th and year from January 1st:

Tons of 2,240 lbs.	1889.		1888.	
	Week.	Year.	Year.	Year.
Phila. & Erie R.R.	2,733	88,631	70,179	
Cumberland, Md.	70,000	3,137,964	3,590,483	
Barelay, Pa.	7,500	135,500	161,366	
Broad Top, Pa.	15,385	376,801	385,150	
Allegheny, Pa.	60,748	3,184,327	3,364,362	
Allegheny, Pa.	15,240	918,374	810,806	
Beech Creek, Pa.	25,000	1,378,367	1,512,384	
Pocahontas Flat Top.	37,000	1,614,568	1,387,280	
Kanawha, W. Va.	35,300	1,569,164	1,621,079	
Total	268,906	12,437,296	12,903,679	

WESTERN SHIPMENTS.			
Pittsburg, Pa.	13,133	681,820	729,184
Westmoreland, Pa.	31,506	1,559,892	1,568,121
Monongahela, Pa.	4,175	365,044	380,695
Total	51,714	2,607,656	2,677,101
Grand total	320,620	15,044,952	15,581,080

PRODUCTION OF COKE ON line of Pennsylvania R. I. for week ending December 28th, and year from January 1st, in tons of 2,600 lbs.: Week, 1,223 tons; year, 4,553,648 tons; to corresponding date in 1888, 4,126,293.

Anthracite.

There is altogether too much coal on the market to permit of a very confident feeling as to the future of the trade during the next month or two. Notwithstanding the number of collieries that have been reported closed down, the production for last week was larger than during the corresponding week in 1888. It showed a decrease, fortunately from the inordinate and unnecessarily large production of the week previous. Almost a total suspension of production is imperative if the weather continues as mild as it is at present. The gentlemen in charge of our producing interests know this as well as any one else, and it is to be hoped that they will lose no time in bringing such a restriction about. The weather this year seems to have been prepared for the express purpose of teaching anthracite coal producers a severe moral lesson. It has long been evident that only one of two things, as we have frequently stated, would bring about a decided change for the better in the hard coal trade. One of these was a pronounced cold snap and the other a stoppage of production. In years past the miners of anthracite coal have always been unwilling to resort to the latter expedient, but this year the mildness of the weather should convince them that their only salvation is the course which seems so disagreeable to them. The trade in its present condition cannot endure many more violations of agreements as to production. Honesty now is not only the best policy but the only policy.

A meeting of the general sales agents was to be held this afternoon, but was postponed until next Tuesday afternoon.

There continue to be rumors as to the amount of coal held by various firms, all of which does not put a cheering aspect on the situation.

Mr. John H. Jones sends us the following statement of shipments of anthracite coal (approximated) for the week ending December 28th, 1889, compared with the same period last year:

Regions.	Dec 28, 1889.	Dec. 29, 1888.	Difference.
Wyoming Region-Tons	221,333	248,582	Dec. 26,649
Lehigh Region	99,586	93,691	Inc. 5,895
Schenykill Region	150,269	118,763	Inc. 31,506
Total	471,788	460,886	Inc. 10,902
Total for year to date	35,221,116	38,064,247	Dec. 2,840,131

Bituminous.

The week in the soft coal trade has been featureless so far as news is concerned. At the lower shipping ports, particularly Philadelphia, Baltimore, and Norfolk, vessels have lately been very scarce, and there has been some slight accumulation of coal in consequence thereof, but this is only temporary. As soon as some of the vessels now in the East return to Southern ports it will be entirely disposed of. The demand continues large at full prices.

There is nothing new to report concerning the progress of the soft-coal combination, save that several more signatures have been obtained to the agreement noted in this column last week, as to the sales of coal before February 1st. Many consumers have contracts for about all the coal they require, which do not expire until March 1st, and, in the meantime, attention is directed to the fulfillment of these contracts.

Boston.

[From our Special Correspondent.]

The anthracite coal market has been as flat all the week as the flattest pancake ever seen. The thermometer was 50 above to-day and overcoats were a burden. It is useless to contend that prices are strong in view of these facts. A good buyer can place an order for store at his own figures. The steam sizes of anthracite are well sold up owing to the shortage in bituminous, but domestic sizes are plenty enough, notwithstanding the curtailment. Any forcing on part of the companies would completely demoralize the market. It is scarcely likely that we shall have any very cold weather, but dealers do not despair of a few sample days of the old-fashioned winter of our grandfathers.

The bituminous movement is active as the limited supply of soft coal permits. Those shippers and jobbers who have been in position to sell coal for immediate delivery have made money in the last month; they have easily obtained asking prices. Most of the coal readily available is in jobbers' hands now. The soft coal roads are doing a little better by the operators, and it is not quite as difficult to get bituminous along as it was last week. If there continues to be an improvement, even though slight, contractors will manage to worry through the season. Bituminous will bring \$2.75 f.o.b. easily. The increased amounts available for shipment are mainly Clearfield; Cumberland coal will be in short supply

for some months to come; practically speaking there is no Cumberland coal for sale to-day.

The freight situation is unchanged. New York rates are 80¢@90¢; Philadelphia, \$1.30; Baltimore, \$1.50@1.60.

The retail trade is lifeless, and dealers are unhappy. The days begin to lengthen, but the cold does not begin to strengthen, and possibly it is hope deferred that giveth the coal dealer La Grippe. A great many in the trade are down with the distemper.

The exact figures of coal receipts at this port for the year 1889 are: Anthracite, 1,637,338 tons, against 2,057,297 tons in 1888; bituminous, 914,966 tons, against 1,001,195 tons in 1888. The falling off in anthracite is very marked, considering that there is an appreciable yearly increase in the consumption of domestic sizes of anthracite.

Only 5,538 tons of provincial coal were imported.

Buffalo.

Jan. 2.

[From our Special Correspondent.]

Anthracite coal goes begging. Trade very dull in consequence of mild weather and the accumulation of stock. Prices unchanged, and no indications of a change—either higher or lower—for the present.

Bituminous coal in fair demand and the market may be quoted with a weak tone. Supply adequate for want of manufacturers and consumers generally.

The coke trade without notable features. Items very scarce this week; hope that some interesting features will be developed soon.

The coal shipping and the retail trestles and the wharf of the Central Dock and Terminal Company, in this city, are complete and ready for business. Details of the structures, capacity of trestles, etc., have been noted in your columns while their construction was in progress. This work is the most notable achievement in the way of business progress during 1889. The contract was signed February 15th, 1889, the contractors being H. M. Ellsworth, of Rochester, and A. F. Chapman, of Watkins. The work was not begun, however, until March 25th, and it was finished on the 20th of last month. The total number of working days was 208.

The first thing done was the dredging out of the channel on both sides of the jetty pier, 90 feet wide and 725 feet long, so as to give 18 feet of water. This was followed by the putting in of cribwork as a foundation for the main wharf on which rests the shipping trestle, and also for the breakwater on the northwest side. So the work has progressed steadily and rapidly to a completed whole that today affords an interesting study to the observer.

The main wharf, which is 75 feet wide and 1,000 feet long, has a total frontage of 316 feet for vessels and 40 pockets on either side, each having a capacity of 65 tons, making the total capacity of the big structure, in round numbers, 5,000 tons. On top of the pockets there are four tracks upon which to handle loaded cars and a fifth for returning light cars by gravity to the ground below. Each track has a Fairbanks scale of 80,000 pounds capacity. On each side of the main wharf, as before stated, there is a slip 90 feet wide with 18 feet of water, from which a channel of the same depth leads out into the lake around the northwest end of the old breakwater. The height from the water line to the top of the wharf is 9 feet, and from the wharf to the top of the pockets 36 feet, a total of 45 feet. The north slip is protected by a breakwater 650 feet long and 35 feet wide. It consists of crib work 20 feet deep, filled with broken stone.

The approach to this trestle begins beyond Carolina street, level with the tracks of the New York Central, and between these tracks and the canal, and with an up grade of three feet in 100, reaches its highest elevation of 35 feet at a point on a line with the top of the pocket work, and 1,004 feet from the starting point. The connection with the trestle is by an iron riveted bridge resting on iron columns, which was built by the Rochester Bridge Company. It has a span of 101 feet over the Central tracks below, allowing 20 feet in the clear. The eight tracks go down at a grade of one foot in 100.

Pittsburg.

Jan. 2.

[From our Special Correspondent.]

Coal.—The trade is not very active, dissatisfaction being the rule and not the exception. The year just closed does not show a balance on the right side of the ledger. This fact prevents coal operators from being in the best humor. The year's shipments by the Ohio River, compared with 1888, show a deficiency exceeding 40,000,000 bushels. Most of the mines are now in operation.

The nominal rates are:

PRICE OF COAL PER 100 BUSHELS = 7,600 LBS.	
First pool	\$4.75
Second pool	4.50
Third pool	3.90
Fourth pool	3.25
Railroad coal	3.00@3.50

CConnellsville Coke.—At the last moment the coke men decided not to advance prices to \$2. Production keeps pace with the demand, and holidays always interfere with business, the present ones being no exception. At some points cars are still scarce; others, again, have all they require. The coming week business will resume its former position.

Quoted rates are: Furnace, f.o.b., \$1.75; foundry, \$2.05; crushed, \$2.55.

Freights.—Shipments, 70¢; Mahoningh and Shennango valleys, \$1.35; St. Louis, \$3.65; Chicago, \$2.75; Cleveland, \$1.70.

John Brennan, formerly of the Pittsburg post office, but now general superintendent of McClure & Co.'s coke works, was in Pittsburg yesterday. Mr. Brennan is a brother of W. J. Brennan, the well-known Democrat. He is the youngest manager in the region, and his popularity is unbounded. He says the coke workers' scale of prices for the year will be presented to the operators on the 6th inst. The scale, he says, will call for many privileges not now enjoyed by the cokers. There will be no demand for an advance of wages, but he believes the demand for privileges will be greatly modified before the scale is accepted by the operators. He does not believe there will be a strike.

The strike which has been in progress since Tuesday, 31st December, at the Buckeye Coke Works, of 160 ovens and about 200 men employed, is at an end. The company reinstated a couple of discharged men, over which the trouble arose, and the works will be in full blast in the morning. A few members of the Executive Board of Knights of Labor held a meeting here to-day, but they would not say what was transacted. It is understood they are making preparations for a fight should the operators not sign their scale of wages for '90.

FREIGHTS.

From Baltimore to: Boston, Mass., 1.60; Bridgeport, Conn., 1.40; Brooklyn, N. Y., 1.00; Charleston, .80; Fair Haven, Mass., 1.40; Fall River, 1.40; Galveston, 3.00; New Bedford, 1.40; New Haven, 1.40; New London, 1.40; New York, N. Y., 1.05; Portland, 1.60; Portsmouth, Va., .60; Providence, 1.40; Quincy Point 1.80; Richmond, Va., .85; Salem, Mass., 1.60; Savannah, 1.00; Somerset, 1.40; Williamsburgh, N. Y., 1.10.

From Philadelphia to: Alexandria, Va., 1.00; Boston, Mass., 1.40@1.50; Charleston, .75; Galveston, 3.05; Georgetown, D. C., 1.00; New York, 90¢; New Orleans, 2.75; Norfolk, Va., .75; Providence, R. I., 1.20 @1.30; Richmond, 1.00; Savannah, .90; Washington, 1.00; Wilmington, N. C., 1.00.

* And discharging. † Alongside. ‡ And towage.

METAL MARKET.

NEW YORK, FRIDAY EVENING, JAN. 3.

Prices of silver per ounce troy.

Dec.	Sterling Exch'ge.	Lon'd'n Pence.	N. Y. Cts.	Jan.	Sterling Exch'ge.	Lon'd'n Pence.	N. Y. Cts.
28	4.82½	43¾	94¾	1*	*	*	*
30	4.82	43 15-16	94¾	2	4.83	44¼	95¼
31	4.82	44	95	3	4.83	44½	95½

* Holiday.

Council bills advanced 1-32d on this week's allotment.

Silver has been strong and advancing on good London demand for India shipment.

Depressing influence, however, has been our tight money market and consequent weak exchange.

United States Assay Office at New York reports total receipts of silver for the week 90,000 ounces.

Domestic and Foreign Coin.

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

	Bid.	Asked
Trade dollars	75	76
Mexican dollars	75	76
Peruvian soles and Chilean pesos	72	73½
English silver	4.83	4.88
Five francs	.94	.95
Victoria sovereigns	4.85	4.88
Twenty francs	3.85	3.90
Twenty marks	4.74	4.78
Spanish doubloons	15.55	15.70
Spanish 25 pesetas	4.30	4.35
Mexican doubloons	15.55	15.70
Mexican 20 pesos	19.50	19.65
Ten guilders	3.96	4.00

Copper.—The holiday feeling prevailing at this season has produced the usual effect of a quiet market in all metals, and the business transacted has been quite limited. In copper, however, the tendency continues very firm, and Lake brands have been sold at 14½¢, which may be regarded as the opening quotation for the new year, while casting qualities are quoted from 12½¢ to 13½¢. The consumptive demand on all sides continues very satisfactory.

After an interval of nearly a week, the London market opened firm on Monday, with Chili bars and G. M. B.'s at \$50@50 2s. 6d. spot, and \$50 2s. 6d.@50 5s. three months, and with very insignificant fluctuations continued strong throughout the week, closing to-day at the best figures, viz., \$50 17s. 6d.@51 spot, and \$51 5s.@51 7s. 6d. three months.

The latest London quotations for refined and manufactured sorts are: English tough, \$55 10s.; best selected, \$57 10s.; strong sheets, \$57; India sheets, \$60; yellow metal, 6d. per pound.

The statistical position at the close of the year 1889 is fully set forth on another page in our annual summary.

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

To Liverpool—	Copper Matte.	Lbs.	
By S. S. England	3,798 sacks	1,125,389	\$50,200
To Hamburg—			
By S. S. Toormina	1,301 bags	150,000	4,500
To Liverpool—	Copper.		
By S. S. Runic	190 bars	82,768	9,200

Tin.—Our market on this side has been in a dragging condition during the greater part of the

week with business restricted, and the quotations for spot tin, ranging from 21.15c. to 21.25c., which prices are about $\frac{1}{2}$ c. below the London parity. To-day a decidedly better feeling became apparent and the closing prices are: Spot, 21.25c.; January, 21.25c.; February, 21.25c.; March, 21.35c.; April, 21.40c.

The London market has been very strong, and the latest cable quotations received to-day are: the best at £97 10s. @ £97 12s. 6d. spot, and £97 10s. @ £97 15s. three months.

Lead has been dull and neglected, buyers and sellers showing no disposition to do anything. Under these circumstances hardly any business has been transacted and quotations are greatly nominal at 3.85@3.90c.

The latest London quotations are: English, £14 10s.; Spanish, £14 5s. @ £14 10s.

The St. Louis Market.—Messrs. John Wahl & Co. telegraph us as follows: The usual holiday week dullness has characterized our lead market. Transactions were few and far between at say 3.60c. for common and 3.62½c. for corroding. The opening of the new year appears to have nothing striking in store for the metal, and the consensus of opinion is that some time will elapse before it is safe to look for a "healthy advance."

The Chicago Market.—Messrs. Everett & Post telegraph us as follows: Lead is steady at 3.70c. asked, 3.65c. bid. Sales aggregate 200 tons at 3.67½c. In this market trade for the year has been slightly in excess of 1888, and values have been very satisfactory to all concerned. The average price of pig lead for the year is 3.67½c., and is lower than since 1884. Stocks at this center are about the same as at the opening of 1889, and although the opportunity was offered to sell some at and around 3.95c., no trades were consummated.

Spelter continues firm with very little metal offering, and we have now to quote \$5.45@5.50 delivered New York for prime Western.

Antimony remains very firm with Cookson's quoted at 28c. and Hallett's at 20¾c.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Jan. 3.

Pig Iron.—The Thomas Iron Company has opened its books for 1890 deliveries at \$20 for No. 1 foundry, \$19 for No. 2 and \$18 for gray forge. These prices were announced late this afternoon, and, as will be noticed, are the same as those predicted in this column. While the announcement of these prices to some extent may have been discounted, the fact that they have been officially fixed is an event of no little importance, and will have a powerful influence upon the market in steadying values and in fixing definite prices for future negotiations. As we have from time to time pointed out, the altered conditions under which the new year has opened have contributed elements of uncertainty to the market, and there has been naturally a hesitancy on the part of both buyers and sellers to close contracts for long periods to come at any definite figure. Now that this influential company has definitely fixed its prices, and as these prices agree with the quotations privately given to us by other prominent companies, it seems probable that the market will rest upon a very secure foundation. The Thomas Company will book orders only from its regular customers, and will have no iron to sell to outsiders until the wants of their regular patrons are supplied. The company has booked orders for forge irons aggregating about 80,000 tons. The buyers are understood to be pipe makers, principally, who, in fixing their schedules for the year, are, of course, obliged to determine definitely the cost of their crude material. The various orders for forge irons aggregating the above amount have been reported regularly during the past six weeks in this column as they have been placed.

Scotch Pig.—Cables received to-day from Glasgow report a further advance. Scotch warrants are quoted to-day at 66s. The cables also bring us the information that Scotch warrants have been listed on the London Stock Exchange. This news has much significance. Additional facilities will thus be afforded to the investing public for speculation in these warrants, and "booms" are likely to be of even more frequent occurrence, all of which is particularly encouraging to American producers, who are hoping to maintain their complete independence and to be free from any fear of foreign competition.

Spiegeleisen and Ferro-Manganese.—The new year opens with a very marked scarcity of manganese ores. In fact this scarcity has been growing steadily throughout the year, and has, of course, materially aided the tremendous advance in this line which has taken place. The American sources of supply have not been increased, and, in fact, our production seems to be falling off. Foreign advices also state that the increase in production abroad will not be important and will be more than absorbed by the increasing demand during the year on account of the boom in the steel industry abroad. Thus it seems that a continuance of high prices is very probable. In this market there are a number of important inquiries in sight, but consumers, on account of the high prices ruling, are reluctant to close contracts; before long, however, they will be obliged to do so. For spiegeleisen, 20 per cent. \$37.50 is

quoted. Ferro-manganese quotations range from \$100 to \$105 for 80 per cent.

Steel Rails.—Temporarily there is a dearth of new business, but a feeling of confidence is apparent on all sides. During December it is estimated that the orders booked for 1890 delivery aggregated not much over 35,000 tons, making a total quantity already booked for 1890 about 635,000 tons. There have been a number of inquiries in the market, notably one for 15,000 tons for the South, but these have not all been cash propositions, which are the only kind that mills care to listen to under present circumstances. Money is not really scarce although it has been greatly manipulated of late, but it does not seem to be very equally distributed among buyers of rails.

Structural Iron and Steel.—Ruling prices are as follows:

Delivered on wharf, bridge plate, 2.30c.; iron angles, 2.30c.; iron tees, 2.80@2.85c.; steel angles, 2.70c.; beams and channels on wharf, 3.1c.

Steel plates on wharf: Tank and ship, 2.75c.; shell, 3c.; flange, 3.25c.; fire-box, 4@4.1c.

Iron plates on wharf: Common tank, 2.35c.; refined, 2.45c.; shell, 2.6c.; flange, 3.5@3.7c.; extra flange, 3¾@4c.

Bar iron at mill is quoted at 1.8@1.9c. for common and 1.9@2c. for refined. Deliveries from store are quoted as follows: Common, 2.1c. base; refined, 2.3c. base; "Ulster," 3c. base; Norway bars, 4c.; shapes, 5c., and Norway nail rods, 5½c.

Merchant Steel.—Prices are as follows: Best English tool steel, 15c. net; American tool steel, 7½@10c.; special grades, 13@20c.; crucible machine steel, 5c.; crucible spring, 3¾c.; open-hearth machinery, 2¾c.; open-hearth spring, 2¾c.; tire steel, 2¾c.

Pipes and Tubes.—Rates of discount on wrought-iron pipe remain as follows: Butt welded, plain and tarred, 50 per cent. discount; galvanized, 42½ per cent. discount; lap-welded, plain and tarred, 62½ per cent. discount; galvanized, 50 per cent. discount. A discount of 55 per cent. is allowed on boiler tubes of 2 inches and larger, and 50 per cent. on 1¾ inches and smaller. Cast-iron pipes remain at \$25@28, according to size.

Rail Fastenings.—Ruling prices may be quoted as follows: Spikes, 2.25c.; angle fish plates, 2.15@2.25c.; bolts and square nuts, 3c.; hex. nut, 3.25c.

Old Material.—Consumers are undoubtedly in need of raw material, but at the moment are unwilling to pay the prices asked. Old iron rails continue to show a hardening tendency, the latest quotations for tees being \$28.

Louisville.

(Special report by Messrs. Hall Brothers & Co.)

There is nothing especially new to be said about the market, except that the volume of business has increased considerably during the past week. Some concerns have made inquiries for round lots of iron, for future deliveries, covering several grades, but they are slow to decide purchases; and it is thought on some of them conclusions will not be reached until after the first of the year. The inquiries are, therefore, construed as a feeler of the market, and will, probably, result in round purchases, as some of them need the metal. Trades during the week past have been mainly in quantities ranging in car lots, up to two, five, and 600 ton lots.

Hot Blast Foundry Irons.

Southern Coke No. 1	\$19.00@19.50
" " No. 2	18.75@19.00
" " No. 3	19.00@18.75
Mahoning Valley, Lake ore mixture	20.00
Southern Charcoal No. 1	18.50@19.00
" " No. 2	18.00@18.50
Missouri " No. 1	19.50@20.00
" " No. 2	19.00@19.50

Forge Irons.

Neutral Coke	17.50@18.00
Cold Short	16.75@17.00
Mottled	15.50@16.00

Car Wheel and Malleable Irons.

Southern (standard brands)	23.50@24.50
" (other brands)	19.50@20.50
Lake Superior	23.00@23.50

Philadelphia.

Jan. 3, 1890.

Pig Iron.—Representatives of a number of large buyers of both forge and foundry irons who have been questioned within the past three or four days concerning their intended action for January, have replied, substantially, that they do not expect to be in the market, except for small lots of certain sorts of material, to round up their assortments. Should this be the case generally, January demand for iron will be much less than brokers anticipated a month ago. There are, however, enough small buyers among the rolling mills of Eastern and Middle Pennsylvania to make a heavy demand, as it is well known that very few of these small concerns have very much iron, either on hand or under contract. Gray forge is held nominally by most makers at \$18, but buyers think that a square offer of 50 or 25 cents less would secure all the iron that is wanted. Representatives of steel mills have made inquiries for Bessemer iron, and one or two large contracts are reported to have been closed. Founders are, as usual, doing very little, and seem to care very little whether they cover the requirements for the first quarter of the year or not. No. 1 is \$19.50@20; No. 2, \$18@19.

Foreign Material.—Twenty per cent. spiegeleisen is wanted at \$37, and held at \$38. It is rumored that a further advance is to take place, but as to the facts of the matter we can say nothing. Ferro-manganese is quoted at \$85@100.

Muck Bars.—Another advance has taken place in muck bars, nominally, at least; and those who are in position to speak with authority say that present quotations will be paid without question when buyers ascertain the actual condition of things. Consumers would be glad to get supplies at \$30.50@31, but asking prices are \$31.50@32.

Blooms and Billets.—While no large transactions in blooms and billets have been reported this week, there are several large buyers who would like to be accommodated, and manufacturers have promised that they shall be taken care of in any event. The figures at which large business will be taken have been made, but are not publicly known. Several large blocks are wanted.

Merchant Iron.—Very little business was transacted this past week, and it is not likely that there will be any rush next. The mills are pretty well off, and ruling prices for refined are 1.90c. to 2c.

Nails.—Nails are strong but quiet at \$2.20 and \$2.40, respectively, for iron and steel. Mill owners who have expressed opinion say that the signs to-day are as favorable as a month ago, and that the Pennsylvania nail factories will probably run steadily all winter, for the purpose of accumulating stocks for the coming season. No reaction is considered probable.

Skelp Iron.—Skelp is very strong at 1.90c. for grooved, and 2.20c. for sheared.

Wrought Iron Pipe.—The pipe makers expect a large amount of business soon, or so it would appear, from the manner in which they are endeavoring to hurry forward negotiations for material.

Sheet Iron.—Sheet iron is very strong, but the retail distribution this week has been unimportant.

Plate and Tank Iron.—No new orders of consequence have been received, but things look all right for manufacturers. Those who are watching the buying interests say there are a great many orders to come in, and that a large number will come in in January. Tank is quoted at 2.35c. for iron, and 2.70c. to 2.80c. for steel. Shell is 2.60c. to 2.70c.; flange, 3.25c.; fire-box, 3.75c.

Structural Iron.—Those who are accustomed to speak for the structural iron trade say that within the past week or so a great deal of business has been unearthed, but which will not be placed for an indefinite time. There is an inclination, so they say, among promoters of large enterprises calling for structural iron to make contracts two or three months ahead. Capitalists and others engaged in large enterprises are thoroughly aroused to the probability that 1890 is to be a booming year, both as to demand and prices, and, from all we can learn, they seem inclined to protect themselves against possible fluctuations. Angles are quoted at 2.30@2.35c.; tees, 2.80c.; beams and channels, 3.10c.

Steel Rails.—Steel rails are quoted at \$35 in large lots. Reports for the week are very unsatisfactory so far as new business is concerned. While business has been very quiet, there has been a great deal of talk on the street as to what is likely to be done before the close of the present month.

Old Rails.—Old rails are quoted nominally at \$28; but owing to the very light supply on hand, the unwillingness of holders to name prices and the unwillingness of buyers to pay fancy figures, no business has been closed.

Scrap Iron.—No. 1 is nominally \$25 and choice \$26. Yardmen and brokers are negotiating as fast as possible for a great deal of cargo and carload stuff to be delivered during the winter, and some of them expect to have enough to meet the wants of all their customers.

Pittsburg.

Jan. 2.

(From our Special Correspondent.)

Raw Iron.—Our first report for the new year has to record, in spite of the holidays, a good demand for leading descriptions of gray forge and Bessemer. The raw iron sales reported in the ENGINEERING AND MINING JOURNAL for 1889 amount to 1,923,050 tons, exceeding the previous year by 813,189 tons. We also reported sales of 3,000,000 tone Bessemer ore, at an advance of \$1 per ton over the previous year's prices; from this it will be perceived that our iron and steel business is growing at a wonderful rate, being without doubt the leading iron market of this country; the trade is yet in its infancy and there is no telling what the future has in store for us.

We hear persons talking about prices reaching the highest point ever known.

Gray forge iron has been sold in this market at \$55 per ton. These figures will never be repeated. The world is moving steadily on, and those who fail to catch on are certain to be left. It makes no difference how long you have been in the business, there is plenty to learn, and the sooner the fact is realized the better. Years ago iron was sold on four and six months and sometimes even longer. A cash sale was something that did not often occur. Now things are changed. A time sale is seldom made. Formerly leading houses confined their business principally to pig iron and occasionally a sale of blooms. How is it now?

Leading brokers sell pig iron, blooms, billets, muck bar, spiegel, ferro-manganese, steel rails, structural iron, skelp iron, bloom ends, steel wire rods, iron ores, old iron and steel rails. The fact is there is scarcely a limit to their transactions. A new feature in the market is the purchase by Eastern dealers of steel billets; some round lots are under negotiation for delivery East. This is something that does not occur very often; but then iron and steel must be had, and when it becomes scarce Pittsburgh is found to be equal to the occasion.

Coke and Coal Smelted Lake Ore.

3,000 Tons Bessemer	\$24.00 cash.
2,000 Tons Gray Forge	18.00 cash.
2,000 Tons Gray Forge	18.25 cash.
3,000 Tons Bessemer	24.25 cash.
1,500 Tons Bessemer	23.80 cash.
1,000 Tons Bessemer	24.00 cash.
1,000 Tons off Bessemer	22.00 cash.
1,000 Tons Mill Valley Furnace	15.00 cash.
1,000 Tons Gray Forge	18.50 cash.
1,000 Tons Neutral Forge	18.50 cash.
1,000 Tons Gray Forge	19.00 cash.
1,000 Tons off Bessemer	22.50 cash.
750 Tons Gray Forge	18.50 cash.
750 Tons Gray Forge, Cold Short	18.00 cash.
750 Tons Gray Forge	18.75 cash.
500 Tons Gray Forge	18.50 cash.
500 Tons Gray Forge	18.50 cash.

Coke, Native Ore.

1,000 Tons Gray Forge	17.50 cash.
400 Tons No. 2 Foundry	18.75 cash.
100 Tons Mottled	17.00 cash.
100 Tons Clear Gray Forge	18.50 cash.
50 Tons Silvery No. 2	18.00 cash.
50 Tons Silvery Extra	21.00 cash.

Muck Bar.

1,500 Tons Neutral, January	31.50 cash.
1,500 Tons Neutral, January and February	30.50 cash.
500 Tons Neutral, January	30.50 cash.
500 Tons Neutral	31.25 cash.

Steel Slabs and Billets.

4,000 Tons Billets and Slabs	36.75 cash.
2,000 Tons Billets	37.00 cash.
2,000 Tons Slabs, Wheeling	36.25 cash.
2,000 Tons Billets	36.00 cash.
750 Tons Billets	37.00 cash.

Steel Wire Rods.

500 Tons American Fives	50.00 cash.
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New Steel Rails.

22,000 Tons, Spring delivery for Western Roads	34.60 cash.
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Spiegel.

100 Tons 10 to 12 per cent	32.60 cash.
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Skelp Iron.

2,000 Tons Sheared Iron	2.12 1/4 mo.
1,500 Tons Wide Grooved	1.90 4 mo.
1,000 Tons Narrow Grooved	1.85 4 mo.

Bloom Ends.

3,500 Tons Mixed Lots	25.00 cash.
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Prices.

20% Spiegel at seaboard	36.00@37.0
Muck-Bar	31.00@31.50
Steel Blooms	36.00@37.00
Steel Slabs	35.75@36.00
Steel Cr'p Ends	25.00@26.00
Steel Bl. Ends	25.00@26.00
Ferro-Man., 80%	102.50@105.00
Steel Billets	36.50@37.00
Old Iron Rails	27.50@28.00
Old Steel Rails	23.00@24.00
No. 1 W. Scrap	22.00@23.00
No. 2 W. Scrap	19.00
Steel Rails	35.00@35.00
light sec.	35.00@38.00
Bar Iron, nom.	1.90@ 1.35
Iron Nails	2.25@ 2.30
Steel Nails	2.25@ 2.30
Wire Nails	2.90@3.00

Coke or Bituminous Pig—

Foundry No. 1.	\$20.00@20.25
Foundry No. 2.	19.00@19.25
Gray F. No. 3.	18.00@19.00
No. 4.	@17.50
White	17.00@17.25
Mottled	17.00@17.25
Silvery	18.00@21.00
Bessemer	24.00@24.50
Low Phos.	@28.00

Charcoal Pig—

Foundry No. 1.	23.50@24.50
Foundry No. 2.	22.00@22.25
Cold-Blast	25.00@25.00
Warm Blast	24.00@25.00
10 + 12% Spiegel at seaboard	30.00@32.00

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Jan. 3.

In all branches of the markets covered by this report, the year just opened promises to be fruitful of interesting and important events. It will be not only to the advantage but absolutely necessary to both consumers and purchasers to use every means available to secure at all times an accurate knowledge of current progress. This the ENGINEERING AND MINING JOURNAL has in the past endeavored to record, and we trust that in the future it will not be found wanting.

Heavy Chemicals.—With the single exception of bleaching powder, it is thought that higher prices will rule for all of the so-called heavy chemicals during the year on which we have just entered. Soda ash and refined alkali are not only scarce on the spot, but are obtainable only with some difficulty for future delivery, and the probability of increased consumption early in the year arising from the resumption of work by the glass manufacturers, encourages holders to believe that higher prices will prevail.

For carbonated soda ash, 48 per cent., \$1.35 to \$1.45, according to quantity and brand, is now asked. For refined alkali, 58 per cent., on the spot as high as \$1.50 is quoted. Futures can probably be obtained at \$1.37 1/2.

Caustic soda is somewhat scarce on the spot. At the beginning of the new year higher prices for raw material and fuel will go into effect on the other side, and consequently cable advices received from Liverpool this week quote prices higher than they have been. Cable advices received yesterday afternoon indicate that the cost of importation of 70 and 74 per cent. will be \$2.40. On the spot there is a small supply that can probably be obtained at \$2.35@2.37 1/2.

Bleaching powder still continues to be the weak spot on the list. For lots ex-store, \$1.50 is quoted. Forward deliveries can probably be obtained at

\$1.45. Dealers are hoping that ere long a reaction in the long continued depression in this article will ensue. It must be confessed that so far as can be judged, at present, the outlook is not encouraging. There is a possibility, however, that some of the influences which have been affecting the market very powerfully during the year, may be shifted so that values may be advanced.

Hyposulphite of soda is quoted at \$1.50 per pound in casks, and \$1.60 per pound in kegs.

Acids.—The new year opens under conditions that are in many ways without a parallel in recent years. In the first place, during the last six months trade has been much better than usual; stocks at present are supposed to be lighter than they have been on January 1st any time during the past ten years; and, thirdly, and most important of all, the greater part of trade is now included in a more or less "iron clad" combination, a condition of affairs which only a few years ago many manufacturers would have deemed as far off as the millennium.

The Standard Oil Company is reported to have made some large purchases of acid lately.

The management of the Knickerbocker Chemical Company is very much gratified with the unanimity with which the schedule prices adopted last July have been adhered to. There has possibly been some cutting by those who are not included in the combination, but it is said that this has not amounted to much. Consumers have not hesitated to close contracts, particularly as a number have been made with the proviso that if the combination prices are not maintained, contracts will be filled at ruling market values. If those who are earnestly and energetically supporting the combination are right in their views, however, there is very little likelihood that consumers will find this last proviso necessary. Prospects for an increased consumption of acid during the year are apparently good; but if the demand does not come up to expectations, the combination professes to be able to regulate the matter of production, and thus the trade seems to be likely to be kept in a satisfactory condition. Raw material, in nearly all cases, is cheap. Of course there is a great deal of doubt as to the course that will be pursued, under varying circumstances, by those who are not included in the combination, but the members of the "combine" think it probable that the so-called outsiders will find it to their advantage to uphold the market. At all events the year promises to be one of unusual interest.

Fertilizing Chemicals.—While the holidays have engrossed their due share of attention, there are signs that manufacturers are beginning to look around for supplies for spring consumption. Some sales of blood have recently been made, and while prices are not quotably changed, there seems to be a general impression that the bottom has been reached. Potash salts are temporarily quiet. Most of the buyers who were ready to make purchases supplied their wants at the low figures ruling before December 21st. Revised quotations are as follows: Azotite, \$2.05; dried blood, low grade, \$2.00; high grade, \$2.10. Tankage, high grade, 9 to 10 per cent. ammonia and 15 to 20 per cent. phosphate, \$20.50@21 per ton, and low grade, 7 to 8 per cent. ammonia and 25 to 30 per cent. phosphate, \$20@20.50. Fish scrap, \$21.50@22 per ton, f.o.b. factory. Sulphate of ammonia at \$3.15@3.20 per cwt. Concentrated tankage, \$2@2.05. Refuse bone-black, guaranteed 70 per cent. phosphate, \$20 per ton. Dissolved bone-black is 90@92 1/2 c. per unit for available phosphoric acid, and acid phosphate 80c. per unit for available phosphoric acid. Steamed bones, unground, \$20@23; ground, \$25@26.

Charleston rock, undried, \$5.75 per ton; kiln dried, \$6.75@7 per ton, both f.o.b. vessels at the mines. Freight by sail from Charleston to New York, \$3@3.25 per ton. Charleston rock, ground, \$11.50@12, ex-vessel at New York.

Double manure salts, 48 to 51 per cent. sulphate of potash, for 1890 shipment, \$1.12 1/2 per 100 pounds; high grade manure salts, basis 90 per cent. sulphate of potash, \$2.37 1/2 per 100 pounds. These prices are for invoices of 50 tons, based on foreign analyses and foreign invoice weights, ex-ship, New York.

Muriate of potash.—An item of interest in this market which is attracting some attention is the resale of two lots of 50 tons each, held by local manufacturers at \$1.75 and \$1.77 1/2 per pound respectively. The syndicate prices continue at the latter figure for 1890 shipments.

Kainit.—Prices are unchanged at \$10.35 per ton and the trade passing presents no features of interest.

Brimstone is quiet, unchanged and in light demand. Nitrate of soda.—Quotations are somewhat nominal.

NOTES OF THE WEEK.

On another page will be found an exhaustive review of the chemical and mineral markets of 1889. Among the particular features of interest are the statistics of importations of heavy chemicals for eleven months of the year; the importations of various potash salts for the year; an unusually able review of, together with intelligent criticisms on, the nitrate of soda market by a well-known trade authority; the latest statistics of Charleston phosphate rock shipments, and a manufacturer's opinion on the fertilizer market.

Messrs. Adolph Hirsh and Carl Weidinger have returned from a short business visit to Germany.

The death of Mr. Edward Petit, to which we refer on another page, occasions sincere regret in the fertilizer trade, where Mr. Petit had been well known and highly regarded for many years.

The fifteenth annual meeting of the United States Menhaden Oil and Guano Association will be held on Wednesday, January 8th, 1890, in the United States Hotel, New York City, at 10 A. M. Mr. Jasper Fryer, the secretary, says that a full attendance is requested, as matters of importance will be brought before the meeting, particularly the recent seizures of fishing steamers by the State of Massachusetts.

At the hearing in Washington this week on the tariff question before the Ways and Means Committee of Congress, Mr. Armstrong, the president of the Pennsylvania Salt Company, advocated the imposition of a specific duty of 1/2 cent per pound on sulphate of soda, instead of the present rate of 20 per cent. ad valorem. W. B. Cogswell, of Syracuse, representing the only manufactory of soda ash in the country—that of the Solvay Process Company—said that the Senate bill was satisfactory so far as he was concerned. He informed the committee that the dividends of his company were small. He did not think that the duty of \$5 a ton could be taken off soda ash and his business make any profit unless the price of labor were reduced. He admitted that English and Belgian companies were interested in his company. Over two-thirds of the capital invested in his company was American capital. An argument was made by a Philadelphia manufacturer, N. P. Allen, for an increase of the duty on phosphorus of from 10c. a pound—as fixed in last winter's Senate substitute—to 25c.

The Brooklyn Sulphur Works had a representative on hand to propose the scaling down of the duty on sublimated flour from \$20 to \$15 a ton.

BUILDING MATERIAL MARKET.

NEW YORK, Friday Evening, Jan. 3.

The year 1890 opens with a feeling of great confidence as to the future in all branches of the building material trade. Real estate transactions during the year just closed have been unusually heavy, and the number of buildings projected very large. It is, therefore, thought that consumption will probably be active during the year to come. There will also be a number of large projects upon which the work of construction will begin during 1890, and it is hoped that to a moderate degree this will cause some of the activity occasioned a few years ago by the demand for material for the new Croton aqueduct. An interesting review of the building material market for 1889 is published on another page.

Brick.—The market for brick during the week has been very quiet. There has been altogether too large a supply available to permit any hope that prices will shortly advance. The mild weather, however, makes it possible for builders to continue operations, and if we are to have a repetition in 1890 of the weather of 1889, before production commences again stocks of brick will become greatly depleted. In this event, unless brick is made much earlier than looked for, dealers will undoubtedly make a strenuous effort to boom prices.

The year just closed, as will be seen by reference to the review on another page, was one of depressed values, and holders will now be all the more anxious to take advantage of any opportunity that is offered for securing higher prices.

No Up-river brick are now coming forward. For washed Haverstraws \$6.50 is asked. For smooth Haverstraws, \$7 per thousand. Jerseys are worth \$5.50@6 per thousand. Pales, \$3@3.50.

Mr. James D. Avery is reported to be endeavoring to organize the Star Brick Company for the purpose of purchasing the Montrose and Fishkill brick yards.

The attendance at the Building Material Exchange falls off perceptibly during the winter months, but there is, nevertheless, quite a large assemblage of builders who indulge in gossip and social intercourse rather than in business.

Lime.—It is thought that the cargoes of Rockland lime now on the market are probably the last that will be received this season, all of the kilns having stopped work. The demand is rather light. Stocks at the end of the year are estimated to be about as large as they were a year ago this date. Sanguine feelings are expressed as to the lime market in 1890. On Long Island two large jobs will require a great amount of lime. These are the big aqueduct to be built on the south side of the island, and the county buildings to be erected at St. Johnland, Kings County.

Cement.—All the makers of Rosendale cement have stopped work for the season, except two, who will suspend operations as soon as their store-houses are full. As previously noted in this column the necessity of shipping all goods by rail hereafter has caused quotations to be advanced to \$1.20 and \$1.25 per barrel f. o. b. New York. Importers will be interested to learn that at the hearing on the tariff before the Ways and Means Committee of Congress, on Monday, Mr. Robert W. Leslie, of Philadelphia, representing the American Improved Cement Company, advocated a specific duty of eight cents per 100 pounds on cement imported in barrels, and seven cents when imported in bags or bulk.

DIVIDEND-PAYING MINES.

NON-DIVIDEND PAYING MINES

Main table with columns: NAME AND LOCATION OF COMPANY, CAPITAL STOCK, SHARES, ASSESSMENTS, DIVIDENDS, NAME AND LOCATION OF COMPANY, CAPITAL STOCK, SHARES, ASSESSMENTS. Lists 150+ mines with their respective financial details.

G. Gold, S. Silver, L. Lead, C. Copper. * Non-assessable. † This company, as the Western, up to Dec. 10th, 1881, paid \$1,400,000. ‡ Non-assessable for three years. § The Deadwood previously paid \$275,000 in eleven dividends, and the Terra \$75,000. ¶ Previous to the consolidation in Aug., 1884, the California had paid \$31,320,000 in dividends, and the Con. Virginia, \$24,000,000. ** Previous to the consolidation of the Copper Queen with the Atlanta, Aug., 1885, the Copper Queen had paid \$1,350,000 in dividends. †† 1,000,000.

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Table with columns for Name and Location of Company, Dividend dates (Dec. 28, Dec. 30, Dec. 31, Jan. 1, Jan. 2, Jan. 3), and Sales. Includes sub-sections for Dividend-paying and Non-dividend-paying mines.

*Ex. dividend. †Dealt in at the New York Stock Ex. ‡Unlisted securities. §Assessment unpaid. ¶Dividend shares sold, 14,905. Non-dividend shares sold, 34,620. Total, New York, 49,525. †Holidy

BOSTON MINING STOCK QUOTATIONS.

Table with columns for Name of Company, Dividend dates (Dec. 27, Dec. 28, Dec. 30, Dec. 31, Jan. 1, Jan. 2), and Sales. Includes sub-sections for Dividend-paying and Non-dividend-paying mines.

* New Year. Boston: Dividend shares sold, 10,994. Non-dividend shares sold, 28,915. Total Boston, 39,909.

COAL STOCKS.

Table with columns for Name of Company, Par value of shares, and Dividend dates (Dec. 28, Dec. 30, Dec. 31, Jan. 1, Jan. 2, Jan. 3) and Sales.

*New Year's. Sold in New York, 142,350; in Philadelphia, 134,661. Total sales, 386,769.

San Francisco Mining Stock Quotations.

Table with columns for Company, Closing Quotations (Dec. 27, Dec. 28, Dec. 30, Dec. 31, Jan. 1, Jan. 2).

* New Year's Day.

STOCK MARKET QUOTATIONS.

Baltimore, Md. COMPANY. Bid. Asked. Atlantic Coal 1.00 1.50 Balt. & N. C. .05@.08 .10 Big Vein Coal .10@.15 Conrad Hill .22 Diamond Tunnel .22 George's Crk. C .05@.08 Lake Crombe (Balt.) .30@.35 Silver Valley .30@.35 Prices bid and asked during the week ending Jan. 2d.

Birmingham, Ala. COMPANY. Bid. Asked. Ala. Con. C. & C. Co. \$20 Ala. R. Mill Co. \$102 Alice Furnace Anna Howe G. Mg. Co. \$36 Bir. Mg. & Mfg. Broken Arrow Cahaba Coal Mg. Co. \$63 Camille Gold Mg. Co. \$14 De Bardeleben C. & I. Co. \$75 Decat. L. Imp. Decatur Min. L. \$1 \$22 1/2 @ \$23 Eureka \$100 Florence L. & Mg. Co. \$23 Hecla Coal Co. \$30 Hen. S. & M. Co. \$73 @ \$85 Jagger Towley C. & C. \$10 @ \$11 1/2 Mag. Ellen. \$92 Mary Lee C. & R. Co. \$40 Sheffield C. & I. Co. \$59 @ \$60 \$63 @ \$65 Sloss I. & S. \$59 1/2 @ \$60 \$85 Sloss I. & S. \$85 Tuscaloosa C. L. & Co. \$20 1/2 Tenn. C. & I. Co. \$75 @ \$76 \$76 @ \$77 Woodstock L. Co. \$56 @ \$57 \$58 @ \$60 Prices bid and asked during week ending Dec. 28th. Bonds. † First mortgage. †† Second mortgage.

Denver, Colo. COMPANY. H. L. Sales. Allegheny, Colo. .35 .29 22,000 Amity .19 .17 21,000 Aspen Mutu'l .35 .30 5,500 Big Indian .42 .33 21,400 Brownlow .45 .40 700 Calliope .46 1/4 .45 Claudia, J. .15 .14 290 Clay County .72 1/2 .65 7,100 Hard Money .10 .07 290 Legal Tender .08 1/2 .06 100 Matchless .18 1/2 .15 13,400 May-Mazepa .82 .75 50 Mollie Gibson .26 .23 5,100 Morning Glim' .15 .10 40,800 Pay Rock .25 .19 124,900 Puzzler .72 1/2 .71 1,400 Silver Cord .35 .32 3,500 Whale Total 266,500 Prices during the week ending Dec. 28, 1889.

Kansas City, Mo. Dec. 28. COMPANY. Par value. Bid. Asked. Ben Harrison \$25.00 30.00 Burch, L. & Z., Mo. 1.00 .75 Express Group Hillsboro Gold Farmers' Coal Co. 50.00 75.00 Ida Hill, S. N. Mex 100.00 100.00 Kansas City L. & Z. .60 Kan. City M. & M. Co. 2.60 3.00 K. C. Colo. Kentuck, Z. Mo. 1.00 La Motte, Mo. 100.00 100.00 Leona 125.00 Maverick, S. Colo. 10.00 1.00 Minnequa Zinc .25 .45 Quartz Mt. .67 .12 Ruby Silver 1.12 1.25 Sonora, G. & S., Mex. 10.00 1.00 Standard, S. Colo. 3.00 Silver Monument 3.00 Templar, N. Mex. 1.00 The Sylph 2.50 Webb City, L. Z., Mo. 5.65 5.00 Wiehita, L. Z., Kan. 100.00 40.00

Pittsburg, Pa. COMPANY. H. L. Closing. Allegheny Gas Co. \$30.00 \$30.00 Bridgewater Gas Co. 32.00 29.00 32.00 Cbartiers Val. Gas. 50.00 40.00 47.50 Columbia Oil Co. 3.00 Consolidated Gas Co. 38.00 108.00 Forest Oil 108.00 Haziewood Oil Co. 50.00 50.00 La Noria Mining .75 .50 .75 Luster Mg. Co. 50.00 21.50 50.00 Manufacturers Gas Co. Nat. Gas Co. of W. Va. 75.00 65.00 75.00 N. Y. & Cleve. Gas Co. 37.00 35.00 37.00 Ohio Valley Gas 35.00 31.00 31.50 Pennsylvania Gas 13.25 12.75 13.12 1/2 People's N. G. & P. Co. 15.50 14.75 15.37 Philadelphia Co. 30.00 29.13 30.00 Pine Run Gas Co. 80.00 66.00 80.00 Pittsburgh Gas 70.00 69.00 70.00 Tuna Oil Co. 70.00 70.00 Union Gas 75.00 75.00 80.00 Washington Oil Co. 90.00

W'house Brake Co. 62.75 62.75 W'house A. B. Co. 117.00 117.00 W'house E. Light. 48.00 46.00 48.00 Wheeling Gas. 30.00 20.00 30.00 Yankee Girl Mg. 3.75 3.50 3.50 Sales during the week ending Dec. 31: Chartiers. 50 shares \$44.00 Luster. 100 shares \$50.00 @ \$12.50 Pa. Gas. 50 shares \$13.25 @ \$12.50 Philadelphia. 665 shares \$30.00 @ \$29.13 West. Electric. 240 shares \$48.00 @ \$46.00

St. Louis. Jan. 2. COMPANY. Bid. Asked. Adams, Colo. \$ 27 1/4 \$ 32 1/2 American & Nettie. 1.45 1.55 Anderson .15 Aztec, N. Mex. .00 1/2 Black Oak, Cal. .00 1/2 Black Spar .16 1/4 Carriboo, Idaho. .02 Cleveland, Colo. .02 Cleveland, Idaho. .25 1/2 Cour d'Alene. .70 .90 Dimeo, Colo. .02 Golden Era, Mont. .07 1/2 Golden King. .07 1/2 Gold Run Granite Mountain, Mont. 46.50 47.00 Hope, Mont. 4.00 Ingram Iron Clad. .02 Ivanhoe, Colo. .04 I. X. L. Colo. .04 Jumbo, Colo. .02 Keystone. .02 La Union. .03 Little Giant. .03 Major Budd, Mont. .22 1/2 Mexican Imp., Mex. .31 1/2 Michael Breen. .40 .45 Montrose Placer, Colo. .63 1/2 Mountain Key. .09 1/2 Mountain Lion. .02 Neath, Colo. .02 Old Colony. .02 Old Jesuit. .02 Pat Murphy, Colo. .08 .10 Phillips, Colo. .02 .02 Pine Grove, Idaho. .06 .12 Queen of the West, Idaho. .08 1/2 Rasperry, Mont. .01 .01 Rosalis. .01 .01 San Francisco, Mont. .00 1/2 San Pedro. 1.50 1.55 Silver Age, Colo. .80 Silver Bell. .80 Small Hopes, Colo. .04 1/2 Tourtelotte, Colo. .77 1/2 West Granite, Mont. .50 .51 1/2 Yuma, Ariz. .50 .51 1/2

Trust Stocks. Jan. 3. The following closing quotations are reported to-day by C. I. Hudson & Co., members of New York Stock Exchange: CERTIFICATES. American Cotton Oil. \$33 @ \$35 Cattle Trust. 10 @ 12 Distillers' & Cattle Feeders'. 39 @ 39 1/2 Linseed Oil. 43 1/2 @ 44 1/2 National Lead. 213 1/2 @ 215 Standard Oil. 118 @ 119 1/2 Sugar Refineries. 59 1/2 @ 59 1/2 Sales at the New York Stock Exchange week ending Dec. 13: (Price) American Cotton Oil. Sales. H. L. National Lead. 38,365 213 1/2 18 1/2 Sugar. 359,922 89 1/2 56 1/2

Foreign Quotations. London. Dec. 14. COMPANY. Highest. Lowest. Almada, Mex. 1s. 6d. 1s. Atturas Gold, Idaho. 1s. Amador, Cal. 1s. Appalachian, N. C. 1s. 6d. Arizona Copper, Ariz. 1s. California Gold, Colo. 1s. Canadian Phos. Canada. 2 1/2 @ 2 1/2 Carlisle, N. Mex. 4s. 3d. Colorado, Colo. 3s. 9d. Constock, Utah. 1s. Conova. 1s. 6d. Cons. Esmeralda, Nev. 4s. 6d. Denver Gold, Colo. 1s. 3d. Dickens Custer, Idaho. 4s. East Arevalo, Idaho. 3s. 6d. Eberhardt, Nev. 1s. El Callao, Venezuela. 4s. 9d. Elmore, Idaho. 4s. 3d. Empire, Mont. 1s. 6d. Flagstaff, Utah. 3s. 6d. Gambler Freehold, N.C. 1s. 6d. Ilex, Cal. 4s. Jay Hawk, Mont. 4s. Josephine, Cal. 7s. Kohinoor, Colo. 2s. 3d. La Luz, Mex. 2s. 6d. La Trinidad, Mex. 3s. 6d. La Valera, Mexico. 1 1/2. Montana Lt., Mont. £1 7-16 New California, Colo. 1s. New Consolidated. 1s. New Eberhardt, Nev. 1s. New Emma, S. Utah. 3s. 6d. New Flagstaff, Utah. 2s. 6d. Newfoundland, N. F. 2s. 9d. N. Gold Hill, N. C. 1s. 3d. New Hoover Hill, N. C. 2s. 3d. Old Lour, Colo. £15-16 Palmarejo, Mex. 2s. Pinos Altos, Mex. 1s. 11-16 Pittsburg Orig., Cal. £3-16 Pittsburg Cons., Nev. £3-16 Quebrada, Venezuela. 1 1/2. Richmond Con., Nev. 1 1/2.

Ruby & Dunderberg, Nev. 1s. 6d. San Christan, N. C. 3s. 2s. 6d. Sierra Buttes, Cal. 2 1/4. Sonora, Mex. 9d. 3d. Stanly, N. C. 7s. 6d. 6s. 6d. United Mexican, Mex. 7s. 5s. U. S. Placer, Colo. 5s. 4s. Viola Lt., Idaho. 1s. 9d. 1s. 3d.

Paris. Dec. 12. Belmez, Spain. 550.00 550.00 Callao, Venez. 93.75 93.75 Callao Bis, Venez. 4.00 4.00 East Oregon, Ore. 19.00 19.00 Forest Hill Divide, Cal. 390.00 390.00 Golden River, Cal. 125.00 125.00 Lexington, Mont. 4.00 4.00 Ouray, Colo. 396.25 396.25 Rio Tinto, Spain. 119.50 119.50 Tharsis, Spain. 119.50 119.50 * Francs.

CURRENT PRICES. These quotations are for wholesale lots in New York. CHEMICALS AND MINERALS. Acid—Acetic, # 100 lbs. \$1.75 @ \$2.00 Muriatic, 18°, # 100 lbs. 1.00 @ 1.50 Muriatic, 20°, # 100 lbs. 1.12 1/2 @ 1.75 Muriatic, 22°, # 100 lbs. 1.37 1/2 @ 2.00 Nitric, 36°, # 100 lbs. 4.00 @ 4.25 Nitric, 42°, # 100 lbs. 6.00 @ 6.25 Oxalic, # 100 lbs. 6.50 @ 10.50 Sulphuric, 60°, # 100 lbs. 80 @ 1.25 Sulphuric, 66°, # 100 lbs. 1.00 @ 1.75 Alkali. Refined, 48 p. c. 1.50 @ 1.55 Refined, 58° 1.40 @ 1.45 Alum—Lump, # lb. 1 1/2 @ 2 Lump, # ton, Liverpool £4 17 6 Sulphate of Alumina, # ton £4 10 Aqua Ammonia—18°, # lb. 4 1/2 20°, # lb. 6 28°, # lb. 6 @ 7 Ammonia—Sul., # 100 lbs. 10 @ 11 Carb., per lb. 3.15 Arsenic—White, powdered, # lb. 3 1/4 @ 3 1/2 Red, # lb. 5 1/2 @ 6 1/2 White, at Plymouth, # ton. £12 2 6d. Asbestos—Am., p. ton. \$50 @ \$300 Italian, p. ton, c. i. f. L'pool. £18 @ £60 Asphaltum—P. ton 13.00 Prime Cuban, # ton 4 1/2 @ 5 1/2 Hard Cuban, # ton \$28.00 Trinidad, refined, # ton \$30.00 Barytes—Sulph., Am. prime white 7 @ 5 1/2 Sulph., foreign, floated, p. ton 19 @ 21.50 Sulph., off color, p. ton 11.50 @ 14.00 Carb., lump, f. o. b. L'pool, ton. \$6 No. 1, casks, Runcorn " £4 10 0 No 2, bags, Runcorn " 3 15 0 Bleach—Over 35 p. c., # lb. 1.70 @ 1.75 Borax—Refined, # lb. 9 1/2 @ 9 1/2 Concentrated, # lb. 7 1/2 @ 8 1/2 Refined at Liverpool, # ton. £29 Bromine—See Sulphur. Chlorine—# ton 37 @ 38 Precipitated, # lb. 1 1/2 China Clay—English, # ton 13.50 @ 15.50 Southern, # ton 13.50 Chrome Yellow, # lb. 10 @ 25 Cobalt—Oxide, # lb. 2.60 @ 2.90 Copper—Sulph. English Wks, ton £20 @ £21 Coppers—Common, # 100 lbs. 70 Best, # 100 lbs. 75 @ 1.00 Liverpool, # ton, in casks. 1 15s. Cream of Tartar—Am. 99% 22 1/2 Powdered, 99 p. c. 23 Emery—Grain, # lb. 4 1/2 @ 5 Flour, # lb. 3 1/2 @ 3 1/2 Feathers—Ground, # ton 15.00 Fuller's Earth—Lump, # bbl. 90 @ 95 Powdered, # lb. 1 1/2 @ 2 Gypsum—Calcined, # bbl. 1.25 @ 1.50 Iodine—Resublimed. 2.75 Kainit—# ton 10.00 Kaolin—See China Clay. Lead—Red, # lb. 6 1/2 @ 9 White, American, in oil, # lb. 6 1/2 @ 7 1/4 White, English, # lb. 8 1/4 @ 8 1/2 Acetate, or sugar of, white. 12 @ 13 Lime Acetate—Amer. Brown. 95 @ 1.00 Gray 1.75 @ 1.87 1/2 Litharge—Powdered, # lb. 6 1/2 @ 6 1/2 English flake, # lb. 6 @ 6 1/2 Magnesite—Greek, # ton. 20.00 Manganese—Crude, per unit. 23 @ 28 Oxide, ground, per lb. 2 1/2 @ 6 1/2 Mercuric Chloride—(Corrosive Sublimate), # lb. 70 @ 72 Mineral Wool—# lb. 2 Mica—in sheets according to size, 1st quality, # ton. 25 @ 36.00 Ochre—Yellow, "B. F.", # ton, f. o. b. mill 30.00 "J. F. L. S.", # lb. ex doc. 2 1/2 Phosphate Rock—S. Carolina, p. ton, c. b. Charleston. 5.75 @ 7.00 Ground, ex vessel New York. 11.00 Canadian Apatite, lump, f. o. b. at Montreal, # ton 16.00 Phosphorus—# lb. 70 @ 75 Plumbago—Ceylon, # lb. 4 @ 5 American, # lb. 5 @ 7 Potassium—Cyanide, # lb. 30 @ 40 Bromide, # lb. 33 Chlorate, # lb. 13 @ 14 Carb. # lb. 4.70 @ 5.50 Caustic, # lb. 7 1/2 @ 8 Iodide, # lb. 2.65 @ 2.70 Muriate, # 100 lbs. 1.80 Nitrate, refined, # lb. 6 @ 8 Bichromate, # lb. 10 1/2 @ 11 Sulphate, # 100 lbs. 2.30 @ 2.35 Yellow Prussiate, # lb. 17 1/2 @ 18 Red Prussiate, # lb. 4 @ 4.5 Fulmic Stone—Select lumps, lb. 3 1/2 Original cks., # lb. 1 1/2 @ 2 1/2 Powdered, pure, # lb. 2 1/4 @ 2 1/2 Pyrites—Non-cupreous, p. units 10d

Quartz—Ground, # ton. 14.00 @ 16.00 Rotten Stone—Powdered, # lb. 3 1/4 @ 3 1/4 Lump, # lb. 2 @ 2 Salt—Liverpool, ground # sack. 75 @ 80 Turk's Island, # bush 2 1/2 @ 2 Salt Cake—# lb. 60 @ 62 1/2 Salspeter—Crude, # lb. 5 1/2 @ 5 1/2 Refined, # lb. 6 @ 6 Soda Ash—Carb., 48% 100 lb. 1.45 Caustic, 48% 1.30 Soda Caustic, 60% 2.50 " 70% 2.27 1/2 @ 2.35 " 74-6% 2.27 1/2 @ 2.35 Sal, English, # 100 lbs. 1.00 Sal, American, # 100 lbs. 1.90 @ 1.95 Nitrate, 100 lbs. 9 @ 9 1/2 Strontium—Nitrate # lb. 19 @ 19 1/2 Sulphur—Roll, # lb. 19 1/2 Flour, # lb. 19.50 Crude Brimstone, 2s, # ton 19.00 Talc—Ground French, # lb. 1 1/4 @ 1 1/4 Domestic, # ton \$18 @ \$20 c. i. f. Liverpool, # ton. £4 5 Vermillion—American, # lb. 61 English, # lb. 82 @ 85 Vitriol—(Blue), Ordinary, # lb. 5 1/2 @ 5 1/2 Extra, # lb. 7 Zinc Oxide—Am., Dry, # lb. 4 1/2 Antwerp, Red Seal, # lb. 6 @ 6 1/2 Paris, Red Seal, # lb. 6 1/2 @ 7 * Spot.

THE RARER METALS. Aluminum—(Metallic), # lb. \$2. @ \$2.50 Sheet, per lb. 2.50 Arsenic—(Metallic), per lb. 4.00 Barium—(Metallic), per gram. \$4.00 Bismuth—(Metallic), per lb. 2.75 Cadmium—(Metallic), per lb. 1.00 Calcium—(Metallic), per gram. 10.00 Cerium—(Metallic), per gram. 7.50 Chromium—(Metallic), per gram 1.00 Cobalt—(Metallic), per lb. 6.00 Didymium—(Metallic), per gram 9.00 Erbium—(Metallic), per gram. 7.50 Gallium—(Metallic), per gram. 140.00 Gadolinium—(Metallic), per gram. 12.00 Indium—(Metallic), per gram. 9.00 Iridium—(Metallic), per oz. 7.00 Lanthanum—(Metallic), per gr. 13.00 Lithium—(Metallic), per gram. 10.00 Magnesium—Per lb. 4.50 Manganese—Metallic, per lb. 1.10 Chem. pure, per oz. 10.00 Molybdenum—(Metallic), per gm. .50 Niobium—(Metallic), per gram. 5.00 Osmium—(Metallic), per oz. 65.00 Palladium—(Metallic), per oz. 35.00 Platinum—(Metallic), per oz. 9.00 Potassium—Metallic, per lb. 28.00 Radium—(Metallic), per gram. 5.00 Ruthenium—(Metallic), per gram. 5.50 Rubidium—(Metallic), per gram 2.00 Selenium—(Metallic), per oz. 1.80 Sodium—(Metallic), per lb. 2.50 Strontium—(Metallic), per gm. .80 Tantalum—(Metallic), per gram 9.00 Tellurium—(Metallic), per lb. 5.00 Thallium—(Metallic), per gram. 25 Titanium—(Metallic), per gram. 2.25 Thorium—(Metallic), per gram. 17.00 Tungsten—(Metallic), per oz. 2.25 Uranium—(Metallic), per lb. 5.00 Vanadium—(Metallic), per gm. 22.00 Yttrium—(Metallic), per gram. 9.00 Zirconium—(Metallic), per oz. 65.00

BUILDING MATERIAL. Bricks—Pale, # 1,000 3 25 @ 3.50 Jerseys, # 1,000 5.50 @ 6.50 Up Rivers, # 1,000 6.00 @ 6.50 Haverstraw seconds, # 1,000. 6.25 @ 6.50 Haverstraw firsts # 1,000. 6.50 @ 7.00 Fronts, nominal, # 1,000. Croton, nominal, # 1,000. 14.00 @ 16.00 Wilmington. 20.00 @ 21.00 Philadelphia. 22.00 Trenton. 22.00 Baltimore. Building Stone—Amherst freestone, # cu. ft. 95 @ 1.00 Brownstone, # cu. ft. 1.00 @ 1.35 Granite, rough, # cu. ft. 45 @ 1.25 Granite, Scotch # cu. ft. 1.00 @ 1.15 Cement—Rosendale, # bbl. 1.85 @ 2.10 Portland, American, # bbl. 2.15 @ 2.45 Portland, foreign, # bbl. 2.30 @ 2.40 Portland, "special brands. 2.45 @ 2.75 Roman, # bbl. 2.65 @ 2.85 Keene's coarse, # bbl. 4.50 @ 5.50 Keene's fine, # bbl. 7.00 @ 8.25 Slate—Purple and green roofing, # 100 ft. 7.00 @ 7.50 Red roofing, # 100 sq. ft. 12.00 Black, roofing, # 100 sq. ft. 4.25 @ 5.00 Lime—Rockland, common # bbl. 1.00 Rockland, finishing, # bbl. 1.20 St. John, com. and finish, # bbl. 90 @ 95 Gens Falls, com. and fin., # bbl. 85 @ 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 Stonemasons, # day. 3.50 @ 4.00 Tilelayers, # day. 3.50 @ 4.50 Bricklayers, # day. 4.00

THE ENGINEERING AND MINING JOURNAL will thank any one who will indicate any other articles which might with advantage be quoted in these tables or who will correct any errors which may be found in these quotations.

Bellows.



Miner's Bellows: 24 in., \$8.50; 26 in., \$9.75; 28 in., \$11.00; 30 in., \$11.25; 32 in., \$13.50. 60 and 55 dis.
Standard, each: 18 to 24 in., \$10; 23 in., \$12; 32 in., \$14; 34 in., \$16; 36 in., \$18; 38 in., \$20; 40 in., \$23; 44 in., \$32. 60 and 55 dis.
Hand Bellows, per doz.: 6 in., plain, \$10; fancy, \$20; 7 in., plain, \$12; fancy, \$24; 8 in., plain, \$14; fancy, \$28; 9 in., plain, \$16; fancy, \$32; 10 in., plain, \$18; fancy, \$36. 50% dis.



Belting.

LEATHER BELTS.
Standard Manufacturers List.
Single belts per foot.

Width.	Width.	Width.	
1 inch.....10	6 inch.....76	20 inch.....2.84	
1 1/4 ".....13	7 ".....80	21 ".....3.02	
1 1/2 ".....17	8 ".....84	22 ".....3.20	
1 3/4 ".....20	9 ".....88	23 ".....3.37	
2 ".....23	10 ".....92	24 ".....3.54	
2 1/4 ".....26	11 ".....96	25 ".....3.72	
2 1/2 ".....30	12 ".....100	26 ".....3.90	
2 3/4 ".....33	13 ".....104	27 ".....4.08	
3 ".....36	14 ".....108	28 ".....4.26	
3 1/4 ".....43	15 ".....112	29 ".....4.44	
3 1/2 ".....50	16 ".....116	30 ".....4.62	
4 ".....56	17 ".....120	31 ".....4.80	
4 1/4 ".....63	18 ".....124	32 ".....4.98	
5 ".....70	19 ".....128	33 ".....5.16	
5 1/4 ".....77	20 ".....132	34 ".....5.34	

Double belts twice the price of single.

Discounts of Newark Leather Belting Co.
Dis. single and double belts, cemented, 50 and 5%
Dis. single and double belts, riveted and cemented, 50 and 5%
Dis. single belts, cemented and lacesewn, water proofed, 50%
Dis. double belts, cemented and lacesewn, water proofed, 45%
See Rubber Belting, page 7.
See Link Belting, page 9.

Bolts.

Philadelphia Tire Bolt, with forged nuts.
Price per hundred. Condensed list.

Length	1-8	3-16	7-32	1-4	5-16	3-8
1	\$1.50	\$1.50	\$1.50			
2	1.50	1.60	1.85	\$2.25	\$3.05	\$5.00
3		1.90	2.25	2.75	3.65	5.80
4				3.25	4.25	6.00
5					4.50	7.40

Fractional sizes, intermediate prices.
Discount 80 and 2 %.

Common Carriage Bolts, price per hundred.

Length.	3-16 & 1-4	5-16	3-8	7-16	1-2	9-16 & 5-8	3-4
1 to 1 1/4	\$1.35	\$1.60	\$2.30	\$3.10	\$3.80	\$7.50	
2	1.45	1.75	2.30	3.10	3.80	7.50	
3	1.65	2.05	2.70	3.60	4.44	7.50	\$13.50
4	1.85	2.35	3.10	4.10	5.08	8.50	14.90
5	2.05	2.65	3.50	4.60	5.72	9.50	16.30
6	2.25	2.95	3.90	5.10	6.36	10.50	17.70
7	2.45	3.25	4.30	5.60	7.00	11.50	19.10
8	2.65	3.55	4.70	6.10	7.64	12.50	20.50
9	2.85	3.85	5.10	6.60	8.28	13.50	21.90
10	3.05	4.15	5.50	7.10	8.92	14.50	23.30
12	3.45	4.75	6.30	8.10	10.20	16.50	26.10
14	3.85	5.35	7.10	9.10	11.48	18.50	28.90
16	4.25	5.95	7.90	10.10	12.76	20.50	31.70

Fractional sizes, intermediate prices Dis. 75 and 10%.

Philadelphia Carriage Bolt, price per hundred.

Length	1-8, 3-16 & 1-4	5-16	3-8	7-16	1-2
1 inch.	\$3.00	\$4.00	\$5.00	\$7.40	\$9.00
2 "	3.40	4.10	5.00	7.40	9.00
3 "	3.80	4.70	5.80	8.20	10.00
4 "	4.20	5.30	6.60	9.00	11.00
5 "	4.80	6.00	7.40	9.80	12.00
6 "	5.40	6.60	8.20	10.60	13.00
7 "		7.30	9.00	11.40	14.00
8 "		7.90	9.80	12.20	15.00
9 "		8.50	10.60	13.00	16.00
10 "			11.40	13.80	17.00
11 "				14.60	18.00

Fractional sizes, intermediate prices. Dis. 80 and 5 %.



Brick Machinery.

BENNETT BROS. & CO.

Heavy Steam Power Machine.....\$525.00
Horse-Power Machines... 300.00
Additional Horizontal Pugmill..... 225.00
Brick Moulds.....\$2.50 to \$3.00
Brick Trucks..... 5.00 to 13.50
Brick Barrows..... 7.25
Brick Barrows with Springs..... 8.2
Sand Barrows, steel tray..... 6.50

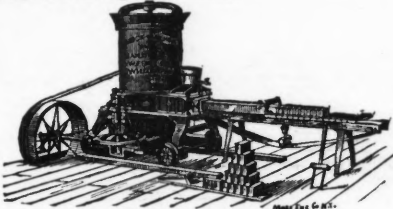
Burglar Alarm.



SAFETY AUTOMATIC BURGLAR ALARM AND DOOR FASTENER.

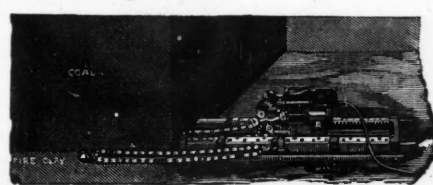
REQUIRES NO WINDING UP.
Per doz., \$24. Dis., 40%.
The slightest push on the door explodes two caps in succession and rings alarm bell.

Clay Working Machines.



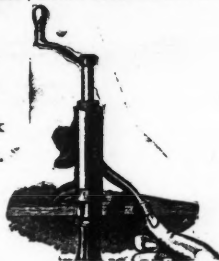
No.	brick per day.	Compl'te.
No. 10 D brick machine.....	50,000	\$1,500
No. 10 S " ".....	30,000	1,200
No. 4 " ".....	40,000	1,100
No. 7 S " ".....	20,000	650
No. 6 S " ".....	15,000	575
No. 2 E. H. P. " ".....	6,000	3,360

Coal Mining Machine.



Jeffrey.
6 feet undercut.....\$1500 | 5 feet undercut.....\$1400
Jeffrey Power Coal Drills.
Air feed drill.....\$275 | Screw feed drill.....\$200
Discount, 10%.

Cork Pullers.



The Samson Cork Puller, per dozen, \$12 net.



Crucibles. E. H. Sargent & Co.
Battersea Crucibles, Triangular.
Height. Width. Crucibles. Covers.
No. Inches. Inches. Per doz. Per doz.

S.....	4 1/2	4 3/4	\$1.00	\$0.50
T.....	4	3 3/4	0.80	0.50
V.....	3 1/2	3 1/4	0.60	0.40
U.....	3 1/4	2 3/4	0.45	0.40
W.....	2 3/4	2 1/4	0.35	0.30
X.....	2 1/4	2 1/4	0.30	0.30
Y.....	2 1/4	2 1/4	0.25	0.30
Z.....	1 3/4	1 3/4	0.20	0.30

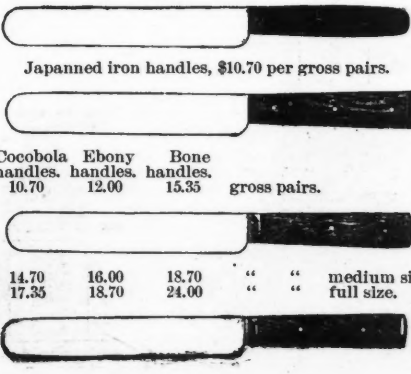
Battersea Muffles, any size, made to order.
See Illustration in advertisement.

No.	Long. Inches.	Wide. Inches.	High. Inches.	Price. Each.
A.....	7	3 1/2	2 1/2	\$.60
B.....	7 1/2	4 1/2	2 1/2	.75
C.....	8	4 3/4	3	.85
D.....	8 1/2	5	3 1/4	1.00
E.....	9	5 1/2	3 3/8	1.15
F.....	10	6	4	1.25
G.....	11	6 1/2	4 1/4	1.40
H.....	10 1/2	5 1/4	3 3/8	1.00
J.....	12	6	4	1.25
K.....	14	8	5	1.75
L.....	15	9	6	2.00

Export discount 15 %.

Cutlery.

(Tommins & Adams.)
KNIVES—TABLE.



Japanned iron handles, \$10.70 per gross pairs.

Cocobola Ebony Bone handles. handles. handles. gross pairs.
10.70 12.00 15.35

14.70 16.00 18.70 " " medium size.
17.35 18.70 24.00 " " full size.

17.35 18.70 21.35 " " medium & full size.
20.00 21.35 26.70 " " "

22.70 24.00 29.35 " " "

27.35 28.70 36.00
Cocobola Ebony Bone handles. handles. handles. gross pairs.

28.00 29.35 38.00 " " "

28.65 30.00 38.00 " " "

28.65 30.00 38.00 " " "

32.00 33.35 38.00 " " "

34.70 36.00 48.00 " " "

33.35 34.70 46.70 " " "

37.35 38.70 50.70 " " "

40.00 41.35 53.35 " " "

Hard rubber handles, 5.75 per dozen pairs.

Solid bone handles, 4.80 per dozen pairs.

Celluloid handles, 7.35 per dozen pairs.
Forks are made to match all above patterns, with either three or four prongs.
Discount 25 %.

BUTCHERS'—COCOBOLA HANDLES.

Per dozen.

4 and 5 5 1/2 6 6 1/2 7 8 9 10 12
1 1/2 in. in. in. in. in. in. in. in. in. in. in.

1.40 1.50 1.15 1.20 1.30 1.40 1.70 1.90 2.35 3.00 3.70 5.35

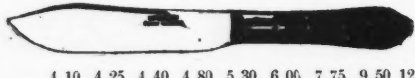
1.15 1.20 1.30 1.40 1.70 1.90 2.35 3.00 3.70 5.35

..... 1.45 1.60 1.70 2.00 2.35 2.80 3.25 4.00 6.0

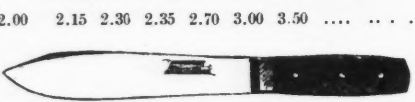
2.00 2.15 2.30 2.35 2.70 3.00 3.50 4.25 5.00 7.50

2.45 2.70 2.95 3.15 3.45 3.70 4.35 5.00 6.00 8

2.10 2.20 2.35 2.50 2.80 3.40 4.35 5.30 6.85 ...
3.40 3.55 3.70 4.10 4.60 5.30 7.00 9.75 11.



4.10 4.25 4.40 4.80 5.30 6.00 7.75 9.50 12.5



2.00 2.15 2.30 2.35 2.70 3.00 3.50 ...

Discount 25 and 10 %.

HUNTING—EBONY HANDLES.

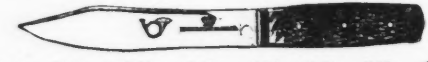
5in. 5½ in. 6 in. 6¼ in. 7 in. 8 in. 9 in. 10 in.
Per Dozen.



10 2.20 2.35 2.75 3.00 3.60 4.30 5.25



.10 2.20 2.35 2.75 3.00 3.60 4.30 5.25



2.55 2.70 3.00 3.30 3.55 4.00 5.00 6.00



.55 2.70 3.00 3.30 3.55 4.00 5.00 6.00

Discount, 25 and 10 %.

Per Dozen.

Putty knives, cocobola handles..... \$1.30@1.50



SHIERS.

TAILORS'—JAPANED OR NICKEL HANDLES.



Per pair. 12 in..... 6.00
12½ in..... 7.00
13 in..... 8.00
13½ in..... 9.00
14 in..... 10.00
14½ in..... 11.00
15 in..... 12.00
16 in..... 14.00
Discount, japanned, 60 %; nickel, 45 %.

BENT TRIMMERS.

Per dozen. n..... 13.00 | 10 n..... 27.00
n..... 15.00 | 11 in..... 30.00
n..... 17.00 | 12 in..... 33.00
n..... 22.00

STRAIGHT TRIMMERS. Per dozen. 6 in..... 12.00 | 10 in..... 25.00
7 in..... 14.00 | 11 in..... 30.00
8 in..... 16.00 | 12 in..... 33.00
9 in..... 19.00

LADIES' SCISSORS.

Per dozen. 4¼ in..... 10.00 | 6 in..... 11.00
5 in..... 10.00 | 6¼ in..... 12.00
5½ in..... 10.50 | 7 in..... 13.00

PAPER AND BANKERS'.

Per dozen. 9 in..... 18.00 | 13 in..... 36.00
10 in..... 25.00 | 14 in..... 42.00
11 in..... 27.00 | 16 in..... 54.00
12 in..... 32.00 | 18 in..... 60.00

BARBERS'.

Per dozen. 7½ in..... 15.00 | 9 in..... 18.00
8 in..... 16.00 | 9½ in..... 20.00
8½ in..... 17.00

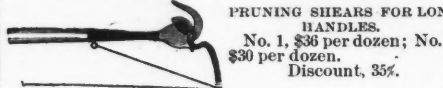
SCISSORS.

BUTTON-HOLE. 5 and 5½ in., 14.00 per dozen.
Discount, japanned, 70 and 10 % nickel. 60 and 10 %

PRUNING. 1 B., 9 in., 24 per dozen; 2 B., 8½ in., 21; 3 B., 7¼ in., 9.80.



No. 110,
10 in.,
\$30 per
doz.



PRUNING SHEARS FOR LONG HANDLES.
No. 1, \$36 per dozen; No. 2, \$30 per dozen.
Discount, 35%.

SPOONS, FORKS, ETC., BEST PLATE ON HARD WHITE METAL.



Tipped Tea Spoon.



Oval Tea Spoon.



Perfect Tea Spoon.



Leader Tea Spoon.

—5 oz. or extra plate—

Tea spoons....	4.25	4.50	4.75
Dessert spoons...	7.50	8.00	8.50
Table spoons...	8.50	9.00	9.50
Coffee spoons...	4.25	4.50	4.75
Dessert forks...	7.50	8.00	8.50
Medium forks...	8.50	9.00	9.50

Discount, 60 and 5%.

Spoons and forks, German silver, tipped pattern.
Tea spoons. Table spoons. Medium forks.
22.50 45.00 45.00 per gross.

Discount, 60 %.

Spoons and forks, made from brass, and silver plated on a coating of hard, white nickel.
Aesthetic medium fork.



Tea spoons. Table spoons. Medium forks.
7.50 15.00 15.00 per gross.

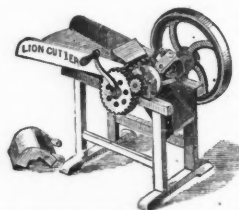
Discount, 30 and 5%.

Children's sets on cards.

Leader pattern, as per cut... 21.00 24.00 doz. 60 and 5 %
Aesthetic pattern, as per cut... 5.75 7.25 doz. 30 and 5 %

Cutters.

FEED.



No. of cutter.	No. of knives.	Length in inches of knives.	Length in inches of feed cut.	Price.
1	2	6½	½, ¾ and 1¼	\$18.00
2	2	7½	½, ¾ and 1¼	21.00
2½	1	7½	¾, 1, 1¼ and 1¾	21.00
2½	2	7½	¾, 1, 1¼ and 1¾	23.00
3	1	8½	¾, 1, 1¼ and 1¾	25.00
3	2	8½	¾, 1, 1¼ and 1¾	27.00
4	1	10	¾, 1, 1¼ and 1¾	30.00
4	2	10	¾, 1, 1¼ and 1¾	33.00
5	2	10	¾, 1, 1¼ and 1¾	35.00
6	2	11	¾, 1, 1¼ and 2	45.00
6	2	11	¾, 1, 1¼ and 2	45.00
6½	2	13	¾, 1, 1¼ and 2	60.00
7	2	13	¾, 1, 1¼ and 2	60.00
7½	2	16	¾, 1, 1¼ and 2	80.00
10	2	20	¾, 1, 1¼ and 2	100.00
11	2	11	¾, 1, 1¼ and 2	45.00
13	2	13	¾, 1, 1¼ and 2	60.00
16	2	16	¾, 1, 1¼ and 2	80.00
20	2	20	¾, 1, 1¼ and 2	100.00

The knife arbors for all sizes are made of machine-steel. 30 per cent. dis.

VEGETABLE—GALE'S.

Size.	Weight of Fly Wheel Pounds.	Will cut per hour. Pounds.	Price
No. 1¼	20	1,500	\$12
No. 2¼	32	1,700	15
No. 3¼	32	1,700	15
No. 4	42	2,000	18
No. 5	50	3,000	25
No. 10	65	8,000	35

30% dis.



Drill—Portable Hand Rock.

Price, \$225.

Dis., 20%.

Duck and Twine.

No.	22-inch, Hard, Medium and Soft.		Weight		Cents.	
	per yd.	per yd.	per yd.	per yd.	per yd.	per yd.
0...	19 oz.	35	No. 6...	13 oz.	26	
1...	18 "	33	7...	12 "	25	
2...	17 "	32	8...	11 "	23	
3...	16 "	30	9...	10 "	21	
4...	15 "	28	10...	9 "	20	
5...	14 "	27				

Ravens, 28¼-inch.—Eight ounce, 15 cents per yard
Ten ounce, 19 cents per yard; twelve ounce, 22 cents per yard; Fifteen ounce, 27 cents per yard. Dis. 25 and 1%
Cotton Sall Twine.—Three-fold and upward, 17 to 20 cents per pound. Dis. 3%.

Electroplate.—Babcock & Co.'s.

Dis. 60 and 2%.



1,200—Dinner



CASTERS.

232—Breakfast.

Dinner Casters.
No. 1,200. 17¼ in. high, \$8.00, quadruple plate.
No. 80. 17 in., \$6.00, quadruple plate.
No. 148. 16 in., \$7.50, " "
No. 830. 16 in., \$5.00, " "
No. 25. 16 in., \$4.00, double plate.
No. 33. 16 in., \$3.75, " "
No. 53. 15 in., \$3.00, " "
No. 15½. 14½ in., \$2.00, single plate.
No. 19. 14½ in., \$1.85, " "
No. 40. 14 in., \$1.75, " "

Breakfast Casters.
231. 20 in. high, \$4.00, quadruple plate.
No. 232. 15 in. high, \$6.00, quadruple plate.
No. 13. 12 in. high, \$2.25, double plate.
No. 12. 10½ in. high, \$1.75, single plate.



No. 681.

CAKE BASKETS.
Quadruple Plate.
No. 448. 7 in. high, chased, \$16; gold lined, \$17.
No. 690. 7½ in. high, chased, \$7; gold lined, \$8.
No. 686. 6½ in. high, chased, \$4.50; gold lined, \$5.50.
No. 681. 6 in. high, chased, \$3; gold lined, \$3.50.



No. 126.

BUTTER DISHES.
No. 126. 11 inches high, \$5.50.
No. 127. 7 inches high, \$5.50.
No. 75. 8 inches high, \$1.85.
No. 78. 7½ inches high, \$2.00.

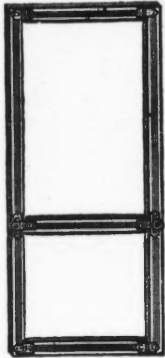
Discount.

CHILD'S SETS.
No. 90. Satin lined case, cup, saucer, knife, fork and spoon, \$2.25.



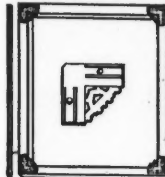
No. 90.

No. 41. Cup, gold lined, in fancy case, \$1.15.
No. 43. Cup and saucer, gold lined, fancy case, \$1.15.



DOOR SCREEN FRAMES.
Patent Corners.
 No. 22, 3 by 7 ft. sticks, 7/8 by 2, per doz. sets, \$11.
 No. 24, 3 1/4 by 8 ft. sticks, 7/8 by 2, per doz. sets, \$12.
 No. 26, 3 by 7 ft. sticks, 7/8 by 2 1/4, per doz. sets, \$12.50.
 No. 28, 3 1/4 by 8 ft. sticks, 7/8 by 2 1/4, per doz. sets, \$14.50.

Dis., 20%.



WINDOW SCREEN FRAMES.
Patent Japanned Corners.
 No. 25, 36 by 36 corners and screws, without bead, per doz., \$2.50.
 No. 25, 36 by 36 corners and screws, with bead, per doz., \$2.90.
 No. 35, 42 by 42 corners and screws, without bead, per doz., \$2.90.
 No. 35, 42 by 42 corners and screws, with bead, per doz., \$3.30.
 Black satin stain, sticks 7/8 by 1 in.
 Dis., 20%.



PULLEYS.
 Side, No. 45, Japanned.
 Inches... 1 1 1/2 2 2 1/2 3 4 5
 Per doz. ... 1.00 1.60 2.40 3.50 9.00 15.00
 2 inch and under, 2 dozen in box; 2 1/2, 3 and 4, 1 dozen in box; 5 inch, 1/2 dozen in box.
 Discount, 50%.



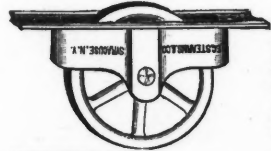
PULLEY HOOK (New Floor.)
 Deep cut thread, forged point.
 3/4 in. wrought iron, 8 in. long, list... \$1.90
 net... 1.00



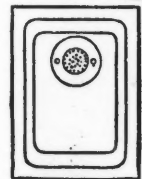
WELL WHEEL.
 New pattern.
 Japanned.
 In. 8 10 12 14 16
 Pr.d. 7.00 9.50 12.50 20.00 30.00
 Discount, 70%.



HAY FORK PULLEY.
 New pattern.
 No. 15, 5 in. iron wheel... per doz. \$4.50
 25, 5 in. wood " " " " " 4.50
 66, 6 in. " " " " " 6.00
 4 dozen in case, 8 dozen in barrel.
 No. 15, per dozen, \$2 net.



SHEAVES.
 Patent Common
 Turned and polished
 iron wheels, round
 corners, brass pin, one set
 in box.
 2 1/4 inch... \$1.50
 3 " " " " " 1.60
 4 " " " " " 2.00
 5 " " " " " 2.60
 Discount, 50%.



SINKS.
 All 6 inch deep.
 14 x 20 in. ... \$1.50
 15 x 25 in. ... 1.75
 15 x 27 in. ... 2.00
 16 x 24 in. ... 1.80
 16 x 28 in. ... 2.10
 17 x 30 in. ... 2.25
 18 x 24 in. ... 2.10
 18 x 30 in. ... 2.50
 18 x 32 in. ... 3.00
 18 x 36 in. ... 3.00
 20 x 30 in. ... 3.00
 20 x 36 in. ... 3.70
 20 x 40 in. ... 4.00
 Discount, 60%.



SPOKE POINTERS.
 Per doz.
 No. 1, points 1 1/2 in. diameter, \$9.00
 No. 2, points 2 1/2 in. diameter, \$15.00
 Discount, 15 and 10%.
 1/2 dozen in box.



WISE.
 (Bench Vise, Steel Jaws.)
 3 1/4 in. opens 5 in., weight 12 lbs.
 List price, each, \$4.00
 Net " " " " " 1.60
 Silent Saw Vise.
 No. 10, 10 in. jaw, per doz. \$15.00
 Dis., 33 1/2%.

Moore & Barnett Mfg. Co.

No.	per dz.	gr.	lbs.	per dz.	gr.	lbs.
1 Amateur	70	1 1/4	11 1/2	3.00		80
2 Anvil	200	3/4	14	5.00		220
3	11.25	615	Combination	21.00		1,425
4	18.00	1,350	hand	5.25		85
10	24.00	1,675				

Spot cash discount, 33, 20 and 2 f.o.b.
 Nos. 1, 1 1/2, 2 and 2 1/4 are packed in dozens; Nos. 3 and 3 1/2 in half dozens; Nos. 4, 4 1/2 and 10 in quarter dozens, and No. 20 singly. Each hand vise is put up in neat box and packed in half dozen lots.

1 Hinge pipe vise, 0 to 2 in. pipe... Each \$10.00
 0 to 4 in. pipe... 20.00
 1 Malleable pipe vise, 0 to 2 in. pipe... 8.00
 1 Combination pipe and bench vise, 0 to 2 in. pipe... 16.00
 Discount, 50%.



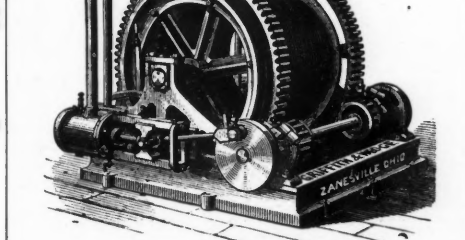
WRENCHES.
 Coes' Knife Handle
 Wrenches.

Size.	per doz.	Size.	per doz.
6 inch	\$9.00	15 inch	\$24.00
8 "	10.00	18 "	30.00
10 "	12.00	21 "	36.00
12 "	14.00		

BLACK.
 BRIGHT.
 4 in. \$10.00 12 in. \$16.00
 6 " 10.00 15 " 26.00
 8 " 11.00 18 " 32.00
 10 " 14.00 21 " 38.00
 Discount, 55, 10, 7 1/2 and 3%.

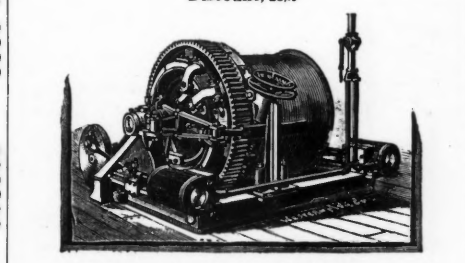
Coes Mechanics' Screw Wrenches, same list, less 55, 10, 10, 7 1/2 and 3%.

A. G. Coes & Co. Pat. Screw Wrenches, same list as above. Discount, 55, 10, 7 1/2 and 3%.



Hoisting Engines.—Griffith & Wedge.

No.	Weight.	Price.
Hoisting Engines, Miner's Prospecting...	4,500	\$750
Hoisting Engines, No. 1 Double Cylinder...	4,500	800
" " " " " " " " " "	6,000	1,000
" " " " " " " " " "	11,000	1,500
" " " " " " " " " "	15,500	1,800
" " " " " " " " " "	17,000	2,100
" " " " " " " " " "	13,600	1,750
" " " " " " " " " "	17,000	2,100
" " " " " " " " " "	19,000	2,400
" " " " " " " " " "	48,000	4,500

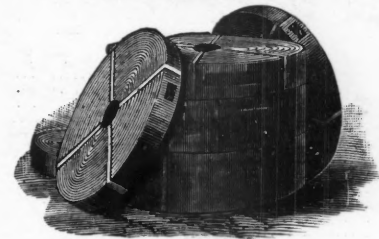


Webster Camp & Lane Machine Co.

Single drum.	Average Load.	Double drum.
No.	Pounds.	Pounds.
\$825.00 = 5	1,950	6,000 =
918.50 = 6	1,650	6,500 =
1,177.00 = 7	2,200	8,000 = \$1,661.00
1,331.00 = 8	3,000	8,500 = 1,815.00
1,694.00 = 9	3,500	14,000 = 2,722.50
1,914.00 = 16 1/2	3,700	16,000 = 3,124.00
2,343.00 = 17 1/2	5,500	19,000 = 3,333.00
2,475.00 = 18	5,500	22,000 = 3,872.00

Ice Machines (Family).
 L. DERMINGNY & Co.
 No. 1, Ice machine, ice and ice cream molds, 1 lb. ice, \$15.00.
 No. 2, Ice machine, ice and ice cream molds, 1 1/4 lbs. ice, \$20.00.
 No. 3, Ice machine, ice and ice cream molds, 1 carafe 1 bottle holder, 2 lbs. ice, \$23.50.
 No. 4, Ice machine, ice and ice cream molds, 2 carafe 1 bottle holder, 4 lbs. ice, \$33.00.
 No. 5, Ice machine, ice and ice cream molds, 3 carafe 1 bottle holder, 6 lbs. ice, \$40.00.
 No. 6, Ice machine, ice and ice cream molds, 4 carafe 1 bottle holder, 9 lbs. ice, \$46.50.

India Rubber Goods.
 MECHANICAL.
 Commonwealth Rubber Co.



RUBBER BELTING.

Inches.	2 ply per foot.	3 ply per foot.	4 ply per foot.	5 ply per foot.	6 ply per foot.
1	\$0.07				
1 1/4	0.09				
1 1/2	0.11				
2	0.15	\$0.17	\$0.21		
2 1/2	0.18	0.22	0.26		
3	0.22	0.26	0.31		
3 1/2	0.26	0.30	0.37		
4	0.30	0.34	0.42		
4 1/2	0.33	0.39	0.47		
5	0.36	0.43	0.52		
6	0.43	0.52	0.62		
7	0.51	0.60	0.73		
8	0.59	0.70	0.84	\$1.05	\$1.25
9	0.67	0.80	0.95	1.18	1.42
10	0.75	0.90	1.07	1.33	1.60
11	0.83	1.00	1.18	1.47	1.77
12	0.91	1.08	1.30	1.62	1.95
13	1.00	1.18	1.42	1.77	2.13
14	1.08	1.28	1.54	1.92	2.31
15	1.16	1.38	1.66	2.07	2.49
16	1.25	1.50	1.78	2.22	2.67
18	1.41	1.70	2.02	2.52	3.03
20	1.58	1.90	2.26	2.82	3.39
22	1.76	2.12	2.52	3.15	3.74
24	1.96	2.36	2.80	3.50	4.20
26	2.18	2.60	3.08	3.85	4.62
28	2.42	2.84	3.36	4.20	5.04
30			3.64	4.55	5.46
32			3.92	4.90	5.88
34			4.20	5.25	6.30
36			4.48	5.60	6.72
38			4.76	5.95	7.14
40			5.04	6.30	7.56
42			5.32	6.65	7.98
44			5.60	7.00	8.40
46			5.88	7.35	8.82
48			6.16	7.70	9.24
50			6.44	8.05	9.66
52			6.72	8.40	10.08

Dis. Reliance, 60 and 5. Dis. Royal, 60, 10 and 10. Dis. Manhattan, 70 and 5. See Leather Belting, page 3; Link Belting, page 9.

PACKING.

Piston Packing.

Round Piston Packing
 Per lb. 85c.
 Discount, 60, 10 and 5 per cent.

Square Piston Packing.
 Price same as above.
 Round and square piston packing is made in lengths of twelve or twenty-four feet.

Square Piston Packing.
 Rubber back, per pound \$1. Discount 60 per cent. Best only.
 Square piston packing rubber back is made in lengths of twenty feet.



Steam Packing.
 Cloth Insertion, Rubber Outside.
 Cloth Insertion, Cloth on one or both sides.

Thickness.	1-Ply.	2-Ply.	3-Ply.	4-Ply.
1-64 inch	70 cts.			
1-32 "	65 cts.			
1-16 "	60 cts.	63 cts.	66 cts.	
3-32 "	55 cts.	58 cts.	61 cts.	
1-8 "	55 cts.	55 cts.	58 cts.	61 cts.
3-16 "	55 cts.	55 cts.	55 cts.	58 cts.
1-4 "	55 cts.	55 cts.	55 cts.	55 cts.

One-ply of cloth to every 1-16 inch thickness.
 Three cents per pound additional will be charged for each extra ply of cloth. Each cloth, whether insertion or on outside, to count as one ply.
 All cloth insertion or plain packing is one yard wide, and any length desired.
 Wire insertion packing, all thicknesses, per lb. 50 cents.
 Discounts: Reliance, 70 & 10; Royal, 60, 10 & 10; Manhattan, 60 per cent.
 See Packing, page 10.

HOSE.

Improved "Smooth Bore" Rubber Suction Hose. On spiral flat or round tinned steel w/ re.

In. Diam.	Per ft.	Per. Diam.	Per ft.
1/2	6.50	7/16	\$13.56
3/4	7.50	1/2	15.00
1	8.50	5/8	16.51
1 1/4	9.50	3/4	19.50
1 1/2	10.50	7/8	22.50
1 3/4	12.00	1	27.50

Suction hose discount: Reliance, 50 and 10%; Royal, 60, 10 and 5%; Manhattan, 70 and 5%.

SUCTION HOSE.

On spiral brass or iron wire

Int. Diam.	Per. ft.
1/2 in.	\$.77
3/4 in.	1.00
1 in.	1.25
1 1/4 in.	1.65
1 1/2 in.	2.10
1 3/4 in.	2.50



RUBBER HOSE.

Conducting Hose—Two-ply.

Int. diam.	Per ft.	Int. diam.	Per ft.	Int. diam.	Per ft.
1/2 in.	\$0.20	2 in.	\$0.66	5 in.	\$1.65
3/4 in.	25	2 1/4 in.	75	6 in.	1.98
1 in.	33	2 1/2 in.	83	7 in.	2.31
1 1/4 in.	42	2 3/4 in.	92	8 in.	2.64
1 1/2 in.	50	3 in.	99	9 in.	2.97
1 3/4 in.	58	4 in.	1.32	10 in.	3.33

HYDRANT HOSE—THREE-PLY.

Int. diam.	Per ft.	Int. diam.	Per ft.
1/2 in.	\$0.25	1 1/2 in.	\$0.60
3/4 in.	30	1 3/4 in.	70
1 in.	40	2 in.	80
1 1/4 in.	60	2 1/4 in.	90

Discount—Reliance, 60; Royal, 70; Manhattan, 70 and 10 per cent.

GASKETS AND RINGS.

Fibrous.

1/2 inch thick, or less, per lb. \$0.90

5-32 inch thick, and upwards, per lb. \$0.80

Cloth Insertion.

1-16 inch thick, or less, per lb. \$1.25

3-32 inch thick, and upwards, per lb. \$1.00

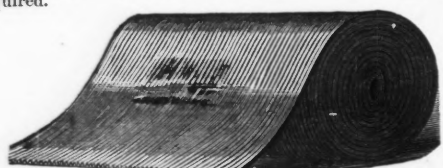
There is one ply of cloth to every 1-16 in thickness.

Five cents per pound additional for each extra ply of cloth.

Dis., 60, 10 and 5%.

CORRUGATED RUBBER MATTING.

Rolls 1 yard wide, 30 yards long, cut to any size required.

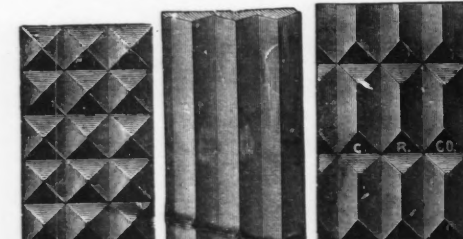


3-32 in. thick, per sq. ft.	Price
1/4	\$0.33
1/2	0.40
3-16	0.56
1/2	0.73
3/8	1.03
1/2	1.30

Dis., 25 and 5%.

TENNIS SHOE SOLING.

Cuts show full size of pattern.



Diamond Point. Corrugated. Oblong.

Price, \$1 per.

Rubber cement to attach soles finished.

STAIR TREADS.



No. Inches.	Thick.	Per doz.	Thick.	Per doz.
1. 6 x18	1/8	\$4.00	3/8	\$8.80
2. 7 x24	1/8	6.00	1/2	5.00
3. 4 x39	1/8	5.50	5/8	4.70
4. 7 x40	1/8	10.00	3/4	8.80
5. 7 1/2 x42	1/8	11.00	7/8	9.10
6. 7 1/2 x48	1/8	12.50	1	10.40
7. 9 x40	1/8	12.50	1 1/8	10.40
8. 9 x48	1/8	15.00	1 1/4	12.50
9. 9 x36	1/8	11.25	1 1/2	9.40
10. 6 x48	1/8	10.20	1 3/4	8.00
11. 7 x28	1/8	7.00	1 7/8	5.85
12. 9 x54	1/8	16.80	2	14.00
13. 8 x52	1/8	14.60	2 1/8	12.15
14. 10 x24	1/8	8.40	2 1/4	7.00

RUBBER SOLING FOR BOOTS.

Rough finish. 1-16 to 3-16 thick.

Smooth finish. 1-32 to 1-16 thick.

85 cents per lb.

Indurated Fibre Ware.

SPITTOONS.

Size	Doz.
16 in. dia., 8 in. high	\$24.00
12 1/2 in. dia., 5 1/2 in. high	10.80
9 in. dia., 5 in. high	7.80

Dis. on all 25 and 20%.

CORDLEY & HAYES.

Pails.

No. in crate.	Cubic feet.	Price per doz.
1	2 3/4	\$5.35
1	3 1/4	4.80

Ladies' or Weaver's pails, 6 qt.

Half or buggy pails, 6 qt.

Star pails (standard plain), 12 qt., stenciled "for fire only" without extra charge.

Deck or Mason's pails (same size as Star, but heavier, with heavy wire ball).

Railroad or fire pails, 14 qt. (also stenciled "fire" without extra charge).

Fire pails, round bottoms.

Milk pails, 14 qt.

Stable pails, flush bottom, heavy wire ball, 14 qt.

Stable pails, 16 qt., same as above.

Covers for fire or star pails.

WASH TUBS.

No.	Size	Price
No. 0, 23 in.	1/2 12	27.00
Nos. 0, 1, 2 and 3, nested	1 in. 3 1/2	22.50
No. 1, 21 in.	1/2 10 1/2	24.00
No. 2, 19 1/2 in.	1/2 9	21.00
No. 3, 18 1/2 in.	1/2 9	18.00
Nos. 1, 2, and 3, nested	1/2 9 1/2	21.00

KEELERS.

Size	Price
A—20 in., 7 in. deep	16.20
B—19 " " "	15.00
C—18 1/2 " " "	14.00
1—17 1/2 " " "	13.20
2—15 1/2 " " "	12.00
3—13 1/2 " " "	10.20
4—12 " " "	9.00

MILK OR VEGETABLE PANS.

Size	Price
13 1/2 in. dia 3 1/4 in. deep, 6 quarts.	\$3.60 per doz.

WASH BASINS.

Size	Price
12 1/2 in.	Doz. \$4.80
12 in.	4.20
11 1/2 in.	5.60

CHAMBER PAILS.

Size	Price
12 in. dia., 9 in. deep, 3 gal.	16.00

WATER COOLERS.

Capacity	Price
3 gal.	\$32.00
4 " "	40.00
5 " "	44.00
6 " "	48.00
8 " "	64.00
10 " "	80.00
12 " "	96.00
15 " "	120.00

WATER COOLERS AND FILTERS.

Capacity	Price
4 gal.	Doz. \$96.00
5 " "	108.00
6 " "	120.00
8 " "	144.00
10 " "	192.00
15 " "	288.00

Lamps.

F. H. Lovell & Co.

Drummond Electric Hanging Lamp, 300 candle power, complete, each \$3.50.

The electric lamp, 60 candle-power. With decorated shades, nickel, per doz. \$22.00

With opal plain shades, nickel, per doz. 18.00.

With decorated shades, brass, per doz. 21.00.

With opal plain shades, brass, per doz. 17.00.

Lamp chimney patent for Sun burners.

Per doz. No. 0, 50 cents. No. 1, 60c. No. 2, 75c.

Hitchcock nickel table lamp (No. 654), each \$3.25

" hanging " 656 " 7.25

" bracket " 651 " 3.50

" " with reflector 653 " 3.75

French bronze bracket, with reflector, No 653, each \$3.75.

Net.

Illuminated night clock, per doz., \$27.

PAPER LAMPS.

No.	Height	Diameter	Weight	Price
No. 0.	2 1/2 in.	3 in.	3 3/4 lbs.	\$2.75
No. 1.	3 in.	2 1/2 in.	2 1/4 lbs.	\$2.75
No. 2.	3 1/2 in.	3 1/2 in.	3 1/2 lbs.	\$3.25
No. 3.	4 in.	4 in.	4 lbs.	\$4.50
No. 4.	5 in.	4 in.	7 lbs.	\$4.50

Dis., 20%.

Miners'.

Brass, Collar and Breast in one piece. Spout and Body in one piece.

Price, \$9 per gross net.

Laundry Appliances.

Rolls.

"Volunteer." Length, 10 in. x 1 1/4 in. dia. \$40 per doz.

"Volunteer." Length, 11 in. x 1 1/4 in. dia. \$50 per doz.

"Volunteer." Length, 12 in. x 1 1/4 in. dia. \$50 per doz.

Dis., 40%.

"Daisy." Length, 10 in. x 1 1/4 in. dia. \$30 per doz.

"Daisy." Length, 12 in. x 1 1/4 in. dia. \$48 per doz.

Dis., 40%.

"Empire." Length, 10 in. x 1 1/4 in. dia. \$63 per doz.

"Empire." Length, 11 in. x 1 1/4 in. dia. \$74 per doz.

"Empire." Length, 12 in. x 1 1/4 in. dia. \$84 per doz.

"Empire." Length, 12 in. x 1 1/4 in. dia. \$87 per doz.

"Empire." Length, 14 in. x 2 1/4 in. dia. \$156 per doz.

"Empire." Length, 14 in. x 2 1/4 in. dia. \$220 per doz.

"Empire." Length, 16 in. x 2 1/4 in. dia. \$360 per doz.

EMPIRE CLOTHES DRYING BARS.

\$10 per doz.

Dis., 40%.

Closed.

Open for use.

APPLE.

Advance	Per doz.	\$4.75
Baldwin		5.25
Champion		7.25
Hudson's '88		3.75
Improved Bay State		30.
Little Gem	Monarch	31.50
	Oriole	4.00
	Turntable	4.50
	Victor	13.50
	White Mountain	4.50
	Rocking Table	4.25
Little Gem Corer and Slicer		3.70

Roofing.

CORRUGATED IRON.

2 1/2 inch corrugations.

PRICE LIST.

Gauge.	Per square.
No. 18, Painted Red	\$8.80
No. 20, " "	6.90
No. 22, " "	6.00
No. 24, " "	5.15
No. 26, " "	4.50
No. 27, " "	4.15
No. 28, " "	4.10
No. 20, Galvanized	10.15
No. 22, " "	8.85
No. 24, " "	7.60
No. 26, " "	6.60
No. 27, " "	6.50
No. 28, " "	6.35

Discounts next issue.

Portable Houses. (Ducker Portable House.)

Weight, 450 lbs.
Price, \$150.
Closes securely.
Dis., 10%.

Weight, 85 lbs. per section.
Price, \$220.
Dis., 10%.

No. 10.—26 x 33 ft. including veranda and rear extension. Main part, 19 x 26 ft.	\$500.00		
No. 1. Veranda on side.			
12 x 12, 1 door, 3 windows	\$120.00	No. 2. Veranda without end.	\$105.00
12 x 14, 1 " " " "	135.00		120.00
12 x 17, 1 " " " "	155.00		135.00
12 x 19, 2 " " " "	175.00		155.00
12 x 21, 3 " " " "	190.00		165.00
12 x 23, 3 " " " "	200.00		175.00
12 x 25, 3 " " " "	220.00		190.00
14 x 21, 3 " " " "	205.00		180.00
10 x 12, 1 " " " "	3 " "		90.00
10 x 14, 1 " " " "	3 " "		95.00
7 x 10, 1 " " " "	2 " "		65.00
7 x 12, 1 " " " "	2 " "		75.00
7 x 14, 1 " " " "	2 " "		85.00
Hunter's Cabins.			
7 x 12, with 4 berths	\$80.00		
7 x 14, " " " "	96.00		
Discount, 20%.			

Post Hole Diggers.

Chieftain Hay Rake Co.

Little Giant	\$36.00 doz 11 cu ft.
Hercules	30.00 " " " "
New Champion	20.00 " " " "
Scheidler	36.00 " " " "

Dis. 40% f.o.b. New York or Boston.

Press.

Combined press for cutting, forming, horning and shearing.

Particulars of flat front presses, including beds, slides, bolsters, plates, etc.

Prices are net, delivered on steamers in New York, including insurance, etc.

Nominal size of press.	41	42	43	44	450
Price, including et ceteras.	\$130	\$200	\$260	\$420	\$660
Weight, about	600	1050	1900	3600	7200
Greatest diameter that can be wired	5	7	10	14	20
Greatest depth that can be wired	8	10	13	16 1/2	20
Hole through bed—circle intersecting	4 1/2	6	8 1/2	12	17
Hole through back—width	8	9 1/2	12	15 1/2	20 1/2
Width between die clamps—clear	8	11	15	20	27
Distance back from center of slide bar	4 1/2	5 1/2	7	9	12
Height to slide-bar, when up	5 1/4	6 1/2	7 1/2	8 1/2	9
Stroke of slide-bar	1	1 1/4	1 1/2	1 3/4	2
Adjustment of slide-bar	1	1 1/4	1 1/2	1 3/4	2
Diameter of fly-wheel	20	26	32	38	44
Width of fly-wheel	3	4	5	6	7
Weight of fly-wheel, about	125	250	420	725	1100
Speed per minute, about	120	110	100	90	80
Cubic feet boxed, about	30	40	50	60	70

Printers' Sundries.

Vanderburgh, Wells & Co. And Liberty Machine Works.

Wood rules, 12 cents per yard.
Wood rules, on end wood, 15 cents per foot.

EUREKA STAND.
12 full cases. \$12.00

Boxing and cartage. 1.25

SHOOTING STICKS.

Each.

No. 1, 75c.
No. 2, \$1.
No. 4, 45c., black.
No. 4, 60c., bright.
No. 5, 60c., black.
No. 3, 75c., bright.

GAUGE PINS—ALL SIZES.

Brass, 40c. doz. | Steel, 60c. doz.
Wire, 25c. doz. | Golden, 40c. doz.

MITRE BOXES.

Regular size, 2 in., 50c. each.
Extra size, 3 1/2 in., 75c. each.

LEAD CUTTER.

Curtis' Lead Cutter.....\$2.00

PROOF PRESS, "OUR OWN."

9 x 32, complete, with Brayer.....\$28.00

THE "LIBERTY" CYLINDER PRESS.
For Newspaper and Job Printing.

Bed.		Form.	Price
No. 5—20 x 42	24 x 40		\$1,200
6—33 x 47	28 1/2 x 45		1,300
7—37 x 51	33 x 49		1,600

Dis., 20 and 5%

THE "LIBERTY" JOB PRINTING PRESS.

Size of chase.

No. 2—7 x 11	\$200
2a—9 x 13	250
3—10 x 15	300
3a—11 x 17	350
4—13 x 19	400
5—14 1/4 x 22	500

Dis., 12% and 5%.

Two sizes built extra strong for boxmakers, embossing, etc.

No. 3a—11 x 17	\$375
4—13 x 19	425

Fountains, either size, \$25 extra, if ordered with press.
Steam fixtures, either size, \$15 extra.

THE AMERICAN CARD AND BILL HEAD PRESS.

No. 5—4 x 6	\$16
7—6 x 9	36
8—8 x 12	60

Dis., 20% and 5%.

THE "LIBERTY" PAPER CUTTER.

Cuts 30 inches.....\$140.00

Extra knife..... 18.80

Dis., 12% and 5%.

THE "LIBERTY" IMPOSING TABLES.

Marble top.

No. 1—24 x 36	\$24
2—32 x 48	38
3—26 x 74	44
4—36 x 48	48

Dis., 12% and 5%.

Slate Top.

No. 1—24 x 36	\$18
2—32 x 48	25
3—26 x 74	32

Dis., 12% and 5%.

Kelsey & Co.,

The Eagle Card and Paper Cutter, 24 1/4 inch.

\$12 each, \$100 per doz.

THE "LIBERTY" TYPE CABINETS.

Number of cases.	Stained.		Grained.	
	Flat.	Gal. ley.*	Flat.	Gal. ley.*
12 1/2	12.00	14.50	14.00	17.00
16 1/2	15.00	17.50	17.00	20.00
18 1/2	16.50	19.00	18.50	21.50
20 1/2	18.00	20.50	20.00	23.00
12 3/4	15.00	17.50	17.00	20.00
16 3/4	18.00	20.50	20.00	23.00
18 3/4	19.50	22.00	21.50	24.50
20 3/4	22.00	24.50	23.00	26.00
12 full	18.00	20.50	20.00	23.00
16 "	22.00	24.50	24.00	27.00
18 "	24.00	26.50	26.00	29.00
20 "	26.00	28.50	28.00	31.00

Number of cases.	Pine.		Cherry.		Napanoch.		Walnut.	
	Flat.	Gal. ley.*	Flat.	Gal. ley.*	Flat.	Gal. ley.*	Flat.	Gal. ley.*
12 1/2	18.00	21.00	20.00	23.00	22.00	25.00	23.00	26.00
16 1/2	22.00	25.00	24.00	27.00	26.00	29.00	27.00	30.00
18 1/2	24.00	27.00						
20 1/2	26.00	29.00	28.00	31.00	30.00	33.00	31.00	34.00
12 3/4	21.00	24.00	23.00	26.00	25.00	28.00	26.00	29.00
16 3/4	25.00	28.00	27.00	30.00	29.00	32.00	30.00	33.00
18 3/4	27.00	30.00						
20 3/4	29.00	32.00	31.00	34.00	33.00	36.00	34.00	37.00
12 full	24.00	27.00	26.00	29.00	28.00	31.00	29.00	32.00
16 "	28.00	31.00	30.00	33.00	32.00	35.00	33.00	36.00
18 "	30.00	33.00						
20 "	32.00	35.00	34.00	37.00	36.00	39.00	37.00	40.00

*Furnished with galley top and extra drawer for copy. Dis., 20 and 5%.

THE "LIBERTY" CASE STANDS AND RACKS.

Stands.

Single, without racks	\$3.75
" with racks for 8 full cases	4.06
Single, with racks for 10 full cases	4.23
Single, with racks for 12 full cases	4.50
Single, with racks for 14 full cases	4.75
Double, without racks	4.25
" with racks for 8 full cases	4.50
Double, with racks for 16 full cases, and gal. rest	6.25
" " " " " " " " " "	6.50
" " " " " " " " " "	6.75
" " " " " " " " " "	5.25
" " " " " " " " " "	5.00
" " " " " " " " " "	5.25
" " " " " " " " " "	5.5
" " " " " " " " " "	5.75
" " " " " " " " " "	6.00
Stands with closed ends, extra	2.00
Extra slides for stands, each	.09

Case Racks.

Cases.	Inches High.	Inclosed Back and		Cases.	Inches High.	Inclosed Back and	
		Sides.	Price.			Sides.	Price.
12	41	\$8.50	30	84	\$10.00	\$13.50	
16	50	7.00	35	51	12.50	16.00	
20	60	8.00	11.00	40	60	14.00	17.50
24	70	9.00	12.00	60	84	18.00	23.00

Dis., 20 and 5%.

THE "LIBERTY" TYPE CASES.

Outside Name. Measurements. Full size. 32 1/2 x 16 1/2 x 19-16 Rooker size. 28 1/2 x 14 1/2 x 19-16 1/4 size. 22 1/2 x 16 1/2 x 18 1/2 Enlarged size. 32 1/2 x 23 x 3-16 Wood type " 32 1/2 x 23 x 19-16 Mammoth " 44 x 23 x 19-16 Cabinet case sides extend 1 1/2 to 3 inches. In ordering cabinet cases, state whether high or low fonts are wanted.

Table listing Liberty Type Cases with columns for Name, Measurements, Without Pat. Clasps, and With Pat. Clasps. Includes items like News, Rooker, German, Music, Job, etc.

Table listing Liberty Type Cases with columns for Name, Without pat. clasps, and With pat. clasps. Includes items like Galley lower, Enlarged Yankee job, Founder's sort case, etc.

Table listing THE "LIBERTY" GALLEYS, All brass "indestructible." Includes Single, Medium, Double sizes.

Table listing SMOOTH LINED NEWS GALLEYS, Half-lined, Full-lined. Includes Single col., Double col., Screw Galleys.

Table listing SMOOTH LINED JOB GALLEYS, Full-lined. Includes 6 x 10, 8 1/2 x 13, 9 x 14, 10 x 16 sizes.

These have a rule laid out on one of the rims, divided into quarter inches, by which to set advertisements. Cost of ruling extra, 25 cents.

Zinc bottom, 50 cents; brass bottom, 90 cents. Brass closed both ends, \$3.

GALLEY RACKS. From \$3 up.



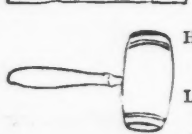
LEAD CUTTERS. From \$2 up. Dis., 20% and 5%.



THE "LIBERTY" STEEL SHOOTING STICKS. Bright, \$1 each. Nickelplated, \$1.25 each. Dis., 40%.



STANDARD METAL FURNITURE 25c. a pound. In fonts of 25, 50, 75 and 100 lb. Dis., 15%.



THE "LIBERTY" MALLETS. Hickory, small. \$.20 medium. .25 large. .30 iron bound. 1.00 Lignum Vita, No. 3. .40 No. 2. .50 No. 1. .70 Dis., 20 and 15%.

THE "LIBERTY" PLANERS AND PROOF PLANERS.

Midget planer. 10c. Small Maple. 20c. Large. 25c. Midget b'ked with leather. 30c. Proof planer, faced with cloth, 50c. Dis., 40%.



GROVER'S PATENT AND UNION. Screw or News.

Table listing Grover's Patent and Union Composing Sticks with columns for Size (6 in., 8 in., 10 in., 12 in., 14 in., 16 in., 18 in., 20 in.), Steel, and Price.

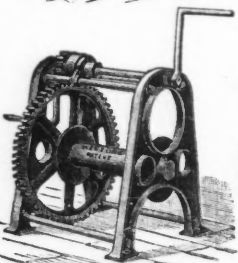
Table listing THE "LIBERTY" COMPOSING STICKS with columns for Grover's and Yankee sizes, Steel, and Price.

Table listing Other Sizes to Order with columns for Size, Steel, and Price.

Table listing Pulley Blocks with columns for Size (1/4 ton, 1/2 ton, 1 ton, 1 1/2 tons, 2 tons, 3 tons), Gearing, and Price.



Table listing DOUBLE LIFT HOISTS FOR HATCHWAYS, ETC. with columns for Capacity (500 lbs., 1000, 1500, 2000, 500), Price, and Dis.



WESTON CRAB SAFETY BRAKE, HANDLES CAN NOT FLY BACK. Each. 21. 22. 23. 25.

Pumps. Runnsey & Co. Prices on all pumps include cylinders.

Table listing various pumps with columns for No., Dia., Cyl., Suction, Cap. stroke, Iron, Brass, Price, and Dis.

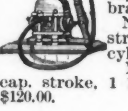
Standard and Cylinder for 1 1/2 in. Iron Pipe. \$16.00. Dis., 55%



No. 6 1/2, sta pipe, \$13.00. and cylinder, 1 1/4 in. No. 7 1/2, standard and cylinder, 1 1/4 in. pipe, \$15.00. No. 8 1/2, standard and cylinder, 1 1/4 in. pipe, \$18.00. With hose and discharge pipe, add \$3.00 to list price. Dis., 55%.



No. 1, diam. cyl., 2 1/2 in.; cap. stroke, 1-8 gal.; size pipe, 1 1/4 in. Price, iron, \$12.50; brass cyl., \$17.50. No. 2, diam. cyl., 3 in.; cap. stroke, 1-6 gal.; size pipe, 1 1/4 or 1 1/2 in. Price, iron, \$14.50; brass cyl., \$18.50. No. 3, diam. cyl., 4 in.; cap. stroke, 2-5 gal.; size pipe, 1 1/2 or 2 in. Price, iron, \$23.50; brass cyl., \$34.50. Dis., 55%.



No. 1, diam. cyl., 3 in.; suction, 1 1/4 in. cap. stroke, 3-10 gal. Price, iron, \$28.00; brass cyl., \$38.00. No. 2, diam. cyl., 4 in.; suction, 1 1/2 in.; cap. stroke, 1-2 gal. Price, iron, \$32.00; brass cyl., \$42.00. No. 3, diam. cyl., 5 in.; suction, 2 in.; cap. stroke, 6-7 gal. Price, iron, \$35.00; brass cyl., \$45.00. No. 4, diam. cyl., 6 in.; suction, 2 1/2 in.; cap. stroke, 1 1-5 gal. Price, iron, \$45.00; brass cyl., \$55.00. Dis., 45%.

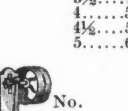
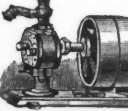
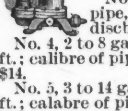


Table listing pumps with columns for No., Diam. cyl., Cap. stroke, Stroke, Pipe, Price, Iron, Br's. Includes items like No. 1, 2, 3, 4, 5, 6.



With Tight and Loose Pulleys. No. 1, cap. per rev., 1-6 gal.; size of pipe, 1 1/4 in.; price, iron, \$26; bronze, \$45. No. 2, cap. per rev., 1-5 gal.; size of pipe, 1 1/2 in.; price, iron, \$31; bronze, \$55. No. 4, cap. per rev., 1-3 gal.; size of pipe, 2 in.; price, iron, \$48; bronze, \$75. Pulleys on Nos. 1 and 2 are 8 in. diam., 2 1/2 in. face; on No. 4, 12 in. diam., 3 1/2 in. face. Balance wheels for above pumps, \$1, \$2, and \$3, according to size. Dis., 45%.



No. 2, 1/2 to 2 gal. per min.; length of drive pipe, 25 to 40 ft.; calibre of pipes, drive, 3/4 in.; discharge, 1/2 in.; price, \$9. No. 3, 1 to 4 gal. per min.; length of drive pipe, 25 to 40 ft.; calibre of pipes, drive, 1 in.; discharge, 3/4 in.; price, \$11. No. 4, 2 to 8 gal. per min.; length of drive pipe, 25 to 40 ft.; calibre of pipes, drive, 1 1/2 in.; discharge, 1 1/2 in.; price, \$14. No. 5, 3 to 14 gal. per min.; length of drive pipe, 25 to 40 ft.; calibre of pipes, drive, 2 in.; discharge, 1 in.; price, \$22. No. 6, 4 to 25 gal. per min.; length of drive pipe, 30 to 40 ft.; calibre of pipes, drive, 2 1/2 in.; discharge, 1 1/2 in.; price, \$40. No. 7, 8 to 60 gals. per min.; length of drive pipe, 30 to 40 ft.; calibre of pipes, drive, 4 in.; discharge, 2 in.; price, \$75. No. 8, 12 to 120 gal. per min.; length of drive pipe, 30 to 50 ft.; calibre of pipes, drive, 6 in.; discharge, 2 1/2 in.; price, \$125. Dis., 45%.

Refrigerators.

Advertisement for Indurated Fibre and Stoneware-Lined Refrigerators by Cordley & Hayes. Includes illustrations of various refrigerator models and a table of specifications with columns for No., High, Wide, Nos. 75, 85, Price, and Dis.

RAILROADS.

Railway Track Punch

- 58 Round Point. 15c. lb., net.
- 60 Track Wrench. 7½c. lb., net.
- Rail Fork. 9c. lb., net.
- 64 Crow Bars, Wedge Points, 3½c. lb., net.
- 65 Pinch Point, 3½c. lb., net.
- 65 Tamping Bar, 6c. lb., net.
- 66 Claw Bar, 7c. lb., net.
- 67 Railroad Spike Mauls 6 to 16 lbs., Steel Face 18c. lb.
- 68 Steel Track Chisel, 15c. per lb., net.

Railroad or Clay Picks.

No.	Per doz.
11, Adze eye, 4 to 5 lbs.	\$11.00
11, " 5 to 6 "	12.00
11, " 6 to 7 "	13.00
11, " 7 to 8 "	14.00
11, " 8 to 9 "	16.00
11, " 9 to 10 "	18.00
12, Hunt eye, 4 to 5 "	11.00
12, " 5 to 6 "	12.00
12, " 6 to 7 "	13.00
12, " 7 to 8 "	14.00

Dis., 60 and 10%.

Mattocks—Price per doz.

- 2, Adze Eye, Long Cutter, 6 lbs., \$16.00.
- 3, Adze Eye, Short Cutter, 5½ lbs., \$15.50.
- 2, Adze Eye, Long Cutter, Light, \$15.00.
- 3, Adze Eye, Short Cutter, Light, \$15.00.
- 4, Hunt Eye, Long Cutter, 6 lbs., \$16.00.
- 5, Hunt Eye, Short Cutter, 5½ lbs., \$15.50.

Adze Eye Pick

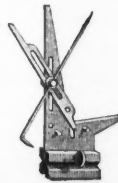
- 6, Adze Eye Pick, \$16.
 - 7, Hunt Eye Pick, \$16.
- Dis., 60 and 10%.

Grub Hoes.

- Western Pattern, No. 0, 3 lbs., ½ doz., \$10.50.
 - Western Pattern, No. 1, 3½ lbs., ½ doz., \$11.
 - Western Pattern, No. 2, 4 lbs., ½ doz., \$11.50.
 - Western Pattern, No. 3, 4½ lbs., ½ doz., \$12.
 - Baltimore Pattern, No. 1, 3½ lbs., ½ doz., \$11.
 - Baltimore Pattern, No. 2, 4½ lbs., ½ doz., \$11.75.
 - Baltimore Pattern, No. 3, 5 lbs., ½ doz., \$12.75.
 - Baltimore Pattern, No. 4, 5½ lbs., ½ doz., \$13.75.
- Dis., 60 and 10%.

MACHINISTS'.

Combination Square, Bevel and Surface Gauge.



Price complete.....\$3.00
Dis., 20, 10 and 5%.

CARPENTERS'.

BOXWOOD RULES.
Two feet, four-fold, 1 inch wide.

Plate.	Middle.	Edge.	Bound.
Round joint.....\$4			
Square ".....5	\$7		\$15
Arch ".....6	8		16

Two feet, four-fold, 1¼ inches wide.

Plate.	Middle.	Edge.	Bound.
Square joint.....\$7	\$9		\$18
Arch ".....9	11		20

Two feet, two-fold, 1¼ inches wide.

Square joint.	Arch.	Arch Bound.
\$5	\$7	\$16
12	14	24

Dis. 80, 10 and 10%.



LEVELS.

Arch top plate, 2 side views..	10 to 16 in.	18 to 24 in.
	\$9.00	\$12.00

PLUMBS AND LEVELS.

Arch top plate, 2 side views.	12 to 18 in.	18 to 24 in.	24 to 30 in.
Polished.....	\$14.00	\$16.00	\$18.00
Mahogany.....	16.50	22.50	
Mahogany tip'd and lip'd.....	27.00		
Polished and tipped.....		24.00	
Polished and tipped.....		28.00	
Polished, lip'd and tip'd.....		35.00	

Mason's level, 2 plumbs, polished.	30,	\$30.00
Mason's level, 2 plumbs, p'd and t'd.	36,	36.00
Mason's level, 2 plumbs, polished.	42,	36.00

PATENT ADJUSTABLE PLUMBS AND LEVEL.

Arch Top plate, 2 side views	26 to 30 in.
Polished and tipped.....	\$27.00
Polished and tipped.....	30.00
Polished, lipped and tipped.....	39.00
Mahogany.....	27.00
Mahogany, lipped.....	33.00
Mahogany, lipped and tipped.....	48.00
Polished, triple stock, lipped and tipped.....	48.00
Mahogany.....	60.00
Rosewood, lipped and tipped.....	90.00

POCKET LEVELS.

Iron top, Japanned.....	2 50
Brass top.....	3.00

Dis., 70, 10, 10%.

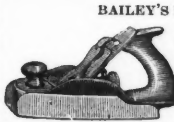


SCREWDRIVERS.

Varnished handles, pat. metallic fastening. Size 1¼, \$1 per dozen; 2, \$1.50; 3, \$2; 4, \$2.50; 5, \$3; 6, \$3.50; 7, \$4; 8, \$4.75; 10, \$6; 12, \$8. Dis., 75 %.

PLANES, BAILEY'S PATENT IRON.

With pat. lateral adjustment.
Smooth, 8 in. x 1¼ in., \$3; 9 in. x 2 in., \$3.25; 10 in. x 2½ in., \$3.75 each.
Jack, 14 in. x 2 in., \$3.75.
Fore, 18 in. x 2½ in., \$4.75.
Jointer, 24 in. x 2½ in., \$6.50 each.
Dis., 40, 10 and 10%.



BAILEY'S PATENT WOOD PLANES.

Smooth. Handle smooth. 9 x 8¼ in. 8 x 2 in. 9 x 2 in. \$2 \$2 \$2.50 each
Jack. Fore. Jointer. 15 x 2½ in. 20 x 2½ in. 26 x 2½ in. \$2.50 \$2.75 \$3.25 each
Dis., 40, 10 and 10%.

STANLEY IRON BLOCK PLANES.

3½ x 1 in.	20c.
5½ x 1¼ in.	40c.
7½ x 1¼ in.	60c. each.

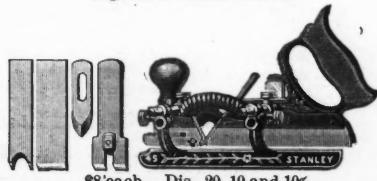
ADJUSTABLE.

5½ x 1¼ in.	60c.
7½ x 1¼ in.	85c. each.

Dis., 40, 10 and 10%.

STANLEY'S BEADING, RABBET, SLITTING AND MATCHING PLANE.

Eighteen Tools, Bits, etc.



\$8 each. Dis., 20, 10 and 10%.



STANLEY "ODD JOBS."

Embraces in combination with ordinary Carpenters' Rule:

- (1) Try square.
- (2) Mitre square.
- (3) T—square.
- (4) Marking gauge.
- (5) Mortise gauge.
- (6) Depth gauge.
- (7) Mitre level.
- (8) Spirit level and plumb.
- (9) Beam compass.
- (10) Inside square for making boxes and frames.

Price 75 cents. Dis., 20, 10 and 10%.

TACK HAMMERS.

Magnetic, small.....	Doz. \$1.25
Medium.....	1.50
Large.....	1.75

Discount, 30, 10, 10%.



MALLEABLE IRON. Inlaid Handle.

Per Doz.....\$2.50
Discount, 30, 10, 10%.



STEAK HAMMERS.

Japanned.....	\$2.25
X Plated.....	3.00

Discount, 30, 10, 10%.



Trucks.

New York Pattern.

Size.	Length of hds. Ft.	Width of nose. In.	Width at upper bar. Inches.	Width at wheel. Inches.	Size of wheel. Inches.	Price.
No. 0	3	6¼	12	13¼	6¼ x 13¼	\$4.50
No. 1	4	1	13¾	15½	6¼ x 13¼	4.85
No. 2	4	5	15	16½	7¾ x 17½	6.00
No. 3	4	8	16	17¾	8¾ x 21¼	7.00
No. 4	5	0	16¼	17¾	9¾ x 21¼	8.00
No. 5	5	4	17¼	18¾	10¾ x 23¼	9.50

Discount 50%.
Special net prices on quantity orders.



NEW YORK PATTERN.

Tuyeres.

No. 2.	No. 4.
\$25.00	\$35.00 per doz.

20 % dis.



Valves. Brass Globe and Angle Valves.

Size, inches.....	¼	½	¾	1	1½	2
Star globe and angle valves.....	\$0.80	\$0.85	\$0.90	\$1.20	\$1.55	\$2.00
Star globe and angle valves, heavy patterns.....				1.50	1.95	2.80
Extra heavy Star and Lion patterns.....				2.00	2.60	3.60
All brass, yoke top.....						3.75
Cross valves.....	1.15	1.25	1.50	2.00	2.50	2.50
Star check valves.....	.70	.70	.75	.95	1.20	1.65
do. heavy pattern.....				1.15	1.50	2.00
Crescent globe and angle valves.....	.60	.60	.75	1.00	1.35	1.80
Crescent hose valves.....						
check valves.....	.50	.60	.85	1.15	1.55	
Vertical check v'lvs.....	.50	.60	.85	1.15	1.55	
Jenkins globe and angle valves.....	1.10	1.25	1.60	2.20	2.80	
Jenkins check valv's.....	1.10	1.20	1.30	1.90	2.00	
Gate valves, Chapman.....			1.30	1.75	2.25	
Gate valves, other makes.....	1.00	1.20	1.75	2.50	2.50	
Brass safety valves.....	2.00	2.25	2.75	3.50	5.00	
Brass butterfly v'lvs.....					3.50	
Size, inches.....	1¼	1½	2	2½	3	
Star globe and angle valves.....	\$3.00	\$4.00	\$6.50	\$12.50	\$19.00	
do. heavy pattern.....	3.95	5.30	8.35	14.00	22.00	
Extra heavy Star and Lion patterns.....	5.40	7.20	10.80	18.20	28.60	
All brass, yoke top.....	5.00	7.00	10.00	18.00	30.00	
Cross valves.....	3.50	5.00	8.00	16.00	24.00	
Star check valves.....	2.50	3.25	5.00	11.00	15.00	
do. heavy pattern.....	3.00	4.00	6.50	12.50	17.00	
Crescent globe and angle valves.....	2.80	3.90	5.90	11.25	16.00	
Crescent hose valves.....	4.00	5.50	7.00	10.00	14.00	
check valves.....	2.30	3.25	5.20	10.00	14.00	
Vertical check valves.....	2.30	3.25	5.20	10.00	14.00	
Jenkins globe and angle valves.....	4.00	5.50	8.00	15.75	22.00	
Jenkins check valves.....	3.60	5.00	7.50	13.50	20.50	
Gate valves, Chapman.....	3.25	4.25	6.25	11.50	16.00	
other makes.....	3.50	5.00	7.50	15.00	22.00	
Brass safety valves.....	7.00	8.50	12.00	20.00	30.00	
Brass butterfly valves.....	4.50	5.50	8.00	11.00	16.00	


Pressure Regulating.

Mason Regulator Co.

Size pipe.	Price.	Size pipe.	Price.	Size pipe.	Price.
1 inch.	\$22.	1¼ inch.	\$28.	1½ inch.	\$35.
2 "	44.	2¾ "	57.	3 "	72.




Ludlow Valve Co.
Double Gate Brass Valves.
Gland in packing box.



Size.	Screw socket.	Flange.	Diameter of Standard Flange.	Face to face of Screw socket.	Face to face of Flanges.	Extra for slide stem and lever subject to discount.
1 1/4	1.25		2 1/4			\$1.00
1 1/2	1.65		2 3/4			1.00
2	2.15		3 1/4			1.00
2 1/2	3.15		3 3/4			1.00
3	4.25		4 1/4			1.00
3 1/2	6.25	11.50	4 3/4	6	4 1/2	1.00
4	11.50	18.00	5 1/4	6 1/2	5 1/2	1.25
5	16.00	22.00	6	7 1/4	6 1/4	1.25
6	21.00	31.00	7	8 1/4	7 1/4	1.25
8	35.00	43.00	8 1/2	10	9	1.25
10	52.00	64.00	10	11	11	1.25
12	78.00	90.00	11			1.25

Rubber-Faced Slide Gate Fire Hydrant.

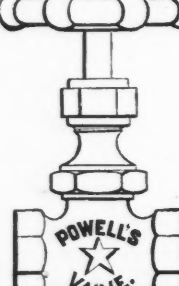


Dia meter of pipe connection.	Dia meter of stand pipe.	Dia meter of seat ring.	One 2 1/2 nozzle.	Two 2 1/2 nozzles.	Three 2 1/2 nozzles.
3 or 4	4 3/4	3	\$23		
3-1-6	5 1/4	3	31	\$33.00	\$35.00
4 or 6	7	3		38.50	40.50
6 or 8	8 1/2	3		49.00	51.00
8 or 10	10	3			

Four 2 1/2 nozzles.	Six 2 1/2 nozzles.	One steam or nozzle.	One steam and one 2 1/2 nozzle.	One steam and two 2 1/2 nozzles.	Frost case, standard length.
\$33.00	\$35.00	\$37.00	\$4.50	\$5.00	\$3.00
38.50	40.50	42.50	6.50	7.50	5.00
\$53.00	49.00	51.00	53.00		

For each 6 inches more or less than standard length of stand pipe, add or deduct from list.	For each 6 inches more or less than standard length of frost case, add or deduct from list.	Extra charge for hub.	Independent nozzle gates each.
\$0.60	\$0.44	6 in. \$0.50	\$3.50
.75	.50	No charge	3.75
.85	.70	8 in. \$1.25	3.75
1.00	.90		4.50

Star Radiator Valves, with Brass T Handles or Wood Wheels.




Size, inches.	1/4	3/8	1
Plain brass	\$1.60	\$2.00	\$2.50
Plated trim'gs.	1.80	2.25	2.80
Rough & Plat'd	2.00	2.45	3.05
Finish'd & P'tt.	2.50	3.00	3.65

Size, inches.	1 1/4	1 1/2	2
Plain brass	\$3.60	\$4.50	\$7.50
Plated trim'gs.	3.95	5.20	8.00
Rough & Plat'd	4.20	5.50	8.50
Finish'd & P'tt.	4.95	6.50	9.75

Dis., 40, 10 and 5%.

EDDY VALVES.



Class 2.	Class 3.	Class 4.	Class 5.
Iron, brass mounted.	All iron for gas.	Water works valves.	Quick opening valves with rack and pinion stem. Iron, brass mounted.
Size.	Screw, or flange ends.	Add for S&L Hub ends.	Hub ends.
2	\$7.00	\$1.00	\$8.00
2 1/2	10.50	1.30	11.80
3	13.00	1.40	14.40
3 1/2	16.50	1.50	18.00
4	18.00	1.70	19.70
4 1/2	22.00	1.80	23.80
5	25.00	2.00	27.00
6	31.00	2.30	33.30
7	37.00	2.70	39.70
8	45.00	3.00	48.00
10	60.00	3.50	63.50
12	80.00	4.00	84.00

All Iron Valves, Classes 2 and 5, 10 per cent. less than Brass Mounted.

Varnish.



Edward Smith & Co.
For Finishing Coats.

Wearing body varnish	gal.	\$3.50
Medium drying body		5.50
One coat coach varnish		4.50
Wearing carriage		4.50
Heavy gear varnish		4.00
Coach body		4.05
No. 1 coach		2.2

For Under Coats.

Hard drying body	\$4.50	Black rubbing varnish	\$4.00
Rubbing body varnish	4.00	Priming (1st coat)	2.50
Quick rubbing	3.50	Filling (2d coat)	2.50
		Rough stuff	2.50

For Inside Work.

Best flowing varnish	\$4.50	Hard oil finish light	\$2.75
Best polishing	4.50	" dark	2.25
Cabinet	3.00	White copal	4.00

Dryers.

Japan gold size	\$3.50	Brown japan	\$1.25
Coach japan	1.75	Liquid dryer	1.25

Discount, 40 per cent. f.o.b. N. Y.

Preservative Coatings.

Spar coatings	\$4.00	Exterior ear coating	\$4.00
I. X. L. No. 1	2.50	Interior ear coating	3.25
I. X. L. No. 2	4.00	Locomotive coating	4.00
Floor finish	2.50		

Discount, 35 per cent. f.o.b. N. Y.

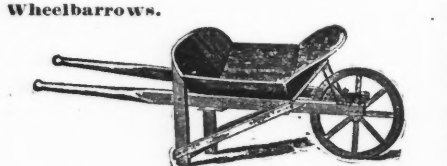
Wagons, Carts, Etc.

D. F. Sargent & Son.

No. 0. Cart, top and fenders.	\$150
No. 1. Cart, top and fenders.	90
No. 2. Cart, one man cart, open.	65
No. 2. Cart, one man, top.	86
No. 2. Cart, one man, top and fenders.	90
No. 3. Cart, two man, open.	60
No. 3-H. Cart, two man, open.	54
No. 4. Cart, two man, top.	86
No. 5. Cart, two man, top and fenders.	90
No. 6. Cart, two men, top and fenders.	90
No. 7. Two man combination cart.	110

Wide track 5 feet.
Narrow track 4 feet 8 inches.
Discount 33 1/2 per cent. off.

Wheelbarrows.



Climax Bolted Barrow, with Wood Wheel per doz. \$22.50.
1 1/2 tire of iron.

Common Nailed Barrow per doz. \$18.50.
Bolted 18.75.

Lansing's Patent Iron-Bolted Barrow, per doz. \$25.50

Capital Patent Bolted Dirt	30.00
Red oak or Government	40.50
Wharf	72.50
Mortar	30.00
Bent Handle Stone	48.00
Coal or Ore	31.50
Pig Metal or Casting	40.50
Brick Yard 20 inch Iron Wheel	each 10.50
Globe Patent Bolted Garden Barrow	per doz., 42.50.
Box 30 by 24 by 12 deep, wood wheel	

Capita Patent Barrows

With Iron Tray, A, per doz.	\$39.00
" B,	42.00

The Leader Iron and Steel Barrows.

Gas-pipe Legs and Handles in one price.

No. 1 Tray of 16 inch, capacity 3 cu. ft. of earth, each	\$12.
No. 2 " " " " " " " " " " " "	15
or 250 lbs. of coal	15
3 Galvanized 18 iron, capacity same as No. 2	15

Whiffletree.

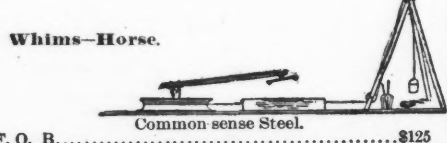


Willson spring (Jeffery Manufacturing Company).

No.	Single.	Double.
No. 1, 34 or 36 inches long	\$1.25	\$2.50
No. 2, " " "	1.40	2.75
No. 3, " " "	1.50	3.00
No. 4, " " "	1.65	3.25

Including either steel books or rings.
Discount, 45 and 5%.

Whims—Horse.



Common sense Steel.

F. O. B. \$125
Dis., 25%, in car lots.

Windmills.

A. J. CORCORAN.
Patent Storm Defying Pumping Mills.

Wheel, 8 1/2 ft.	Weight, 650 lbs.	Cubic feet, 55	Price, 95.00
12 " "	700 "	75	120.00
14 " "	900 "	95	150.00
16 " "	1,350 "	135	250.00
18 " "	1,850 "	195	375.00
20 " "	2,150 "	250	450.00
25 " "	5,400 lbs.	450	775.00
30 " "	9,500 lbs.	795	975.00

Boxing for export extra.

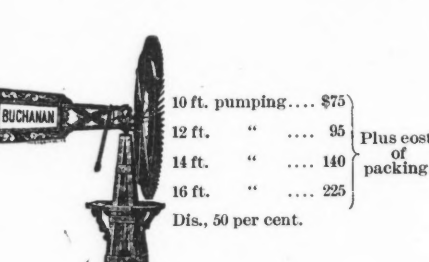
Corcoran Storm Defying Geared Wind mills for Driving Machinery.

Price includes upper set of Bessemer steel gears, one length of shaft.

Dia.	H. P.	Weight.	Cu. ft.	Price.
16 ft.	2 1/2	1,900 lbs.	200	\$400.00
20 " "	5	3,600 "	340	650.00
25 " "	6 1/2	5,400 "	355	850.00
30 " "	8	9,600 "	816	1,150.00
36 " "	10	12,000 "	856	1,500.00
40 " "	12	14,500 "	896	2,000.00
50 " "	30	16,500 "	956	3,500.00
60 " "	40	20,000 "	1,015	4,500.00

Dis., 25%.

BUCHANAN



10 ft. pumping	\$75
12 ft. " "	95
14 ft. " "	140
16 ft. " "	225

Plus east of packing.
Dis., 50 per cent.

EMMERT & LAMB.

"Stover" Pumping Windmills (no tower).

Size wheel.	Wt. packed.	Cubic ft.	Price.
10 ft.	650	50	\$80.00
12 ft.	750	58	100.00

"Zenith" Pumping Windmills (no tower).

10 ft.	650	48	85.00
12 ft.	750	57	110.00

Dis., 50 per cent.

Dis., 45 per cent.

Dis., 40 per cent.

"Zenith" Geared Windmill (no tower).

Prices include upper set of Gears and about 5 feet vertical extra heavy shaft in windmill head.

14 ft.	1,550	178	260.00
16 ft.	1,780	198	300.00
20 ft.	3,170	216	500.00

Dis., 40 per cent.

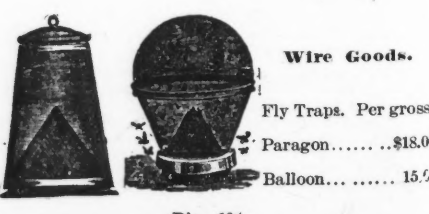
Wire Cloth.

Brass and Copper Wire Cloth.

No. Mesh.	Price per foot.	No. Mesh.	Price per foot.
2 from No. 10 wire	\$2.50	20 from No. 26 wire	\$2.80
3 " 11	2.50	22 " "	2.7
4 " 12	2.50	24 " "	2.8
5 " 13	2.50	30 " "	2.65
6 " 14	2.50	40 " "	2.70
8 " 16	2.50	50 " "	2.75
10 " 18	2.00	60 " "	2.78
12 " 19	2.00	70 " "	2.70
14 " 22	1.10	80 " "	2.90
16 " 24	.80	90 " "	2.90
18 " 25	.80		3.10

Dis., 60%.

Wire Goods.



Fly Traps. Per gross.

Paragon.....\$18.00

Balloon..... 15.50

Dis., 10%.