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THE dividends paid by mining companies of this country, which report their earnings, amounted to \$1,421,875 during October. The total for the first ten months of the year is \$14,095,990, an amount largely in excess of that paid in the same period of 1890.

THE importations of gold into this country from Europe continue and have already exceeded the \$20,000,000 mark. Up to October 31, the total imports of gold for the year amounted to \$22,789,025, while \$1,962,900 has come in during the first six days of this week. The imports of silver from January 1st to October 31st amounted to \$2,363,063. The exports of gold during the same period were \$75,758,351, and of silver \$16,049,456.

THE famous Nottingham colliery of the Lehigh and Wilkesbarre Coal Company, of which Mr. ELMER H. LAWALL is the efficient superintendent, has again beaten its own unrivaled record. During the month of October the colliery was operated 24 days 11 hours (10 hours constituting a day), and shipped 70,152 tons of coal. The average hoist per day was 1,818 mine cars. All of this coal came from one opening, and was hoisted a single car at a time. The hoisting apparatus consists of a pair of firstmotion engines, connected directly with the drum-shaft, the cylinders, being 22 in. in diameter, with 48-in. stroke. There are two spiral cone drums, each 4 ft. 1 in. long, 7 ft. in diameter at the small end, and 9 ft.

and the car (empty) 2,250 lbs. The capacity of the car is 86 cu. ft. The best previous record was made in June of this year, when 66,714 tons, an average of 1,305 cars per day, were hoisted in 23 days 31 hours. We think that this record surpasses that of any other colliery in this country, and reflects great credit upon Mr. LAWALL.

THE USE OF METRIC WEIGHTS AND MEASURES IN EXPORT TRADE.

In our issue of October 3d, we recalled to the attention of certain classes of manufacturers, engaged in the export trade, a matter which we have frequently emphasized in these columns, namely, the universal employment of metric weights and measures in South American countries, whose markets we are now endeavoring to control, and the pressing importance of furnishing to them machinery of metrical gauges and dimensions. It is evident that to secure a commanding position in the trade of any of these countries there must be a strict compliance with local customs and demands. That this has not been done, has been the burden of the complaints of our consular officers at foreign ports for many a year. The necessity in this particular point-metric weights and measures-is, however, so obvious that it should impress itself upon American manufacturers.

Apropos of this subject several recent reports of British consular officers are of interest. British consuls in countries as widely separated as Italy and Japan have thus warned the manufactarers and exporters of their own country that they were losing trade because they persisted in using, in their circulars and price lists. English weights and measures, which were almost unintelligible to the people of those countries, where the metric units are in general use; whereas, their French and German competitors, the former as a matter of course and the latter adapting themselves to the circumstances with the facility which has gained them such an immense export trade to all parts of the world, employ the metric system, which is familiar to everybody, and naturally attract cu-tom. Similar warnings are uttered by the British consuls at Alexandria and Cairo, in Egypt, who declare that British manufacturers are simply playing into the hands of their rivals by continuing the use of weights and measures which to many Egyptian merchants are no more intelligible than those of China.

THE ESSENCE OF THE FREE COINAGE QUESTION.

If the so-called demand for free coinage of silver be traced to its source it will be found to originate nearly always with a small number of silver producers, or a number of those advocates of "cheap money" who a few years ago worked up the greenback "boom" and who would now prefer an unlimited amount of greenbacks to silver because it would be "cheaper's money. It is true such disinterested advocates as the attorney of the infamous Comstock mill ring poses as the champion of "the people," and vould have his followers believe that the "people," and the workmen in articular, are sorely injured by not having a silver dollar which canno e worth more than the present silver dollar, for which they can obtain a ollar in gold, but which would be in name-and probably in name only -unlimited legal tender, as the present "demonetized" silver dollar is in act, because it is exchangeable into a gold dollar.

We maintain that if this country enacted free silver coinage its effect would be to lower the commercial value of silver bullion by removing he one great purchaser of silver for gold or its equivalent, the United States Government. Why, then, should silver producers advocate it?

Take, for instance, the Comstock mines, which produce a doré bullion containing nearly equal values at coining ratio of gold and silver; at least the whole of the silver would be absorbed in paying wages. With free coinage and legal tender silver the producer would receive in wages \$1.2929 per ounce for this silver, while now it brings considerably less than \$1.00. So it would be equivalent to a reduction of fully 30 per cent, in wages. The workman would get \$3.00 or \$4.00 a day of "good legal tender silver dollars," which would buy, perhaps, 20 per cent. less clothing or provisions than gold dollars would. The producer, instead of the whole people, that is, the Government, as at present, would make the seigniorage, and the workman would always lose, approximately, the difference between the coinage and bullion value of the silver, for no matter how much the law might say silver and gold dollars were of equal legal tender value, no one would give a gold dollar for a silver one; in fact, there would then be no gold dollars in circulation.

The Comstock mill ring, which controls nearly all the Comstock mines, would thus gain the entire difference between the market value of silver bullion in gold, which might be 80 or 90 cents an ounce, and the coinage nominal value, \$1.2929 per ounce, on all their silver; and if their silver alone would not pay the wages they would take their gold, buy silver bullion with it at 80 or 90 cents an ounce, and have it coined free into legal tender dollars, which they would pay to their workmen at \$1.2929 an ounce. Nor would the Comstock employers of labor be the only ones to do this, as experience has shown. As soon as any coin can be purchased at less than its face value and can be used at its nominal value in at the large end. The total hoist is 470 ft. The cage weighs 4,990 lbs. the payment of wages, it will be done. The poor and the wage earners, the farmers and laborers, are those who always lose in these cases ; the rich employer can always take care of himself.

The adoption of the free silver coinage would be equivalent to an enor mous reduction in wages throughout the country.

A NEW ARGUMENT AGAINST ORE DEPOSITION BY SUBLIMATION.

In the columns of the Salt Lake Tribune of September 15th (during the visit in that city of the party of geologists from the International Congress), Mr. R. H. TERHUNE calls attention to the observed distribution of silver in the Ontario mine, as an interesting confirmation of the present general rejection of the "sublimation theory" of ore deposition. Appealing to the familiar experience of lead smelters in the formation by sublimation of crusts of mixed sulphides in the cooler zones of the shaft furnace, Mr. TERHUNE says he has never met, in the literature of the subject, a recognition of the significance of the relative poverty of such crusts in silver. Even in smelting the richest galena of the West, the sublimate will always be relatively low in silver, though high in lead and zinc. He continues as follows :

zinc. He continues as follows: "We find further that the galena in the great Ontario fissure veln has shown no increase in silver contents in a descent of 800 ft. in the mine. Now, it has gecurred to me that if its metallic contents were a sublimate, a diminution of silver as we accend would be apparent, the silver sulphide being so infinitely less volatile than either blende or galena. We find throughout this depth, along the Ontario vein, the relation of zinc to lead very constant. "Having found, on the scale of a blast-furnace operation, that silver sulphide is but slightly volatile, can we not safely conclude that in the grander but slower pro-cess of nature in vein formation, if the sublimate theory were correct, we would have the same impoverished galeua in cooler zones near the surface of the earth that we have in cooler zones of the blast furnace f"

In connection with this suggestive inquiry, one or two comments may be permitted.

1. In the first place, as Mr. TERHUNE himself remarks, the sublimation theory is no longer seriously advocated; so that this argument against it is superfluous. On the other hand, I do not understand that sublumation may not still be asserted, in some cases, to have taken part with other agencies in the deposition of metalliferous compounds.

2. As a general argument, Mr. TERHUNE's reasoning is open to the criticism that it would favor the notion of sublimation as the agency of deposition in silver mines in which the conditions of the Ontario are not reproduced, but the ore grows richer in silver as depth is increased.

3. But as applied to the Ontario and to similar mines, the argument rests upon an analogy which it may be worth while to examine more closely-namely, the analogy of the lead-smelting shaft furnace, in which the mixed sulphide ores are submitted in the smelting zone to a temperature not much higher than that of fusion, and certain portions of them, partly volatilized, partly only carried mechanically with the blast, are deposited on the walls, a very short distance above, as incrustations. The zone of fusion is very limited ; the diminution of heat, foot by foot, upward through the furnace is both regular and rapid; and the top, a few feet above the tnyères, is kept cool by the continual addition of fresh material. Moreover, the current of gases escaping into the flues carries with it a large amount of "fume," concerning which it is, I believe, an open question how much it carries as sublimed vapor, and how much as suspended dust.

Now these conditions cannot be positively assumed as paralleled in the Ontario or any other fissure vein. In the first place, if we assume the fissure to represent a furnace, we are not sure that the heat was greatest at the bottom, and diminished regularly to the top. Nor do we know where the top was. The outcrop of the vein, as we find it, is usually thonsands of feet below the former surface, and we are not led to believe that the vein was formed subsequent to this denudation. There may have been along the immense column thus comprised, "lakes of fusion," local centers of excessive heat, and consequent re-sublimations and re-depositions many. The whole of the Ontario mine as now exposed may have been in a single zone of a temperature sufficiently high to volatilize all sulphides, ob literating the differences that exist among them at lower temperatures; and the cooling agency which subsequently solidified them may have been powerful enough to do its work in the same indiscriminate fashion. But this is not to be understood as an argument in favor of the theory of sublimation. There are other considerations which negative that theory in its exclusive form. But it seems to me that neither proof nor disproof can be drawn directly from the present ore distribution, for the fundamental reason that, however the different minerals were first deposited, they have been subjected to such processes of solfataric action, solution leaching and re-distribution as to mask the original process entirely.

Some of the suggestions I have made bear upon the question asked by MR. TERHUNE in the same article concerning another matter. Namely he inquires, with reference to the mines in the Alta district :

If waters highly charged with carbonic acid have been the agency which created the great ore cavities of this region in limestone, how deep is it rational to explore for similar great deposits *l*. In other words, how deep could carbonated waters pen-etrate before being neutralized and robbed of their erosive power *l*. The district has been rich in examples of extensive oxidation; great masses of iron disulphide hav-ing been completely converted into peroxide of iron.

Since, with our present knowledge, we attribute both oxidizing and carbonating effects to surface waters only, it seems clear that the creation of cavities in limestone might be looked for at least at any depth where oxidized pyrites were found. But to the question, "How deep?" a definite answer would involve some knowledge of two factors, both as yet undetermined-the amount of denudation which has taken place, and the amount of elevation (or, in some places, subsidence) which has accompanied or succeeded it. The present surface is not a base-line from which we can make any measurements as to the range of ancient processes of change.

Finally, we are still largely in the dark as to the real age of most of our mineral deposits. The age of the country rock inclosing them is a very different thing. Apart from intercalated beds, clearly laid down in the order of their position, we can only say that ore deposits are later in origin than the inclosing rocks ; but how much later, we do not know. There is some reason to believe that most of them are comparatively recent-that is, not older than the Tertiary-as to their present individuality. But out of what still older deposits they may have been re-formed it would be difficult to say. Even the Tertiary and Quaternary periods witnessed such changes of continental level, climate, and volcanic activity that we cannot easily reconstruct for a given ore deposit the probable conditions of its formation. And the attempt to generalize in any way, about the behavior of ore deposits in depth-meaning thereby depth below the present surface-seems hopelessly premature. R. W. R.

BOOKS RECEIVED.

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

to Make Inventions; or, Inventing as a Science and an Art. A prac-tical guide for inventors. By Edward P. Thompson, M. E. 161 pages. Published by D. Van Nostrand Co., New York, 1891.

CORRESPONDENCE

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

The Boston & Montana Consolidated Copper and Silver Mining Company

The Boston & Montana Consolidated Copper and Silver Mining Company. EDITOR ENGINEERING AND MINING JOURNAL: SIR: In the ENGINEERING AND MINING JOURNAL of October 10th, 1891, you published a report of this company for the year ending June 30th. 1891. The company states that the average cost of producing a pound of refined copper during the year was 9.997 cents. It seems to me, however, that one very important item has been omitted from the total, *i.e.*, the refined copper during the year was 9.997 cents. It seems to me, however, that one very important item has been omitted from the total, *i.e.*, the annual redemption of bonds and the annual interest on the bonded debt, which together amount to \$251,359.75, or $_{100}^{94}$ cents per pound, making the total cost of the copper contained in a 56% matte 10_{100}^{-16} cents per pound. I may point but here that the expression used in the report of the company, "refined copper," is absolutely out of place, and must have a tendency to mislead stockholders. The copper contained in mattes or ores can only be called "refined " after it has gone through a process of refining and has assumed the shape of ingots, etc. The tolls of re-fining this kind of matte are about 14 cents per pound, making it plain that the actual cost of producing refined copper ly this company is prac-tically 12_{100}^{-66} cents. Excluding the construction expenses at Great Falls, amounting to \$462.980.79, last year, from the cost of producing copper, the total eost per pound of copper in England, viz., £46 10s., a parity of 94 eents per pound. It should be further stated that the copper product was sold last year at 11 cents per pound, which is to be understood as the price for the copper in the matte and not for refined copper. The sale is a good one and very creditable to the management or its agents. The balance sheet for last year, if properly made out, will demonstrate a *deficil* of \$473.814, oceasioned by the payment of dividends amounting

The balance sheet for last year, if properly made out, will demonstrate a *deficit* of \$473,314, occasioned by the payment of dividends amounting to \$625,000. I fail to see how they have been earned.

to \$020,000, I fail to see how they have been earned. I find the statements of assets and liabilities of the company for the year 1890-1991, using its own figures, to be as follows: 26,693,842 lbs. copper produced, costing \$2,101,313,59; construction expenses, \$567,814 70; redemption of bonds and interest, \$251,359.75; dividends paid, \$625,000; property bought, \$25,000; total, \$3,570,488.04; receipts for copper and silver were \$3,097,174.04, leaving a deficit of \$473,314. Even under these circumstances the directors properts have a dividend

Even under these circumstances the directors propose to pay a dividend \$125,000 next month, while at the same time the following official notice appears in the Boston papers:

The Boston & Montana company is preparing to send out a call for a meeting of shareholders December 22d, to authorize an issue of \$600,000 seven per cent. mort-gage bonds to fall due, \$100,000 in 1902, and each year up to 1907. The books will close November 26th and open December 23d. The call for the meeting covers 70 pages, under the requirement of the Montana law, that the property to be mortgaged shall be described. A clause in the call says: "The principal purpose for which the pro-ceels of the proposed bonds are to be used is the purchase and erection at Great Falls, Mont., of a complete electrolytic plant and appurtenances."

If my memory is correct, the last second mortgage of \$500,000, issued two years ago, and the 25,000 shares of stock issued several years ago, were to be used for the construction of the Great Falls smelting works, including the electrolytic plant.

I shall at some future time discuss the continuous issue of mortgage bonds, its bearing on the value of the property, and its danger to the shareholders.

For the present I would advise the directors to reduce in their annual reports the real estate account by taking off and charging to current ex-penses at least 10% of such real estate account. The Calumet & Hecla, for instance, charges the whole amount of real estate purchased toward running expenses and adds it to the cost price of its product. Q. E. D. NEW YORK, Oct. 29, 1891.

The Loot of the Comstock.

EDITOR ENGINEERING AND MINING JOURNAL: SIR: The yearly report of the Consolidated California & Virginia Min-ing Company is full of interest to those unfortunates who trusting to the "honesty" of the people in charge, have held their stock hoping for div-idends. The report is significantly free from information, and the reader of it will be forced to believe that it was written rather for concealment than for information. than for information.

than for information. The report says that the mine produced during the fiscal year 86,443 tons of ore, yielding \$1,752,776.03 gross; out of this regal sum the stock-holders of the mine have received the pitiful sum of \$216,000, which is $12\cdot32$ % of the gross output, leaving 87.68% to pay the milling, mining, etc. The disbursements for the year were as follows: Discount on silver, \$287,463,90; paid Comstock Tunnel Company, \$181,572.75; dividends, \$216,000; extracting 86,443 tons of ore, \$405,343.14; milling ore, \$565,563.27; balance on hand, \$98,892.31; total, \$1,754,835.37, (on hand October 1st, 1800, \$81,635,39) 1890. \$1.635.39).

The yield of silver as reported is \$922,853.69, and the discount as given above is \$287,468.90, which is 31.15% of the silver yield leaving \$0.8902 per

above is \$287,468.90, which is $31\cdot15\%$ of the silver yield leaving \$0.8902 per ounce for the company. The battery assay of the rock for the year averaged \$26.04, and the yield per ton \$20.23, which is $77\cdot67\%$ of the assay value. It has been claimed that the assay of the rock is wet, and that the assay of the metal is dry, and as this means a difference of 10%, the actual yield is $87\cdot67\%$ of the battery assay. (Under the contract with J. P. Jones from 88% to 93% of the battery assay was saved, equal under the above compar-ison to from 98% to 103% of the pulp.) The cost of extracting the ore in-cludes all prospecting, dead work, timbers. supplies, etc., done in and used in the mine for the year, and was \$4.69 per ton. THE COST OF MILL-ING THIS ROCK AFTER IT REACHED THE SURFACE, WAS \$7 PER TON. The net receipts from all sources for the year are given as \$1,306,408.86, and out of this amount \$565,563.27, or $43\cdot30\%$ went to the mill owners. Taking the Jones contract as an example of what can be done, the profit

and out of this amount \$565,363.27, or 43'30% went to the mill owners. Taking the Jones contract as an example of what can be done, the profit of the mill owners on Consolidated California & Virginia ore for the year would be as follows: Received for milling, \$565,563.27; concentrates run through the little joker or left in the slime ponds (estimated), \$502,500; total, \$1.068,063.27. From the report we learn that the rock was crushed by the Eureka and Morgan mills. Who owns these mills? The Comstock Mill Company.

From the report we learn that the rock was crushed by the Eureka and Morgan mills. Who owns these mills? The Comstock Mill Company. Who owns the Comstock Mill Company? John W. Mackay, James L. Flood and John P. Jones (Senator). Who controls the Consolidated Cali-fornia & Virginia mines? John W. Mackay and James L. Food. Who is benefited by the returns from the little joker and high-priced milling? John W. Mackay, James L. Flood and John P. Jones (Senator). At the election held at the time when this "report" was heard, not a share of stock was voted outside of the five share pieces standing in the "directors" names. It was all done by proxies; the same officers were elected in the same old farcical style, the same old reports were made and duly swallowed by the dummies, and the same old steal goes merrily on for another year.

for another year

for another year. If any stockholder of the company can get any comfort out of the way this mine is run we wish him joy. We will say, however, that as a gen-eral thing, when mining properties on the Pacific Coast are managed in this way by the ring it is usually done for the purpose of freezing out stockholders. The better the property the more rascally the management

In the case of the Consolidated California & Virginia the past year the stockholders of the mine got 16:53% of the net receipts, while the stock-holders of the mills that crush the rock got 43:30%. For whose benefit is this property worked? For the mine shareholders or for the mill shareholders

holders? You have repeatedly asserted in your columns that there existed an or-ganized gang of thieves on the Comstock who made it a business to plunder the mines through a nefarious mill system. Do not these figures prove this statement? The owners of the mill company are the managers of the mine. The stockholders of the mill companies are millionaires, respected citizens and "senators." The stockholders of the mining com-pany are paupers. "What are they going to do about it?" J. H. TINGMAN, J. H. TINGMAN.

Secretary, Mining Stock Association. SAN FRANCISCO. Oct. 22, 1891.

The Free Coinage Discussion; Views of Mr. Geo. W. Cheyney.

EDITOR ENGINEERING AND MINING JOURNAL:

SRE Will you grant me space in your columns for a few comments on a letter by J. Whidden Graham, to the ENGINEERING AND MINING JOUR-NAL, under date of August 21st, 1891. In his definition of free coinage Mr. Graham makes the not uncommon mistake of confusing the terms bull-ion and money, the silver in, and out of, the dollar, the market value of the metal measured in gold, and the coin value of the same quantity when stamped by the Government. As he "avoids statistics and historical data" it would be useless to refer to past periods when conditions were reversed, and gold was the change bullion metal. and gold was the cheaper bullion metal. I am convinced that he is in error when he says "the advocates of free

I am convinced that he is in error when he says "the advocates of free coinage . . . wish the Government to raise the price of their product by declaring that a piece of metal, now bringing but 80 cents, shall be equal in value to a certain quantity of gold, that quantity now being termed a dollar." To the contrary, the advocates of free coinage desire, and are working to an end, exactly the reverse. In this connection may I suggest that, in such an argument it would be but fair to admit, the now evident fact, that for every advocate of free coinage who produces silver there are many thousands who do not, and much more dignified to meet the argument on its merits than to indulge in insinuations against the motives of its supporters. The Government now buys a piece of silver metal at—for argument I will admit. 80 cents of gold value, and by stamping it "one dolnar" declares it money of that value. To this plan the free coinage advocate objects as strenuously as Mr. Graham, believing it to be directly opposed to the principle of bimetalism, under which the Government would not *buy* a grain of metal, but which would, notwithstaming Mr. Graham's denial, place the coinage of silver upon exactly the same plane as that of gold. Under it there could be no "forced coinage," Just as much would be coined as offered, no less, no more, and all coin would be returned to the owner of the bullion, to be by him disbursed in

the channels of trade. There would be no difference in the dollar, it would be the same we have had since 1792, and those who will receive it Mr Graham's first reason is "Free coinage of silver is undesirable be

cause it is class legislation in its worst form." Gold, always since the inauguration of our Government, has had "free courses".

Gold, always since the inauguration of our Government, has had "free coinage." Does the same argument apply? Second reason: "Free silver coinage would bring about no improve-ment in the condition of the farmers and working men." Many thousand thinkers, writers and workers who have not followed Mr. Graham's example in "avoiding statistics and historical data," have, by studying them carefully, reached a conclusion and a helief radically opposed to such a bare assertion. "The teachings of the orthodox economists" are sadly disturbed by these same "statistics," but the masses have reached a point where they much prefer facts to dogma, and Mr. Graham can hardly have studied "historical data" to much purpose to use the words "im-pudent fallacy" in describing the opinion and belief of the patriot fathers, the framers of the Constitution, Washington, Hamilton, Jefferson, Clay, Webster, and the long line of economists and statesmen before 1873. Third reason: Free coinage would be unjust because it proposes that

Webster, and the long line of economists and statesmen before 1873. Third reason: Free coinage would be unjust because it proposes that debts. freely contracted to be paid in gold, might be paid in either silver or gold. I should like to ask Mr. Graham, if he believes that any man ever *freely* contracted to pay a debt in gold, whether it is not always un-der compulsion of a greater or less degree, measured by the necessity of the case.⁴ Also, if such an option to the debtor is unjust to the creditor, what is the status, in its relation to justice, of the dictum that compelled the debtor to pay an obligation, contracted on a gold or silver basis, in gold alone? All debts, public and private, existing in 1873 had certainly been contracted on such a basis. Mr. Graham says it " would be class legislation, violating the common

Mr. Graham says it " would be class legislation, violating the common principles of honesty, by allowing debtors to repudiate 20% to 30% of their obligations." Would not 'the same argument describe the legislation which permitted creditors to add 20% to 30% to their obligations? Would not the inference from his argument be that if free coinage of silver will reduce the debtor's obligations 20% to 30%, did not the deprivation of silver of the debt paying attribute enhance existing obligations to a proportion-ate degree, and has he not himself proven one of the farmers' arguments, that free coinage of silver will help to relieve them of their crushing in-cubus of debts, unjustly increased by the demonetization of silver? In his fifth reason, he says: "The principal argument in behalf of free coinage is" that it will increase the circulation of currency, but that "as the Government has no possible means of finding what amount of money

In his fifth reason, he says: "The principal argument in behalf of free coinage is" that it will increase the circulation of currency, but that "as the Government has no possible means of finding what amount of money is needed" free coinage is therefore undesirable. As the "orthodox econo-mist's," and apparently the Government's plan of solving that problem is to continually reduce the volume of circulation, and as Mr. Graham strongly deprecates "meddling with the currency with a view of altering the relation of debtor and creditor" and admits that the "real strength of the free silver agitation lies in the general feeling of business depression, increasing poverty, and growing discontent among farmers and the work-ing classes generally," would it be unwise legislation to permit the people themselves to solve the problem, and, by re-establishing free coinage of sorption, and needs of circulation? I should like to ask Mr. Graham if the ultimate test of the value of money is not its power to cancel a debt. If the true reason for the op-position to silver as money is not that a debt is greater in proportion as the power of the debtor to cancel his obligation is lessend, and if all debts are not greater when but gold can be used to cancel them. If silver were a legal tender for the payment of debt, would there be an opponent to its free coinage, and would it not instantly be of the same value as any other money with the same attributes? TOMBSTONE, Ariz, October 12th, 1891.

Florida Phosphates and their Economic Use as Agricultural Manures.

Florida Phosphates and their Economic Use as Agricultural Manures. EDITOR ENGINEERING AND MINING JOURNAL: SIR: At the present moment we have no standard book or books on one of the most important branches of agricultural chemistry. I have hunted in vain through the libraries of England and this country for accounts of reliable and original research as to the presence, geologi-cal distribution and origin of phosphate of lime. The literature on this subject consists almost entirely of scattered papers published in the pro-ceedings of various scientific societies and technical journals, and although the chemical reactions have been deeply studied I am sure that the advertisement of the Scientific Publishing Company stating that Dr. Francis Wyatt has written an exhaustive treatise on the "Phosphates of America" will be welcomed, not only by the scientific world, but by the America" will be welcomed, not only by the scientific world, but by the agricultural.

While a standard work like this is in the press it may seem a work of While a standard work like this is in the press it may seem a work of supererogation to comment on statements published with reference to phosphates. Only during the past week, owing to my absence from the United States, has my attention been drawn to an article in the ENGI-NEERING AND MINING JOURNAL of September 26th, 1891, headed "Florida Pebble and Nodular Phosphate of Lime," by Prof. E. T. Cox, to which is attached as a postscript a letter from that eminent chemist, Dr. Henry Wurtz. There are some statements in Professor Cox's paper which seem to be corroborated by Dr. Wurtz which should not pass unchallenged, as the isrue are article both to the chemical manufacturer and the agriculturthe issues are vital both to the chemical manufacturer and the agriculturist.

ist. Through the courtesy of Prof E. T. Cox, I am also in possession of his paper published in the proceedings of the American Association for the Advancement of Science, vol. xxxix, 1890, entitled "Floridite: a New Variety of Phosphate of Lime." These two papers it is not my intention to discuss or to criticize, more particularly as Dr. Wyatt's book will be so soon in the hands of every one interested in the subject. The cachet, however, given by Dr. Wurtz to a statement in Prof. Cox's papers makes it worthy of notice, and as it seems misleading it should not pass unchal-lenged

All will approve Dr. Wurtz' suggestion to call hard rock-phosphate (although an indeterminate mineral) *floridalite* rather than *floridite* derived according to Professor Cox from "Florida and ites—a stone." but before naming a mineral with a specific name it would seem more sci-entific to determine more exactly its mineralogical attributes. Dr. Wurtz is accepted as a chemical authority, and it is courteous, to say the least of

it, that he should think that "chemists" would accept his test rigidly apit, that he should think that "chemists" would accept his *test rigidly applied* and should write apparently solemnly the following: "The simplest preliminary criterion will be found in the suction of a bubble or two of the evolved gas into the mouth. SiF₄ is thus emphatically distinguishable from CO (pure). Any skeptical chemist will be readily convinced by the removal of the skin from his tongue if much SiF₄ be present. The odor of HF (produced by interaction with H₂ O) is also readily recogniz able after familiarity therewith." The last sentence in the article by Professor Cox reads as follows: "It is, in my opinion, far more economical for the farmer to apply to his land the phosphate of lime in the form of a fine powder than to apply the acid phosphate. In this case, the more phosphate of alumina it con-

the acid phosphate. In this case, the nore phosphate of alumina it con-tains the better, as it will be more readily assimilated by the plants than reverted phosphoric acid, which results from the application of super-phosphates to soils containing iron and alumina."

phosphates to soils containing iron and alumina." Dr. Wurtz argues that mechanical communition is as effective as chem-ical decomposition in rendering the phosphoric acid in phosphate of line available as plant food, and that alumina instead of being a detriment is an absolute benefit. It seems curious that it should be reserved for Dr. Wurtz, although he states that the mass of remarkable and significant chemical facts in the literature of soils and fertilizers, has surprised him, and that apparently no master mind has yet reduced them to any available system of soil-science, to discover, together with Professor Cox, this curious property of alumina allied with phosphate of lime, al though for at least 50 years the most prominent of English, German, French and American chemists have made exhaustive series of experi-ments not only in the laboratory but in the field which seems to prove the reverse. Dr. Wurtz vagnely states that certain facts well known to every chemist were published at certain times by various scientific men, and then states authoritatively that " It is undeniable that great mechan-ical comminution has been proved by numerous experiments to be al-most, if not quite, as efficient as chemical solution, in the promotion of the absorption of phosphates by plant radicles." If this is undeniable the great industry of chemical manure manufac-ture is at an end and even the McKinley Tariff cannot warm this "infant industry" into vital existence and the evidence not only of scientists and practical agriculturists of all civilized nations is worth nothing; but acid phosphate manufacturers may immediately close their works and farmers

phosphate manufacturers may immediately close their works and farmers and phosphate miners, especially those of the "baser sort," take heart of

grace. I do not seriously criticize Dr. Wurtz letter at length as it does not ap-pear as if it were written for publication, but looking at the extremely important statement made by Dr. Wurtz it is to be hoped that he will explain more fully, not only his statement but his experimental data. In this letter I have not attempted to deal with the vexed question as to the exact chemical reaction that takes place when a plant absorbs to

In this letter I have not attempted to deal with the vexed question as to the exact chemical reaction that takes place when a plant absorbs to itself the phosphoric acid present in the soil or applied as a manure in any shape, but without further definite proof from Dr. Wurtz and Prof. Cox. I am of opinion that acid phosphate manufacturers need not be alarmed and that farmers whose soil is lacking in phosphoric acid had better deal with them and "bear the ills they have than fly to others that they wot not off." WALTER B. M. DAVIDSON, A. R. S. M. not off." New York, Oct. 21.

THE STRAIGHT LINE INDICATOR.

The peculiarity of this indicator lies in the simplicity of its parallel motion and in the auxiliary spring by which it is held up to one working surface, thus preventing the appearance of any backlash. The guiding mechanism for the parallel motion is placed as near the fulcrum as pos-sible, to obviate the great amount of movement as found in other indi-cators, and to where the momentum will be the least. The straight line motion in this indicator is attained by two rocking surfaces, one attached to an upright, and the other permanently fixed on the pencil arm. The one on the upright is made circular, and the other of such form that when the lever rises and falls these two guiding surfaces roll together for a very slight distance and cause the pencil to move in a perfectly straight line throughout its full range. All that is required of the auxiliary spring is to give sufficient tension to keep the guiding surfaces in contact while



the instrument is running. This may be determined by turning on steam while the drum is stationary and noting if the pencil traverses the same vertical line. The auxil ary spring is intended also to take up all play that may appear in the joints and oblige the pencil to always follow the same path. Messis. Hine & Robertson, of New York, who are intro-ducing the indicator, state that the first one made was subjected to the test of being run continuously nine hours a day on a high speed engine for over a month, and showed no appreciable wear; what there may have been was taken up by the auxiliary spring, and the instrument improved, if anything, by this hard usage. The moving parts of the instrument are of the lightest possible weight, and that weight is disposed of so near the fulcrum that its little movement makes the momentum very slight and specially adapts it for the highest speeds.

APPARATUS FOR 'THE RAPID DETERMINATION OF CARBONIC DIOXIDE IN FURNACE GASES.

An apparatus for the rapid determination of carbon dioxide in furnace gases is described in *Thonind. Zeit.* 1891, 15, pp. 539-540. The ap-paratus consists of a vessel *a* having a capacity of 100 cc. and provided with an inlet and outlet tube. A graduated tube *c*, divided into cc., and fitted with a stop cock, is ground into *a* at *b*. The stopper *b* is bored at the side, so that communication between the vessel a and its side tubes can be made or closed. The vessel a is filled with the furnace gas to be tested by drawing it in through the tube e by means of the **u**bber ball g in the usual way. The



graduated tube c is filled with caustic soda solution of specific gravity 1.25 graduated tube c is filled with caustic soda solution of specific gravity 1.25 to the mark f. A blank experiment is first made by filling the vessel a with air free from carbon dioxide, closing the openings of the side tubes by turning the stopper b and opening the cock communicating with c. The liquid in c falls to a certain point, which is made the zero of the instrument. Correction for temperature and pressure is neglected, as the instrument is only intended for rough technical purposes. In making a determination, the vessel a having been filled with the gas to be tested, the soda solution is allowed to flow in until absorption of carbon dioxide is complete and no more can enter. The volume of soda solution used then gives at once the percentage of carbon dioxide in the sample. Determinations made by this instrument are said to agree well with those made by more accurate apparatus.

with those made by more accurate apparatus.

THE LANGDON TUYERE.

Mr. N. M. Lungdon, furnace manager of the Port Henry Furnace Com-pany, Port Henry, N. Y., has been using for over a year, with satisfactory results, a tuyère designed by him, the principal features of which will be readily understood by reference to the accompanying section, for which we are indebted to the *Iron Age*. Both the tuyère and the breast are constructed in substantially the same manner. It consists of a butt and nose joined together in the manner indicated, either by soldering or braz-ing or by bolts. When it is desirable an extension piece, consisting of concentric shells held apart by bridges, is interposed between the butt



and the nose. Mr. Langdon states that he has used both the short and the and the nose. Mr. Langdon states that he has used both the short and the extension tuyère. Thus far the nose piece and the extension or interme-diary piece only have been new. He has used the butts of worn-out tuyères by cutting off the small end and putting on a new nose. He has not had a sectional breast in use yet, but is now making the pattern for a tuyère-breast nose piece, and will shortly have a sectional breast at work. A sectional tuyère wholly new costs \$1 to \$1.50 more than an ordinary tuyêre, exclusive of royalty. When it is destroyed at the nose it can be repaired with a new piece at a saving of about 50% on a small tuyère. The economy increases with the weight, and on a breast weighing 140 lbs. to 150 lbs. would amount to 75% to 80%.

Identification of Arsenic and Antimony.—The method of separat-ing arsenic and antimony by parsing H_2S and then dry HCl gas through the tubes in which the metals have been deposited as in Marsh's test, has been modified by James T. Anderson, of Auburn, Ala., so as to be conveniently applied in cases where it is desired to identify as arsenic or antimony metallic deposits on porcelain. A drop of ammonium sulphide is added to the deposit, which converts the metal into the sulphide. Allow the excess of ammonium sulphide to evaporate, and with an ordinary mouth-blowpipe blow across the open mouth of a bottle containing concentrated HCl, directing the stream of gas into the porcelain dish upon the sulphide. If it be antimony sul-phide, it will disappear entirely, while arsenic sulphide will remain un-affected in appearance.

PROMINENT MEN IN THE MINING INDUSTRY

Thomas Sterry Hunt.

The subject of this sketch, Thomas Sterry Hunt, was born in Norwich, Conn., on September 5th, 1826, of an old New England family. His an-cestor, William Hunt, was one of the founders of Concord, Mass., in 1635. His maternal grandfather, Consider Sterry, of Norwich, Conn., was a civil-engineer and mathematician, and was the author of well-known text-books of arithmetic and algebra, published 100 years since, in con-nection with his brother, Rev. John Sterry, whose descendants have made the name honorable in our city to-day. Mr. Hunt was destined for the profession of medicine, but after preliminary studies, his love for chemis-try and mineralogy led him, early in 1845. to become a special student, and afterward assistant to Prof. Benjamin Silliman in Yale College. Two years later be was appointed chemist and mineralogist to the geological survey of Canada (just then organized under Mr., afterward Sir, W. E. Logan), a position which he held for more than twenty-five years, till his resignation in 1872. His work in that capacity is well known; to him were due the investigations of the petroleum, the salt, the phosphates and Logan), a position which he held for more than twenty-live years, till his resignation in 1872. His work in that capacity is well known; to him were due the investigations of the petroleum, the salt, the phosphates and the iron and copper ores of Canada; while the literary work of preparing the reports of the geological survey was his. He it was who made the first studies of the lithology and mineralogy of the crystalline rocks of the Ottawa and the upper lakes. For many years he was obliged by circum-stances to devote much of his time to field-work in geology, and to the administrative during of the crystalline rocks of the

stances to devote much of his time to held-work in geology, and to the administrative duties of the survey. To Dr. Hunt we owe the first systematic attempt ever made to subdi-vide and classify geologically the stratiform crystalline rocks; a work to which he has brought not only his studies throughout Canada and the United States, but those made during repeated visits to the British Islands and to continental Europe. To him we are indebted for the distinctions

Hunt in numerous papers, and is given more at ength in his Systematic Mineralogy, just published (1891). Dr. Hunt has done much work as a teacher and a lecturer. One of the

Dr. Hunt has done much work as a teacher and a lecturer. One of the organizers of Laval University at Quebec, he was there professor of chemistry from 1856 to 1862, where he delivered annual courses of lec-tures in French, and where he is still honorary professor. He was also for three or four years lecturer in McGill University, Montreal, and was pro-fessor of geology at the Massachusetts Institute of Technology, 1872–1878. Among his academic titles are those of M.A., Harvard; Sc. D., Laval : LL. D., McGill, and finally LL. D., Cambridge, England. A fellow of the Royal Society of London since 1859, he is a member of a large number of other societies, both American and foreign. A member of a large number of other societies, both American and foreign. A member of ur National Academy of Sciences since 1873, he has been president of the American Association for the Advancement of Science, and of the American Chemical Society. He was one of the founders, and the first president by election, of the Royal Society of Canada. One of the organizers of the Internaof Mining Engineers, and twice president of the American Chemican Society. He was one of the founders, and the first president by election, of the Royal Society of Canada. One of the organizers of the Interna-tional Geological Congress, he was its first secretary, and was a vice-president at the congresses of Paris, 1878, Bologna, 1881, and London, 1888. In connection with the great industrial exhibitions Dr. Hunt was member of the international juries at Paris in 1855 and 1867, and at our Centennial exhibition in 1876. He is an officer of the French order of the Legion of Honor, and officer of the Italian order of St. Mauritius and St. Legrane Lazarus

Lazarus. Since 1878 Dr. Hunt has retired from public professional life, though much consulted on points of mineralogy, metallurgy and mining-law. Within the past three years his health has been impaired, and he has at times been very ill; but he is now enabled to resume his accustomed liter-ary activity at his present home, the Park Avenue Hotel, New York. During his long career Dr. Hunt has known most of the men eminent in science. Not to mention the living, there may be named among the



THOMAS STERRY HUNT.

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And the designations of Laurentian. Norian, Huronian, Montalban, Takor and Keweenian, all of which have now passed into the literature of geology. In connection with these studies he has attempted the distribution of the grant questions of the origin and the succession of the grant questions of the origin and the succession of the grant questions of the origin and the succession of the grant questions of the origin and the succession of the grant questions of the origin and the metasomatic, all of which have now passed into the literature or plutonic, the metamorphic and the metasomatic, all of which have now non-work and as violating them the origin the succession of the grant questions, but previously solidified from the center of crystalline rocks. According to this, the source of the various group of crystalline rocks. According to this, the source of the various group for crystalline rocks. According to the surface during successive and so was the superficient of the arthor of the arthor of the arthor of the arthor of the grant of the surface during successive and provide to the origin and the uncertain provide the distribution to the scientific history of the last half century. The descent of modern mineral springs, the element is provide to resonant the distribution of the arthor of the arthor or the the same time of the distribution to the scientific history of the last half century. The distribution to the scientific history of the last half century. The distribution to the scientific history of the last half century. The distribution of the arthor is nongues to struce the scientific history of the last half century. The origin labeled is the struce or solid interve or the basis of a solid interve with the distribution to the scientific history of the last half century. The origin and struce the scientific history of the last half century. The distribution of the arthor is not the same time of the scientific history the last of the struce and the compary of the struce the

composition of the stratuorm crystantic rock. logic ages." Dr. Hunt's contributions to general chemistry are numerous and im-portant, aiming at nothing less than a complete system of chemical the-ory, the outcome of wh ch, after nearly forty years of thought, and the successive publication of many papers, from 1848, was the production in 1887 of a volume entitled *A New Basis for Chemistry*, which appeared in a second and augmented edition in 1888. This was translated into French by Professor Spring, of Liège, and published in Paris in 1889, as *Un Nouveau Système Chimique*. The practical application of these new views to the science of mineralogy has been partially set forth by Dr.

STEEL MAKING IN THE UNITED STATES BEFORE' 1810.*

By William F. Durfee

In 1728 Samuel Higley, of Symsbury, and Joseph Dewey, of Hebron, in Hartford County, Conn., represented to the Legislature that the said Higley had, "with great pains and cost, found out and obtained a curious Higley had, art by which to convert, change, or transmute common iron into good steel sufficient for any use, and was the first that ever performed such an operation in America." Swank gives on the authority of Mr. Charles J. Hoadly, Librarian of the Connecticut State Library, a certificate, signed by Timothy Phelps and John Drake, blacksmiths, which states that, in June, 1725, Mr. Higley obtained from the subscribers several pieces of iron. so shaped that they could be known again, and that a few days later "he brought the same pieces which we let him have, and we proved them and found them good steel, which was the first steel that ever was made

and found them good steel, which was the birst steer that ever was made in this country that we ever saw or heard of." A patent was granted Higley and Dewey for ten years, provided "the petitioners improve the art to any good and reasonable perfection within two years from the date of this act." They do not appear to have done this, or to have continued the business of making steel.

done this, or to have continued the business of making steel. In 1740 the Connecticut Legislature granted to Messrs. Fitch, Walker & Wyllvs "the sole privilege of making steel for the term of fifteen years upon this condition, that they should in the space of two years make half a ton of steel:" this condition not having been complied with, the privilege was extended to 1744, before which time Aaron Eliot and Ichabod Miller certified that more than half a ton of steel had been made at the furnace in Symsbury.

Some time before 1750 a steel furnace was in operation at Killing-worth. in Middlesex County, Connecticut. This furnace (says Swank) was owned by Aaron Eliot, and in it he succeeded, in 1761, in converting into good steel a bar of iron, made in a blomary fire from magnetic sand by his father, the Rev. Jared Eliot.

by his father, the Rev. Jared Eliot. It appears from returns made by the Colonial Governors in 1750, in con-formity with the Act of Parliament, that Massachusetts, Connecticut and New Jersey had each one steel furnace, and Pennsylvania two; both of these were in Philadelphia, owned by William Branson and Stephen Paschal, respectively. Branson stated in regard to his steel that "the sort he made, which was blistered steel, ten tons would be ten years in selling." Paschal's furnace was built in the 1747, on a lot at the northwest corner of Eighth and Walnut Streets; this furnace in 1787 was owned by Nancarrow & Matlock, when it was visited in that year by General Wash-ington, and said to have heen "the largest and best in America." White-head Humphrevs, who in 1770 was the owner of a steel furnace on Seventh street. Philadelphia, and made steel for the Continental arrow was treau flumphrevs, who in 1770 was the owner of a steel furnace on Seventh street. Philadelphia, and made steel for the Continental army, was granted in 1786, by the Legislature of Pennsylvania, a loan of £300 for five years, to aid him in making steel from bar iron "as good as in Eng-land."

In 1777 Rhode Island "gave £60 per gross ton for good German steel made within the State." The Legislature of Massachusetts granted in 1778, to the Rev. Daniel Little. "£450, to aid in erecting at Wells [in the District of Maine] a building 35×25 ft., to be used in manufacturing steel.

steel." In 1787 the manufacture of steel was commenced in the town of Easton, Massachusetts, by Eliphalet Leonard, and we are told by Bishop that "the article was made in considerable amount, and cheaper than imported steel." About 1797 steel was made at Canton, in the same State, "from crude iron, by the German process." Peter Townsend, the proprietor of the Sterling Iron Works, in New York, made in 1776 the first steel produced in that province and his son Pater Townsend. In State first steel produced in that province, and his son Peter Townsend, Jr., is said to have made, at the same works, in 1810, steel "of as good quality for the manufacture of edged tools as that made from Dannemora iron." Alexander Hamilton, in a report dated December 5th. 1791, savs, "Steel

said to have made, at the same works, in 1810, steel " of as good quality for the manufacture of edged tools as that made from Dannemora iron." Alexander Hamilton, in a report dated December 5th. 1791, savs, "Steel is a branch which has already made considerable progress, and it is ascer-tained that some new enterprises on a more extensive scale have been lately set on foot." In the same year Tench Coxe, in replying to Lord Sheffield's." Observations on the Commerce of the United States" stated that "about one-half of the steel consumed in the United States is home-made, and new furnaces are building at this moment." Swank states that "in 1805 there were two steel furnaces in Pennsyl-vania which produced annually 150 tons of steel. One of these was in Philadelphia County. In 1810 there was produced in the whole country 917 tons of steel. of which Pennsylvania produced 531 tons in five fur-naces. . . The remainder was produced in Massachusetts, Rhode Island, New Jersev, Virginia, and South Carolina: each State having one furnace. In 1813 there was a steel furnace at Pittsburg, owned by Tuper & McKowan, which was the first in that city." All the steel manufactured in America prior to the year 1810 was pro-duced either by what was called the "German method," which was con-ducted in a "hearth" similar to that used for a "blomary fire," or by the "cementation process." The "German steel" was made directly from the ore or a suitable quality of "pig iron" was used. The operation, when ore was employed, consisted in removing the oxy-gen, and then by appropriate manipulation, together with a regula-tion of the blast and heat, the iron was combined with carbon de-rived from the fuel to such a degree as to convert the metal into a mass of crude steel; this was carefully drawn under a light, quick-working hammer into bars about an inch square; six or eight pieces of these bars were made into a "pile," welded together, and drawn into smaller bars. This process, called "refining," as repeated a number of weldings a

All the early attempts to make steel in America were in the "German manner"; but it was soon discovered that the ores and pig irons available were not of a proper qualit, and attention was early directed toward the "cementation process," the details of which were fully described by Réaumur in 1722.

* From Popular Science Monthly, October, 1891,

The operation of making "cemented' or "blister" steel consisted essen-tially in packing bars of wrought iron in charcoal dust in long boxes or "pots" made of sandstone or fire-brick. These "pots" were covered as nearly air-tight as possible and subjected to a high degree of heat (not, however, sufficient to melt the bars of iron), which was regulated as to temperature and duration according to the contemplated use to be made of the steel. As a rule, the higher the temperature and the longer time it was kept up, the greater the degree of carburization of the bars in the "pots" and the harder the resulting steel. When the iron is packed in the charcoal, one or more bars are allowed to project through openings in one end of the "pots"; these bars are removed at proper intervals of time, and from their appearance when cold the progress of the operation is judged. When the process of "cementation" was finished, the furnace was allowed to cool, and, as soon as men could work therein, the metal was removed from the "pots," and it was found that it had undergone a great change; instead of having a smooth surface, it was covered with a large number of "blisters" of varying size and thickness (hence the name "blister steel"), and, although when put into the "pot" the metal was very fibrous and tough, it was found on removal to be very crystalline and brittle. These changes of structure and fracture were due to the absorp-tion of carbon from the charcoal dust in which the bars had been packed.

tion of carbon from the charcoal dust in which the bars had been packed. When steel was wanted of closer grain, firmer texture, and more re-liable character, a certain number of bars of this "blister steel" were made into a bundle or "fagot" and welded together, and the resulting bar was called "single shear" steel; and if a still higher quality was required, bars of "single shear" were welded and drawn into bars called "double shear steel."

THE PROSPECTOR.

Written for the Engineering and Mining Journal by Dan De Quille.

The true prospector has the patience of the bee hunter. He is never in a hurry, except perhaps when a grizzly bear is at his heels, or a band of hostile Indians have evinced a disposition to make professional examina-tion of his top hair. In his business "the race is not to the swift." Though slow in his movements when at work, all his mental faculties are

tion of his top hair. In his business "the race is not to the swift." Though slow in his movements when at work, all his mental faculties are alive and unceasingly active. The outfit of the prospector is not costly. He carries with him a pair of blankets, coffee pot. frying pan, pick, shovel, gold pan and a horn spoon. In the way of arms, he carries nothing more than a shotgun (for small game), unless going into a region where the Indians are bad, when he takes with him a "Winchester" and a revolver. His stock of provi-sions consists mainly of substantials. Flour and bacon are the principal articles. To these are added beans, jerked beef, a few pounds of sugar, tea and coffee, with a little salt and pepper. To this some add four or five pounds of dried fruit—peaches, apples or pears. With this outfit packed upon the back of a stout burro the prospector takes the field. The town left behind, his home is wherever he unpacks his donkey and lights his camp fire. All remember the excellent under-standing which existed between Sancho Panza and "Dapple"; of the prospector it may be said that he and his donkey live together upon the same excellent terms. The burro would almost seem to have been created expressly for the use of the prospector. He is slow, patient and content under all circumstances. Through the tender grass about the mountain spring is a delight to his heart when he finds it, yet he very philosophi-cally feeds on bitter and prickly shrubs that would be eaten by no other animal except the camel, when the camping place affords no better browsing. The ass is quite at home in the mountain wilds, for his forefathers were natives of Syria, Mesopotamia and the northern parts of Arabia. In the wandering life he leads with the prospector in the wilder-ness he becomes alert and sagacious; in him are aroused instincts and traits long dormant in his race, some portion of those qualities which in his wild progenitors evidently not a little excited the admiration of Job. He is quick to detect the approach of Indi He is quick to detect the approach of Indians or the presence of a "grizzly" or California hon. A veteran prospecting burro is a good guard at night. If he sees danger either from Indians or wild animals he leaves his feed-ing and hastens to awaken his sleeping master. As the burro greatly fears the grizzly bear he at first rushes to his master for protection when one of these animals comes prowling about; from this beginning he soon learns to give the alarm whenever he snuffs danger. The donkey is the animal for the use of the prospector in the arid and desert regions of the Great Basin for many reasons. A great advantage

learns to give the alarm whenever he snuffs danger. The donkey is the animal for the use of the prospector in the arid and desert regions of the Great Basin for many reasons. A great advantage is that he does not becomes alkalied, as would a horse or mule in many sections of country. From his forefathers, the wild asses of Persia and Arabia, he inherits a taste for salt grasses and brackish water. He will drink with relish water that neither a horse nor a mule would touch. I have said that the true prospector has the patience of the bee-hunter. I may further say that like the bee-hunter he delights in being alone when doing his work. It is only in regions where there are known to be hostile Indians that old prospectors hunt in couples or small parties. It is an axiom among miners that the more men there are in a party the less prospecting will be done. They are never able to agree upon any-thing that requires work. Many men, many minds. The "do-nothings" always carry the day. The solitary prospector always does the best work. The best time for prospecting in the arid belt between the Rocky Moun-tains and the Sierra Nevada range is early in the spring, after a winter of heavy snowfalls, as then water for panning may be found in almost every ravine and cañon. In many detached mountain ranges so little water is to be found during the summer months that even what is re-quired for drinking must be carried by the prospector. This being the case, it would be necessary at that season to carry gravel or any other material to be prospected by washing in pan or horn to the nearest water, probably miles away. The advantages to the prospector of having a small flow of water in the ravines, gulches and cañons of the section of country he is exploring are many, but the main advantage is in the facili-ties thus afforded for panning. This panning is not done in the expectation of discovering placer dig-gings. The eye of the prospector usually tells him at a glance where there is hope of finding auriferous gravel. In our in

the surface, or which have been covered and hidden by soil and débris from higher ground.

from higher ground. As a cafion or ravine must cut across all veins of quartz lying in its course. if any of these contain "pay," some gold is pretty sure to be found in the material lying on the bedrock of the ravine. As even the quartz veins in which silver is the predominant metal are found in this region to carry more or less gold, the prospector who finds gold in any cafion may feel assured that somewhere above is a lode worth looking for. Thus it will be seen that the pan tells the prospector where there is ground which it will pay him to examine with care. "Float" quartz—fragments and blocks of loose quartz rock—are also a great aid and guide to the prospector. These fragments, found in a ravine or on the slope of a mountain, tell that above is the vein whence they came. In a ravine may be "float" from several veins. If the pan has shown the ravine to contain gold, the prospector is interested in know-

great and and guide to the property of the prospector is the vein whence ravine or on the slope of a mountain, tell that above is the vein whence they came. In a ravine may be "float" from several veins. If the pan has shown the ravine to contain gold, the prospector is interested in know-ing the particular kind of quartz from which the gold came. With water at hand, he is not long in settling this point. Samples of the "float" are pounded up on a flat rock and roughly ground under a stone of a size and shape to be conveniently used as a muller when they are washed down in the pan or horn. Hav-ing discovered the kind of quartz which carries the gold, the prospector thereafter recognizes it at a glance, even as he walks along. Though there may be strewn along the ravine fragments of quartz from half a dozen other veins he readily distinguishes those from the vein which he wishes to find. He carries in his mind almost without a though tis color, texture, crystallization and every other "ear mark." He can even tell from the appearance of the float whether the vein from which it came is large or small, and the kind of country rock in which it will be found.

that leads to succes

of a philosopher. Nothing escapes his eye in his march through the wilds. He not only sees every rock and pebble at his feet, but also notes every shade of color on the slopes of the far-away mountains. Every patch of color has a meaning for him. He knows the kind of soil-de-composed rock--that makes the particular shade he sees. He is also able through color and configuration to distinguish afar ranges in which water will be found water will be found.

The prospector is able to satisfactorily test all kinds of material for gold with pan and horn, but in order to test ores for silver he generally carries with him a small bottle of nitric acid, a Florence flask and a few test

with him a small both of nitric acid, a Florence flask and a few test tubes, or if he understands the use of the blow-pipe he depends upon that when he is in a region of smelting ores. When rich float has been found and the prospector has camped on the trail of a vein his partner, the donkey, has a good time. He grazes about the temporary home at his ease while his master is at work. When the lode for which search is being made is one of the kind designated as "blind" the prospector frequently finds it necessary to do a good deal of downright hard work. In following the trail of the vein up the slope of the hill or nountain he presently arrives at a point where the "float quartz" disappears. It is covered by soil and débris from a higher part of the mountain. It is then necessary to start a narrow trench and carry it up the slope. When the digging is first commenced the float which had disappeared from the surface will be found at a depth of a few inches beneath the soil. As the trench progresses the depth at which the frag-ments of float are found steadily increases. When they are found lying on the bedrock—face of the rock of which the mountain is composed— the prospector knows that his work is almost over, that he is close upon his vein.

hich it came is large or small, and the kind of country rock in which it is vein. Fill be found. Patience is the paying virtue of the prospector. It is patience alone hat leads to success. A hasty, impatient man has no right to expect to avant coureur of civilization, but in that light he has been so frequently

painted by master hands that little room is left for new touches. He has also been depicted as a sort of cross between Sinbad the Saitor and Baron Münchausen, but in the solitary life he often leads for long periods of time, it would be nearer the mark to paint him as a Crusoe, his burro standing for his man Friday.

Standing for his man Friday. The prospector is entitled to figure as an Indian fighter more dangerous than most of those who pose in that rôle, though nearly all his fighting is after the Parthian manner—while in retreat. The stories of his Indian fights are almost invariably histories of masterly retreats—retreats deadly to his pursuers.

Two New Alloys.—F. W. Martino, Sheffield, and F. R. Martino, Bir-mingham, England, have invented two new alloys for the manufacture of boring and cutting tools having a hardness equal to that of tempered steel, with the further advantage of not losing their hardness when heated by friction. The following alloy is claimed to be suitable for the manufacture of boring tools such as drills, milling cutters, thymers, and the like: Pig iron, 17:25%; ferro-manganese, 3.00%; chromium, 1.50%; tungsten, 5.25%; aluminum, 1.25%; inckel, 0.50%; copper, 0.75%; bar iron, 70.50%; total, 100.00%. The following alloy is suitable for the manu-facture of nail-cutting blades, cutting blades for machines, cutting out tools and the like: Pig iron, 17:25\%; ferro-manganese, 4.50%; chromium, 2.00%; tungsten, 7.50%; aluminum, 2.00% mickel; 0.75%; copper, 1.00%; bar iron (Swedish), 65.00\%; total, 100.00\%. In making these alloys, the pig iron, ferro-manganese, chromium and tungsten are melted together in graphite crucibles under stick charcoal and calcined borax, the tung-sten and pig iron being preferably melted first. The alloy so produced is then reme-lted in clay crucibles together with the bar iron; and the nickel, copper and aluminum are then added. The metal is this time covered with stick charcoal only. The above alloys are cast in sand molds.

A PROSPECT succeed as a prospector. He will probably cover ten times the extent of country in a given time that would be examined by a real prospector, but finds nothing except it may be by chance. The real, born prospector is never discouraged. If he finds nothing after working over a certain tract of country he is consoled by the thought that there was nothing in it to be found. When "good indications" have been discovered he be-gins his siege. He is slow but sure. The majority of those who are pe-riodically smitten with a desire to go forth on a prospecting trip and explore some new region may be called the greyhounds of the business. They hunt altogether by sight. The genuine prospector is "Old Sleuth" bimself. He carefully searches until he has struck a trail—float quartz or a few grains of native gold—and that once found he never loses the scent until he has run his vein " to earth." The prospector of the arid zone is generally a man of middle age with the constitution of the coyote. No roof except the "starry vault" covers his head of nights, and hunger has no terrors for him. On a pinch he will eat anything that flies or crawls. He fears nothing but thirst, and against this he is always on his guard. When by some mischance thirst overtakes him he makes a better fight against it than would most men. He finds moisture in the fleshy leaves of the carcus, and unhesitatingly dricks the blood of any living thing he can capture. By means of a hol-low reed he is able to suck water from wet sand, and using his coffee pot and gun barrel distills alkali water which it would be death to drink as found. It is seldom that very old men venture out into the deserts and

found

It is seldom that very old men venture out into the deserts and mountain wilds as prospectors; nor do many young men care to leave the society to be found in the towns and lead a solitary, roving life in the wilderness. The inveterate prospector belongs to a peculiar type of humanity closely related to the trapper and the bee-hunter. His thoughts by day and his dreams by night are of great and rich veins of the pre-cious metals. He is a close student of nature and generally a good deal



By J. H. Bowden.

The water-hoisting tanks herewith illustrated have been designed for The water-hoisting tanks herewith industrated have been designed for removing large quantities of water from recently-flooded mines, through their hoisting-slopes, with rapidity proportional to the capabilities of the hoisting machinery available, the tanks being adaptable to slopes of small sectional areas and varying pitches. The following features may be of interest to those operating mines lia-ble to be fooded

ble to be flooded.

ble to be flooded. 1. The arrangement of doors on each tank by which it may be auto-matically filled by immersion at any point on the varying pitch of a slope, the water being retained while hoisting on the flat as well as on the steep pitches, and quickly and automatically discharged at the top. 2. The arrangement, in connection with the above-mentioned doors, of side-wheels over the rear wheels of each tank and of side-dumping tracks at the top of the hoist, for the automatic emptying and quick return of the tank

the tank. 3. The arrangement of two or more tanks, one in front of the other, so as to give as large a capacity in a single hoist as the engine power will permit, yet without making any tank too large for the sectional area of the slope, or of unwieldy length, or of such a shape that it cannot easily pass over vertical curves; and without concentrating too much weight on any one pair of wheels or on any point of the track. The details of construction and method of operating are shown by the accompanying sketches (Figs. 1 and 2), and the following more detailed description

description.

description. At the end of each tank is a large iron door of almost the full size of the end of the tank, opening inward, so that when immersed the tanks fill almost instantly. To provide for holding the water while it is hoisted up flat pitches, a wooden door is attached to the front of each tank, opening outward. Each front door is attached to the door at the back by an iron rod, provided with a sliding link, so that the back door can open inde-pendently of the front, but the latter is held closed as long as the rear door

THE BROKEN HILL MINES, NEW SOUTH WALES.

Written for the Engineering and Mining Journal by T. A. Rickard.

Broken Hill, reached by 300 miles of railway from Adelaide (South Australia). but inside the New South Wales border, is in the Barrier Ranges, which were known as a rich but patchy mineral field long before the dis-covery of the silver deposits which have lately made them famous. In those days the black ridge, rising amid the desolation of the salt-bush plains, was the pasture ground of cattle and sheep. It was a cowboy, or "boundary rider," who, dreaming of a possible tin mine, planted his pegs into the ground, aud in so doing marked the commencement of the his-tory of a mine which has since made millionaires of him and his fellow stockmen. That was in September, 1883. During the first three years the extent of the discovery was hardly real-ized; the outcrop was poor, the difficulties of transport were enormous, the hardships undergone were severe; the camp, in short, went through the vicissitudes common to most remotely situated mining fields, the initial difficulties being in this instance heightened by the want of men versed

difficulties being in this instance heightened by the want of men versed in silver mining

in silver mining. When the mine managers trained on the gold fields ceased to throw chloride ore over the dump, when the particular knowledge needed for this kind of mining was obtained from America, and when the enterprise of the clear-headed owners of the mine commenced to have full play, then there began that development which has culminated in an output of from 175,000 to 200.000 ounces of silver per week. As seen from the mine the surrounding country is of dreary flatness, broken only by occasional low hills. The outcrop of the lode forms a black ridge of manganic ironstone, whose irregular contour gives the name of "Broken Hill." Far away amid the haze of the heated at-mosphere stretch the arid plains whose salt bush is like the sage brush and heightens the resemblance which they bear to the lava burnt deserts of Arizona. Close at hand extends the town of Broken Hill with its popu-lation of 30,000, an ordered collection of houses which, like match boxes, Arizona. Close at hand extends the town of Broken Hill with its popu-lation of 30,000, an ordered collection of houses which, like match boxes, extend in lines of weary perspective broken by the clouds of dust which





tain the lubricant. Each tank is provided also with side-wheels, vertically over the rear axle, which have a gauge sufficiently wide to clear all other portions of the tank; and on the surface an elevated track is provided, upon which these dumping-wheels run and thus raise the rear end of each tank as much as may be necessary to dump the water into a trough between the tracks, the tilting forward of the tanks opening the back door and releas-ing the front one. The tanks while emptying rest on their forward wheels and on the dumping-wheels. By having the tracks at the surface slightly up-grade, the tanks will run back when empty, as soon as the rope is slackened. To allow this dumping, the hoisting rope is attached to the tanks by a yoke reaching back on the sides and pivoting on the axle of the dumping-wheels, the tanks back of the first one being attached by eye-bars reaching from axle to axle of the dumping-wheels on the tanks. A stop is provided, to prevent the yoke on the forward tank from dropping and catching in the track when the rope is slackened. This plan of "tandem tanks" was designed and used to hoist about 25,-000,000 gallons of water which had been admitted to extinguish a mine fire in one of the Susquehanna Coal Company's mines. The slope was small in section, and 3,200 ft. long, with single track, and with pitches varying from 4' to 20°. The hoisting plant consisted of a pair of 26-in. \times 60·in. direct-acting engines with cast coned-drum, 9 ft. to 12 ft. in diameter, carrying 13-in. steel rope. These engines had been previously hoisting five cars, weighing about four tons each when loaded. tank is provided also with side-wheels, vertically over the rear

In the Machine Shop attached to the armor-plate department of the Homestead Steel Works, where are made the great steel bolts to fasten the plates to the vessels, a bolt was being turned on one of the lathes recently and the workman operating it turned off a shaving 265 ft. long. Some years ago, at the Woolwich Arsenal, England. a shaving was turned off a gun measuring 171 ft., and is exhibited there as a great curi-osity. The Homestead shaving will be made into a Turk's head and placed in the curio department of the works.

* Paper read before the American Institute of Mining Engineers, (Glen Summit, October, 1891.)

is closed. This connecting rod, as shown in Fig. 2, passes through the front door and through a spiral spring in front of it, so that the amount of pressure necessary to keep the water from leaking out may be readily applied. The tanks are mounted on self-oiling closed wheels, so arranged as to exclude water from the bearings while the tanks are immersed, and to retain the lubricant. Each tank is provided also with side wheels vartically over the prover the provided also with side wheels vartically over the provided also with side wheels wheels vartically over sunset sky, the heat of the dry ground and the wandering cyclone of yel-low dust remind one of Suez and tell a tall e stronger than words of the indomitable perseverance of the pioneers who first laid bare the riches hidden under such a forbidding covering. From the dreary desolation of the distance the eye gladly wanders to the intense activity of the fore-ground. Looking either north or south along the huge black outcrop of the lode one sees tall chimneys belching forth their white smoke, poppet heads of iron, lattice-work girders, slag heaps on dumps, railways and tramways, horses and men, making a mingled hum of busy life, among which one distinguishes the rushing sound of the blast furnace, the hiss of the steam, the clink of hammers, the clashes of machinery and the voices of the workmen. Immediately at cur feet are the 13 furnaces of the "Big Mine"—the Broken Hill Proprietary—and the output from them of a ton of silver per day is a practical answer to the wherefore of all the energy and activity of the surrounding scene. The following figures give the annual yield of the Broken Hill field up to the close of 1590: Prior to December, 1877, 10,378,883 ounces; for the year 1885, 4,020,370 ounces; 1889, 6,358,463 ounces; 1890, 7,824,605 ounces. Originally the present mine, the Broken Hill Proprietary, consisted of seven 40 acre blocks numbered from X. to XVI, inclusive. When its value had been proved Blocks XV. and XVI. were sold in London to form the British Broken Hill Company, the parent company receiving £576,000 in cash and 80,000 full paid £5 shares. Block X. was floated in the colonies, bringing in as consideration for the transfer 96,000 fully paid shares whose nominal value was £912,000. Lastly Block XVI. was also disposed of in Melbourne for 96,000 shares of a nominal value of £432,900. It may be added that each of these offsprings of the original property has seen its shares at a premium. On January 18, 1880, the shares of the leading Broken Hill Proprietary, locally known as "The Big Mine," over

millions sterling: to-day it is slightly under ten millions. Up to the close of last y(ar the average value per ton of ore was £9 7s. 7d, the average cost £4 7s. 9d., and the average profit £5 1s. 10d. The mine has become one of the recognized sights of Australia, and is vis-

The mine has become one of the recognized sights of Australia, and is vis-ited by large numbers of travelers of every description, from colonial govern-ors to globe trotters. It is the custom to charge 5s, per head for the privilege of going underground, the money so obtained going to the local hospital. An old miner, a man who has been in the service of the company since its inception, is told off to act as guide, and under his charge the troops of visitors are conducted through the No. 2 level. This level is the dryest, cleanest and most convenient for the purpose. As you wander through the maze of closely timbered workings the old fellow keeps up a running commentary of the most highly colored description. No wonder that the nnsophisticated tourist or the colonial unversed in silver mining is as-tounded at what he sees and hears at Broken Hill. The Comstock method of square-set timbering comes in for a large share of admiration; and certainly, to the colonial familiar with the crooked, muddy workings of the gold mines, the clean levels and long perspective of straight-sawn Oregon pin- must come in the nature of a revelation. Having done this, the regular tourist promenade, we were permitted, by the aid of a friendly letter of introduction to the general manager, to see the other deeper and more interesting portions of the mine. The mine is worked by means of eight principal shafts, the bulk of the stoping so far done being confined to that part of the mine which is above.

stoping so far done being confined to that part of the mine which is above the second level. This, which is the main gallery, extends from end to end (3,960 ft.) of the property, and is already estimated to have work-ings, drives and cross cuts aggregating four miles in length. The timber-

the half formed crystals of iodide and chloride of silver, the two being The walls have no marked regularity, though the foot is the better. The

The walls have no marked regularity, though the foot is the better. The lode channel is subject to frequent variations in its width. The ore bodies have a varying pitch, generally southward. There is a strong suggestion in the appearance of the footwall that the ore chutes pitch with the line of intersection of the bedding of the country and the plane of the lode fissure. Included portions of country-rock are common. At one point the schist splits the lode, the former being overlaid by a body of kaolin, followed by a band of sulphide ore which southward passes into oxidized material. The line of separation, like a bedding plane, is very marked between the barren decomposed country and the high grade kaolin. Garnetiferous sandstone, in floating pieces for the most part, is often seen and is argentiferous when copper stained. These copper stains are worthy of mention, since they are found notably favorable to the presence of sil-ver. The ore is frequently vermicular; vuggs are common and contain stalactites of siliceous manganic ore, with cerussite and the silver miner-als. Frequently the ore has a sinter-like appearance over a considerable area.

area. This level is in the zone of oxidized ore. There are some magnificent bodies of siliceous manganic oxidized material, over which cerussite is plentifully scattered, but nowhere is there to be seen a body of oxidized lead ore such as the carbonate sand which I remember seeing at the Small Hopes in Leadville. The "kaolin ore," a term very familiar on the Barrier field, forms an important portion of the vein filling. It is usually rich in chlorides and in native silver, but it is notably free from lead and varies in hardness according to its stage of decomposition. Though by



FIG. 1.-TANDEM TANKS FOR HOISTING WATER FROM FLOODED SLOPES.

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The sulphides are loose and friable, the coarser crystalline galena is richer than the fine grained, and carries as a maximum 60 oz. Ag. After about 550 ft. of garnetiferous sandstone a body of good grade kaolin is passed through, connecting with a large body of high grade kaolin extend-ing around Jamieson's shaft. The back of the remainder of the level is in siliceous iron ore and siliceous sulphides. Generally speaking the inclusions of country are larger at this level than the No. 2, garnetiferous sandstone is more frequent, the proportion of oxidized ore has largely d-creased, to be replaced by low grade sul-phides, though it is remarkable that bodies of oxidized ores occur even below this level; while, on the other hand, galena is found in the crop-pings. At Broken Hill the line limiting oxidation is most irregular, and the "water level" is a question about which a great deal of nonsense has been said and written. been said and written.

been said and written. While the stope ground practically ends at the No. 3 level, the shafts have been sunk below 500 ft., but no important development work has been carried out at the deeper levels. Some of the sinking has been done in the search for water, the want of which has at times been severely felt. The great question which comes sooner or later to so many sliver fields, that of the replacement of easily reducible oxidized ores by more or less refractory sulphides, has already come to Broken Hill. Galena, blende and garnetiferous sandstone form ore of a discouragingly refractory char-acter. When its silver contents are low the question of its economical treatment is one which will try the resources of the ablest metallurgist. At the present time attempts are, with the enterprise characteristic of the At the present time attempts are, with the enterprise characteristic of the company, being made to solve the problem.

company, being made to solve the problem. The day of sulphide ores is rapidly coming upon Broken Hill; the mag-nificent output of the past year has been at the expense of the bodies of oxidized ores already uncovered and ere long it will have to undergo the experience of Leadville. Other difficulties are presented by the kaolin ores, whose "dry" character has been so far overcome by a judicious ad-mixture with the oxidized lead ore. To overcome these difficulties both concentrating, and leaching, plants

mixture with the oxiduzed lead ore. To overcome these difficulties both concentrating and leaching plants have been erected. On the ore dressing plant £24,000 has been expended. It is idle now, but the tailings keep going a lixiviation plant which cost £14,721. A large amalgamation plant has since been erected. While Broken Hill owes a great debt to the experience and ability of the American managers who brought the training of the Comstock to help the opening up of the Barrier field, it must be confessed that the methods of the Comstock have been too well repeated. The extrava-gance which formed so marked a feature of mining at Virginia City is being reproduced at Broken Hill. A good mine makes a good mine man-ager, and were it not for the unusual richness of the mine and its rapid development, the wasteful expenditure of thousands when experimental

being reproduced at Broken Hill. A good mine makes a good mine man-ager, and were it not for the unusual richness of the mine and its rapid development, the wasteful expenditure of thousands when experimental tests should have sufficed, would not have been tolerated. As it is, the leaching plant treating the tailings from idle concentration works is a sufficiently sarcastic comment upon the methods of management. The exploration of the lode up to the time of the writer's visit was not sufficiently extensive in depth to enable any just idea to be formed of its true character. So far as can be seen it is a fissure of unusual size traversing metamorphic rocks at a small angle with their dip. The fre-quent inclusion of garnets among the sulphides and the inclosed frag-ments of garnetiferous sandstone suggest the latter rock as the one which by interchange with mineral solutions formed the lode along a line of previous fissure. The occurrence of bodies of kaolin is explained by the masses of felspar rock occasionally seen in unaltered form. It is probable that the exceeding richness of some portions is owing to secondary de-position, the mineral bearing solutions which decomposed the felspar hav-ing been enriched previously by the improverishment of overlying por-tions of the lode. It is to be hoped that the New South Wales Geological Survey will ere long issue a monograph upon a lode system which is un-douttedly one of the most scientifically interesting and economically im-portant of recent mineral discoveries.

Properties of Clay Pressed Wet and Dry.—From the examination of 25 samples of various kinds of clay, H. Liedtke has deduced (*Deutsche Töpf. und. Ziegl. Zeit.* 22, 199) that not all can be successfully pressed in the air-dried condition. A certain small percentage of water $(4\frac{d}{d} - 6\frac{d}{d})$ retained in the air-dried state is necessary in order to obtain satisfactory results. Up to a certain point the time of pressure can be varied inversely as the pressure itself without impairing the quality of the product. Clays which when pressed wet tend to form blisters should not be pressed dry as the solution of the time of pressure. dry, as this objectionable tendency is enhanced thereby. The compres-stolal strength of dry-pressed ware is greater than that of material wet-pressed, while its porosity is less. The latter difference decreases when the goods are burnt at a high temperature. The consumption of fuel is of raw material they contain. The small quantity of water in dry-pressed ware, before firing, takes almost as long to evaporate as the amount of water used with ware made of wet clay, although this is three or four times as much.

times as much. A New Method for the Valuation of Lubricating Oils.—One of the most important tests generally employed for determining the lubricating quality of oils is the viscosity test, for which several apparatus (notably that by Engler) have been introduced during the last few years. J. Lew, in *Dingler's Polytechnisches Journal*, 1891, 280, 16–19 and 40–44, points out, however, although some viscosimeters give satisfactory results in regard to the relative viscosity of a material, they do not determine the absolute lubricating capacity. For this latter a determined the internal frictional resistance becomes necessary. The internal friction of the lubricating material itself and the external friction of the liquid with sold bodies are the physical properties which influence the frictional resistance of solid bodies with their lubricants. According to Mr. Lew, not sufficient attention has hitherto been paid to the fact that the inter-nal and external frictional resistances are different, and vary in different oils and at different temperatures. He deduces formulæ and used with great advantage in the valuation of oils for their lubricating properties. He further gives tables showing the coefficients of internal friction of different oils at ordinary temperatures, and the changes which oils under-go in regard to these factors with varying temperatures.

STEPHEN'S PATENT VISES.

Stephen's patent vise, which is being introduced by Tower & Lyon, of Stephen's patent vise, which is being introduced by Tower & Lyon, of New York, is designed for all purposes where a positive grip is necessary, and is claimed to possess several advantages over the ordinary type of vise. The largely increasing sales is evidence of its growing popu-larity, both here and in foreign countries. A socional view of the new vise is shown in Fig. 2. The sliding bar BB works readily back and forth when the lever H is thrown back; the article to be held is put between the jaws, and jaw B is pushed in by hand;



at this point the lever H is drawn forward; the lever hook M re leases the toggle hook m, and this allows the spring S to act on the ratchet t; this, in turn, engages with the ratchet teeth T on the bar B, and at this point the shoulder C, on the lever, exerts its force on the shoulder n of the toggle G; thus a triple lever force is exerted by means of the toggles GG. The action does away with the slow motion screw, and there is also the advantage that there is no handle protruding beyond the jaws, interfering with the workman. It is also claimed that greater strength is gained in this vise, no threading being necessary on the slid-ing bar, while the bearings of the vise are almost directly under the jaws, it not being necessary to have the latter project over the edge of the bench, as in the old style, unless it is so desired.

AN APPARATUS FOR CHARGING BLAST FURNACES.

An improved method of charging materials into cupolas, blast furnaces, lime kilns, scrubbers and absorption towers has been devised by Mr. W, L. Wise, of London. The object of this invention is the placing of mate-rials in the above apparatus in any desired way, thus, for instance, dis-tributing them uniformly, irrespective even of size and density of the particles, all over the section of the apparatus.

The appliance consists of a charging cone, the periphery of whose base is formed by a curve, the shape of which is varied according to the de-sired purpose. Where uniform charging is desired the curve is a spiral



"such that any two radii forming a constant angle between them shall describe in their rotation two circles, the difference in diameter between which is constant. Each portion of the spiral corresponding to a con-stant angle at the centre thus generates a constant annular surface." The equation of this spiral is $r = a \sqrt{\theta}$, where r is the radius vector (varying from 0 to the radius of the furnace), a the radius of the section of the furnace, and θ the angle formed between the radius r and the initial radius

The charge is tipped over the cone, and in falling is distributed all over its periphery; in the same time the cone makes a revolution, and the charge is thus equally sprayed over the surface of the kiln.

AN IMPROVED BUNSEN BURNER.

Messrs, Church & Sleight, of New York, have designed a new form of Bunsen burner, which they are now introducing. The burner is so con-structed that the ordinary adjusting collar is done away with, and the admission of air is regulated by the jet tube itself. The jet tube is made of brass, and is held in place by a small pin driven through a slot in its



lower end and fastened in the base tube. This construction allows the jet tube to be moved freely, and thus, by turning it to the right or left, opening or closing the air port, changing the nature of flame. The par-ticularly important feature of this burner, as stated by the manufacturers, is the cheapness attained by the new construction, while retaining all the necessary qualities of the ordinary burner.

THE FRASSE WHETSTONE HOLDER.

A novel device for holding whetstones is being introduced by Peter A. Frasse & Co., of New York. The illustrations show the holder in its several positions: (1) closed, (2) flat, and (3) on edge. The holder may be adjusted to any stone under 8 in. in length, by centering pivotal points



FIG. 3.

in its ends. The stone rests firmly on the base of the holder when used either on broad side or on edge; the pivotal points are held down by means of springs, and the base is supported on four pointed pins; thus the holder will not slip. The holder has a cover that protects the stone from dust. The stone may be used on all four sides; the latter being the important feature of the new device. of the new device.

THE BACK-PRESSURE RELIEF VALVE.

Back pressure is an important factor in all instances where confined gas or water is subject to sudden release with a correspondingly abrupt suppression of flow, as in the instance of water used to operate an elewhen the elevator is in motion; the positive throttling of the flow or ex-haust necessarily subjects the pipes to an excessive strain. The McNab & Harlin Manufacturing Company, of New York, has recently intro-duced a valve designed to relieve this excess of strain automatically. The



arrangement is as follows: The pressure is at all times direct against the valve in a line with the stem and spring. The amount of pressure that the valve will withstand is regulated by compression or release of the spring. by means of the handwheel, as the case may be. The exhaust or overflow water may be carried, if necessary, from the side opening in the valve through a pipe to any point desired. The valve is claimed to be particularly adapted for use on water mains and on large cylinder engines, where the exhaust is used for heating purposes.

THE MANUFACTURE OF SODIUM AND POTASSIUM.

An improved electrolytic process for the manufacture of sodium and potassium has been invented by Mr. H. Y. Castner, of London, England. He states that fused caustic soda or potash at as low a temperature as possible is decomposed by an electric current. When the temperature is high the power of the bath to absorb both the metal and oxygen becomes very great, and practically no decomposition takes place. The material, therefore, should not be heated to a temperature higher than 20° above its melting point, and at the same time facilities should be given for the rapid separation of the liberated metal from the bath. The apparatus used consists of an iron vessel A, mounted in brickwork K, in which the caustic soda is melted by heat supplied by means of the gas burner G. The vessel is provided by one or more base pipes or extensions B, adapted



to receive the negative electrode H, which is made of metal, the space K being filled with molten caustic, which becomes set and seals H in position. Above this electrode is suspended a tubular iron receptacle C, provided with a lid N, and with a cylindrical piece of iron wire gauze M attached to its lower end. This gauze surrounds H, and rests between it and F, the positive electrode. P is an opening for the escape of gas, and for the insertion of a thermometer, and S is an asbestos or other insulating medium. The current is supplied through I and L. The size of the electrodes and their distance apart should be in proportion to the quantity of current. If they be larger than necessary the elements will be subjected to a greater chance of being absorbed by the bath and recombining with a consequent waste of electrical energy. On the other hand, if they are too small the resistance will increase and the bath become overheated just at that part where an elevated temperature is most objectionable. When the decomposition takes place the liberated metal rises and floats on the surface of the caustic in C, whence it is removed by a finely perforated spoon which allows the caustic to drain through while retaining the metal. Fresh caustic is added to the bath from time to time so that the process may be worked continuously.

FOX'S COMBINED SQUARE AND MITRE.

This instrument is a combination of a try-square, mitre and straight edge, so designed that there is no adjustment needed, and nothing to get



out of order. It is particularly adapted for general use from the fact that it may be dropped without losing the angle, or being otherwise injured by the fall. The form of the instrument, which has been placed on the market by Wiebusch & Hilger, of New York, is clearly shown in the cut.

COOK'S LUMINOUS LEVEL TUBE.

A novelty in the hardware trade is a luminous level tube, which is being made in sizes corresponding with the ordinary level tube, from which it differs only in being backed by a phosphorescent compound which is in



turn covered by a water-proof lacquer. The level can, consequently, be used as well in the dark as in the light, and will no doubt be much ap-preciated by mechanics working in poorly lighted shops. The Luminous Level Company, of New York, is introducing the new device.

\$283 83 90,352.45 6,089.45 3,946.98 171,000.00 687.21 1,056.00 242,580,18 500,000.00 362,872. 5

OFFICIAL REPORTS.

Mollie Gibson Consolidated Mining and Milling Company.

The annual meeting of the stockholders of the Mollie Gibson Consolidated Mining and Milling Company was held at Iowa City, Ia., on October 13th, at which 950,099 shares, out of a total of 1,000,000, were represented First, at which 55,055 shares, out of a total of 1,000,000, were represented in person or by proxy. The following gentlemen were unanimously elected directors for the present year: J. J. Hagerman, Henry C. Lowe, and Charles S. Ludlam, of Colorado Springs, Colo.; Richard J. Bolles, C. E. Palmer, and W. W. Cooley, Aspen, Colo.; George L Graves, Mil-wankee, Wis. President Hagerman submitted the following report of the company's operations during the preceding year.

President Hagerman submitted the following report of the company's operations during the preceding year : "One year ago at the time of our last annual meeting, the prospects of the company were not flattering. Nearly all the money provided for development work at the time of the formation of the company had been expended, and no ore had been struck. It was seen that money to continue the work would have to be provided by assessing the stock. After two installments of the first assessment had been called and expended, amounting to \$19,500, rich ore was struck which soon provided money to continue work and to pay off the indebtedness of the company, which amounted to \$75,636 28.
"As soon as rich ore was found, the work of development was pushed

As soon as rich ore was found, the work of development was pushed

to continue work and to pay off the indebtedness of the company, which amounted to \$78,636 28. "As soon as rich ore was found, the work of development was pushed rapidly, and on April 5th last the company paid its first dividend of 5c. per share, amounting to \$50,000. Since that time the total dividends paid up to and including that of August 25th, amount to \$500,000, as shown by the report of the treasurer of the company. The treasurer's report also shows a cash balance in the treasury of \$362,872.75. "When the first dividend of 5c. per share was declared, it was called a 'regular' dividend, and the additional dividend of 5c. per share per month was called an 'extra.' This was done because the developments in the mine were so recent, and so little was known about it, that the board did not feel authorized to encourage the belief that more than 5c. per share 'regular,' with an occasional 'extra' could be paid. I am glad to inform you that the financial condition of the company, and the condi- ton of the mine, as shown by the developments of the past summer, are such as to make the directors feel safe in declaring a 'regular' dividend of 10c. per share per month, beginning in November. This has been informally agreed to by a majority of the Board, and I feel author- ized to announce it to the stockholders. " As the ore when found was nearer the western edge of our property than we expected to find it, and as it seemed probable that in its western dip it might run out of our territory, your officers took prompt measures to purchase the Silver King and part of the Emma mining claims, lying to the west of us. They cost \$171,000, which has all been paid. " The old shaft, machinery and workings of the Mollie dibson, as they were when the present company was formed, were found to be entirely inadequate for a large mine. such as the Gibson has turned out to be. The old shaft on the Silver King has been sunk to a depth of 435 ft. ; t

gress." The treasurer of the company made the following statement of re-ceipts and disbursements, from September 1st, 1890, to August 31st, 1891: RECEIPTS. DISBURSEMENTS. Overdraft, Sept. 1, 1890

| Assessments 2c per share on | Bills payable | 90,352.45 |
|---|--|--------------|
| 975,000 shares of the capital | standing, Sept. 1, 1890 | 6,089.45 |
| Bills payable 12.000'00 | him. | 3,946.98 |
| company 3,946.98 | chased | 171,000.00 |
| halances | B. E. Shear-paid on account of his note | 687.21 |
| B. E. Shear-on account of balance due for him 152.61 | General expenses-Colorado Springs | 1,056.00 |
| Orc sales 1.342,338.04 | General expenses-Aspen | 242,580.18 |
| | Balance in bank, Aug. 31, 1891. | 362,872. 5 |
| \$1.378.868.85 | 81 | 1.378,868 85 |

\$1,378,868.85 The new board of directors held its first meeting at the office of the company in Colorado Springs on the 26th ult. Mr. Ludlam tendered his resignation as a director, and Mr. Percy Hagerman was elected to fill the vacancy. The following officers were elected, being the same as last year: J. J. Hagerman, president, R. J. Bolles, vice president; Henry C. Lowe, secretary and treasurer; C. E. Palmer, general manager. Divi-dends amounting to \$200,000 were paid in September and October, mak-ing \$700,000 paid to date. Two dividends of \$100,000 each have been de-clared marable November 15th clared, payable November 15th.

Hydra e of Alu uina .- E. Meyer, of Berlin, claims to have devised process whereby hydrate of alumina may be obtained directly from sili-cates of alumina or clay. The process is said to be based on the hitherto unknown property possessed by superheated steam of exerting a decom-posing action upon silicates of alumina (inclusive of those combined with iron or ferro-silicates) or clay, in such a manner that the metallic sub-stances (such as alumina, oxide of iron, lime and alkalies) which they contain become converted, with separation of silicic acid, into water-soluble hydrates. The superheated steam acts upon the materials, which must be in a state of division, with equal effect whether the said materials are in a dry or a wet condition. The present process consists in bringing superheated steam (preferably heated by means of red-hot iron surfaces) into intimate contact with finely divided silicate of alumina or clay, dis olving the hydrates formed and obtaining the hydrate of alumina therefrom by precipitation.

| DIVIDENDS PAID BY | MININ J. | NG COMP ANUARY | ANIES DURING OCTOB 18T, 1891. | ER AND | FROM |
|-------------------------|-------------|-------------------|----------------------------------|-----------|------------|
| NAME OF COMPANY. | Paid in | Paid | NAME OF COMPANY. | Paid | Paid |
| | Oct. | Jan 1st. | | Oct. | Jan. 1st. |
| Adams, Colo | \$7,500 | \$60,000 | Jackson, Nev | £10.000 | \$5,01) |
| Alaska Treadwell. A'as- | 75.0.4 | 200 010 | Maid of Frin Colo | 120 705 | 100.0 10 |
| Ka | 130.0 | 50,000 | Manumoth Litch | 159.729 | 279,400 |
| American Idaho | | 100,000 | Maryland Coal Md | 49 (1.1.) | 1.5.000 |
| American Belle Colo | | 50,000 | Maxfield, Utah | 9, 00 | 35,000 |
| American Coal, Md | | 90,000 | Mayflower Gavel, Ca! | 0,.07 | 75,000 |
| Aspen, Colo, | | 80,000 | May Mazeppa, Colo | 37,500 | 12 .0 0 |
| Atlantic, Mich | | 40.000 | Minnesota Iron, Minn | 210,0:0 | 840,003 |
| Aurora Iron, Mich | | 100.000 | Mollie Gibson, Colo | 100,000 | 700,06 |
| Bald Butte, Mont | | 40.009 | Montana Ltd., Mont | | 84,100 |
| Ballarat-Smuggler, Colo | | 6,000 | Morning Star, Colo. | | 59 000 |
| Bannister, Mont | 6 0(3) | 60,000 | Morning Star D., Cal | 1,200 | 20.400 |
| Bates-Hunter, Colo | 7,000 | 52,390 | Mr. Diablo, Nev. | | 20,000 |
| Best Friend, Colo. | 1,000 | 1 504 | None Col | 10 000 | 12,640 |
| Dig note Placer, Mont. | 70.00 | 703.000 | New Guston Colo | 110,000 | 220,000 |
| Boston & Mont Mont | 10.00 . | 375.000 | Newton Cal | 110,000 | 5100 |
| Bull-Domingo Colo | | 29.000 | Norih Banner Cons. | | 0,100 |
| Callione. Colo | | 5,000 | Cal | | 20,301 |
| Calumet & Hecla, Mich | | .500,000 | North Commonwealth. | | |
| Centennial - Eureka. | | | Nev | | 25,000 |
| Utah | 33,000 | 270,000 | North Star, Cal | | 50,006 |
| Central, Mich | | 20,000 | Ontario, Utah | 75,000 | 75 .000 |
| Champion, Cal | 3,190 | 35.700 | Osceola, Mich | 54,000 | 150.0.10 |
| Clay County, Colo | 4.090 | 49,000 | Parrot, Mont | 18 000. | 39,000 |
| Colorado Control Colo | 12.75 | 13 750 | Plumas Fureko | 25 100 | 75,0:10 |
| Con Cal & Va Nov | 10,10 | 216 600 | Quicksilver Pref Col | 30,100 | 118 (00 |
| Copper Bell, Mont | | 13,500 | Quincy, Mich. | | 400.000 |
| Contis. Nev. | | 55.0 0 | Red Cloud. Idaho | 10.000 | 93,000 |
| Coriez, Nev | | 250,000 | Retriever, S. Dak | | 20.000 |
| Daly, Utah | 37,500 | 375,000 | Rialto, Colo | 3,750 | 28,500 |
| Deadwood-Terra, S. D | 10.000 | 30,000 | Richmond Cons., Nev | | 33,750 |
| DeLamar, Idaho | 72,00 | 111,000 | Rocky Fork Coal, Mo .t. | | 100. 00 |
| Derbec Blue Gravel | | 20,000 | Running Lode, Colo | 5.000 | 25.500 |
| Dexter, Nev | | 200,00J | Sheridan, Colo | 7,500 | 75,000 |
| Elkhorn, Mont | | 80,000 | Silent Friend Colo | | 25,000 |
| Glongorry Mont | | 10,000 | Silver Glance Colo | | 1,000 |
| Gold Rock Colo | 3 7 50 | 18 750 | Silver Mg. of L. V N | | 4,000 |
| Granite Mountain, Mont. | 100.000 | 1.200.000 | Mex | | 75 000 |
| Gt. Western Quicksilver | | | Standard, Cal | 10.000 | 10.000 |
| Cal | 12,500 | 25,000 | Tamarack, Mich | | 600,000 |
| Hecla Con., Mont | 15,000 | 150,000 | Teal & Poe, N. Mex . | | 5,250 |
| Helena & Frisco, Mont. | 29,000 | 150,000 | Whale, Colo | | 5,000 |
| Helena & Victor, Mont. | 10,000 | 10,000 | W. Y. O. D., Cal | | 4,500 |
| Homestake, S. D | 12,500 | 125,000 | Yankee Girl, Colo | | 260,6.0 |
| Horn Silver, Utah | | 100,000 | Tetal | 1 401 075 | |
| Idano, Cal | 6,200 | 25 000 | Total | 1,421,875 | 11,095,990 |
| aton Mountain, Mont | | 40,000 | | | |

PATENTS GRANTED BY THE UNITED STATES PATENT OFFICE.

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

The following is a new of are patients for many, metanoly, and kinurea subjects issued by the United States Patent Office: TUESDAY. OCTOBER 207H.
461,416. Process of Obtaining Alumina from Barxite. Joseph A. Bradburn and John D. Pennock, Syracuse, N. Y.
461,429, 461,430, 461,431. Mining Sulphur. Herman Frash. Cleveland O.
461,429, 461,430, 461,431. Mining Sulphur. Herman Frash. Cleveland O.
461,429, 461,430, 461,431. Mining Sulphur. Herman Frash. Cleveland O.
461,550. Drying, Deslecating, and Roasting Apparatus. Carl Salomon, Brunswick, Germany.
461,576. Means for Handling Coal. Julius Hersmann, Dresden, Saxony, Germany.
461,583. Stone Crusher. George Lowry, Northampton, England.
461,640. Valve Gear for Pumping Engines. Michael Misic and Eduard Schweizer, Brooklyn, N. Y.

461,579. Process of Demagnetizing Asbestos. Henry V. Jones, New York, N. Y.
461,537. Stone Crusher. George Lowry, Northampton, England.
461,640. Valve Gear for Pumping Englines. Michael Misic and Eduard Schweizer, Brooklyn, N. Y.
461,663. Concentrator. Bryan Tyson, Washington, D. C., Assignor of one-tenth to Charles A. Metcalf, same place.
461,657. Concentrator. Bryan Tyson, Washington, D. C., Assignor of one-tenth to Charles A. Metcalf, same place.
461,857. Self Dumping Mine Cage. Milton S. Ciyan, Corning, O., Assignor of one-half to Frederick Wilter, same place.
461,889. Machine for Solidifying Concrete Mixtures. George Richardson, Wash-ington, D. C.
461,890. Concerta Block and Method of Making the Same. George Richardson, Washington, D. C.
461,893. Concentrator. Charles E. Seymour, Hurley, Wis.
461,901. Rolling Mill Plant. Thomas V. Allis, New York, N. Y.
461,901. Rolling Mill Plant. Thomas V. Allis, New York, N. Y.
461,901. Rolling Mill Plant. Thomas V. Allis, New York, N. Y.
462,021. Gas Retorf Furnace. William H. Snow, Holyoke, Assignor, to Charles S. Waldo, Boston, Mass.
462,020. Brick Kills. James Dunnachic, Glenboiz, Scotland.
462,062. Pumping Engline. James Pollock, Wilkes-Barre, Pa.
462,063. Wetallite. Cross-tie. James M. Price, Philadelphia, Pa., Assignor to the Price Rallway Appliance Company, of Pennsylvania.
462,063. Wapon Burner, Warren M. Abbott, Boston, Mass., Jersey City, N. J.
462,053. Vapon Burner, Warren M. Abbott, Boston, Mass., Jersey City, N. J.
462,054. Punping Engline. James Dulock, Wilkes-Barre, Pa.
462,053. Vapon Burner, Warren M. Abbott, Boston, Mass., Jersey City, N. J.
462,054. Purping Bagine. James Pollock, Wilkes-Barre, Pa.
462,055. Vapon Burner, Machine, Alfred O. Hiscock, Wyoma, Assignor of one-half to Preston B. Bird, Diriton, Fla.
462,134. Weil-Sinking Machine, Alfre

462,245. Reduction of Aluminum Sulphate to Sulphilé. Philip A. Emanuel, Aiken, S. C.
462,277. Pulverizing or Reducing Mill. John A. Peer, Brooklyn, Assignor of one-half to Theodore W. Bayand, New York, N. Y.
462,209. Hoisting Machine. Milan C. Bullock, Chicago, Ill.
462,313. Brick or Tile Machine. Jacob Gorich, John Iig and Thomas M. Cronin Morris, Ill.
462.322. Electro-magnetic Separator. Richard R. Moffatt, New York, and Sylvester Chichester, Brooklyn, N. Y.
462,326. Grinding Pan. William G. Stevenson, Wellsville, O., Assignor to Stevenson & Co., same place.
462,336. Grinding Pan. William G. Stevenson, Wellsville, O., Assignor to Stevenson & Co., same place.
462,306. Rock Core Drilling Apaparatus. Samuel W. Douzlass, Chicago, Ill., Assignor to Milan C. Bullock, Same place.
462,337. Malanding and Extracting Gold from Refractory or Other Ores. William Crookes, London, England.
462,651. Automatic Pump and Water Flevator. Anthony H. Bryan, Evansville, Ind.

PERSONAL.

Mr. E. E. Olcott, mining engineer and metallur-gist, of New York, has just returned from a pro-fessional trip to Canada.

Capt. J. R. De Lamar has resigned his position as World's Fair Commissioner from Idaho, on aecount of stress of private business.

Mr. Andrew Carnegie, a son of the late Thomas Carnegie, has entered the laboratory of the Edgar Thomson Steel Works at Bessemer, Pa.

Mr. J. L. Morris, of the Britton Iron and Steel Company, has accepted the superintendency of the American Tin Plate Company at Ellwood, Ind.

Mr. H. M. Curry, of Carnegie Bros. & Co., Limited, Pittshurg, Pa., has gone to Panama, Republic of Colombia, on business of the company.

Dr. G. W. King, of Helena, Mont., surgeon of the Montana Company, Limited, is visiting this city. He will return to Montana about the middle of the month.

Mr. A. R. Thomson, mining engineer, of Spokane Falls, has just returned from a two months' so-journ in the Seven Devils District, Southern Idaho, where he has heen engaged upon profes-sional work.

Hon. J. P. Randol, of San Francisco, Cal., man-ager of the Quicksilver Mining Company, of New Almaden, was elected one of the Board of Direc-tors of the Bank of California for the ensuing year at the recent meeting of the shareholders.

Mr. William Harper, superintendent of the Broken Hills Proprietary Company's mines, at Broken Hill, New South Wales, Australia, arrived at San Francisco, Cal., on the 29th ult., and will inspect the Comstock and other mines on the Pacifie coast.

Mr. Riehard Hancock, lately connected with the Mountain Lodge Gold Mining Company, of Sierra County, Cal., has been appointed by Messrs. J. Taylor & Sons, of London, England, general superintendent of a gold mine in the Malay Dominent Peninsula.

Hon. John S. Baker, of Taeoma, Wash., who is largely interested in the Tacoma Smelting Com-pany, is inspecting his extensive mining interests in Idaho and British Columhia. He is aecompan-ied by Mr. Geo. Milliken, mining engineer of the Northern Pacific Railway Company. They will spend two months among the mines before return-ing home.

OBITUARY.

John H. Cameron, of the St. Louis Age of Steel and the St. Louis Lumberman, died last week of heart disease at Louisville, Ky.

James E. Lewis, superintendent of the Erie Iron Works at Cleveland, O., died on the 3d inst. soon after reaching his office. He became unconscious while on the way to the works in his earriage, and died soon afterward of heart failure.

while on the way to the works in his earriage, and died soon afterward of heart failure. Edward Y. Townsend, President of the Cambria Iron Company, died of heart disease on the 5th inst, at his country home at Bryn Mawr, Pa. He had been in poor health for some time, and for nearly two months he had been unable to attend to business. Mr. Townsend was born at West Chester, Pa., in October, 1824. His early education was acquired at the school of Anthony Bolmar at West Cnester. At the age of 18 he entered the firm of Wood, Abbott & Co., a Philadelphia dry goods house doing an extensive business in the South and West. When the firm of Wood, Abbott & Co. was dissolved and that of Wood, Baeon & Co. formed he was m de a partner. He continued in the firm until the acquisition of a large interest in the Cambria Iron Company hy R. D. Wood and his brother, Charles S., and others, who organized the firm of Wood, Morrell & Co., in whieh Edward Y. Townsend was made a partner. The firm was re-organized in 1862, with Charles S. Wood as presi-dent and Mr. Townsent as vice-president. He tilled this office until Mr. Wood's death in 1873, when he was promoted to the presidency. The preat Johnstown flood, whieh destroyed the eom pany's works, gave Mr. Townsend a shock from which he never fully recovered.

INDUSTRIAL NOTES.

The Eagle Iron and Steel Company has been or-ganized to operate the old rolling mill at Ironton, Ohio.

The Pennsylvania Steel Company's blast furnace No. 4, at Steelton, Pa., which has been idle for several months undergoing repairs, has been blown in.

The Illinois Steel Company's South Chicago Works produced 34,338 tons of steel rails in Octo-ber, which is stated to be the largest month's output in the history of these works.

The Carrie Furnace Company's furnace No. 2 at Rankin Station, near Pittshurg, Pa., which has been out of blast for two months for relining and other repairs, was blown in on the 26th ult.

The Homestea'l Steel Works 119-in. plate mil¹ (Carnegie, Phipps & Co., Limited), Homestead, Pa., produced during Octoher 4,800 tons of finished plates. This record has heen excelled only once before, the product for October, 1890, being 5,200 tons.

The Monongahela Iron and Steel Company's new muck mill at Hays Station, on the line of the P., V. & C. railroad, a few miles from Pittsburg, was put in operation last week. For the present only muck iron will be manufactured, but it is the intention of the company to manufacture bar iron later on.

The Solvay Process Company, of Syracuse, N. Y., the great manufacturer of soda hy the Solvay ammonia process, is putting up a number of eoke ovens to experiment with ammonia recovery from coke-oven gases. As a large consumer of ammonia, it desires to test the question, what future there is in coke manufacturing as a source of supply.

James Leffel & Co., Springfield, O., builders of the famous James Leffel water wheel, report that 18 large water wheels were recently ordered by one firm. The turbines of this large order are to be used for driving a fine wood pulp mill, now under contract for construction in Wisconsin. This mill is situated near large quantities of suitable timber, and where ample water power can be had.

J. W. Penfield & Son, of Willoughby, O., have issued a neat pamphlet descriptive of their various elay-making machines. The text of the hook is principally devoted to a practical discussion of the suitability of brick as a paving material; also a comparison of the different kinds of bricks that may be used for that purpose. Several cuts illus-trate properly laid briek pavements and typical brick machiners. brick machinery.

brick machinery. The Joliet Sheet Rolling Mill Company has heen organized to erect at Joliet, Ill., a plant for the manufacture of iron and steel sheets. The general manager of the enterprise will be Samuel Fewtrili, who has for many years been connected with the Joliet Steel Works. At a meeting held last week in Joliet many of the prominent business men of the city were in attendance and subscribed liber-ally to the stock of the company. A site compris-ing some 20 acres has been secured in a favorable location.

location. The American Ore Machinery Company, of New York, manufacturers of the Narod Dry Pulverizers, have just advised us as follows: "A gentleman in Johannesburg, South Africa, states that he saw our advertisement in your paper. We also had last week letters from Brishane and Melbourne, Aus-tralia, bearing like testimony to your extended circulation. Our experience certainly is abundant. proof that the ENGINEERING AND MINING JOUR-NAL is by far the best medium we know of for reaching all foreign countries. In Europe, for example, there are only four countries that we have not heard from, viz.: Turkey, Greece, Ru-mania and Bulgaria." The Mason Begulator Company of Boston

mania and Bulgaria." The Mason Regulator Company, of Boston, Mass., have arranged to issue a treatise entitled "Common Sense in Making and Using Steam." This book is the second in a series on mechanical subjects, treated in a popular manner by compe-tent writers. The book in question has as its pri-mal object the enlightenment of steam users and plant owners, with suggestions in reference to proper location for best effect; also chapters de-voted to fuels, feed water, lubrication, etc. The last pages of the hook will contain various tables of the efficiency of steam and other useful me-chanical data in a condensed form. The armor plate tests at Indian Head Md. on

of the efficiency of steam and other useful me-chanical data in a condensed form. The armor plate tests at Indian Head. Md., on the 31st ult., resulted in a vietory for the low ear-bon nickel-steel plate nade hy Carnegie, Phipps & Company, Limited, of Pitrsburg, Penn. Three plates were tested, the other two heing, viz., a high-carbon nickel-steel plate and a low-carbon Harvey process steel plate, both made hy the Bethlehem Iron Company. Each plate was $10\frac{1}{2}$ in. thick. They were lined up together, the Carnegie, Phipps & Company plate in the middle. Each plate was solidly backed and holted and furnished with strip side plates to represent the contiguous plates of a ship's armor. The gun, a 40-calibre 6 in. breech-loading rifle, was under a homb cover, even the few feet of muzzle protruding being covered with sandbags. The greatest rapidity was exhibited in the firing, while time enough was allowed between shors to photograph the plates, take measure-ments of the depth of penetration, width of bulge, and height of firing. The record is as follows: *First Shot.*—A plate, nickel-steel, high-carhon; Beth-lehem. Fired at upper left-hand corner. The point of the projectile plater armor-plate, to a distance of 15 ft. Projectile found in per'ectly sound condition. Depth of penetration, 13 in., width of bulge, 8 in. A uniformly circular fringe about 1 in. in height was raised. Result normal. Striking velocity, 2075 foot seconds. Pro-jectile, a fin. Holtzer armor-plercing. Charge, 41 lbs, of powder. *Second Shot.*—Plate, nickel-steel, rolled, and of low carhon: Carnegie, Phipps & Company. Fired at upper

Projectile parts could not be found. Velocity, 2,078 foot seconds. Projectile and charge same as before.
Fourth Shot.-Plate, nickel-steel, high carbon; Bethlehem, Fired at upper right-hand corner. Projectile penetrated to a depth of 9% in., the base breaking off in the same manner as against the Harvey plate. Bulge and fringe same as in case of first shot. Velocity, projectile, and charge same as before.
Fifth Shot.-Plate, nickel-steel, rolled, low carbon; Carnegle, Phipps & Company. Fired at upper right-hand corner. Projectile penetrated to a depth of 9 in. from the face of the plate to the hase of the projectile. Projectile settle served as an effectual plug, as in former instance. Condition of shell, good. Bulge, 1834 in. in diameter.
Velocity, projectile, and charge same as before.
Sixth Shot.-Plate, low carbon steel. Harvey process; Bethlehem Company. Fired at upper right-hand corner. Projectile penetrated to a depth of 2 % in, measured from face of plate to the forward end of the interior cavity. Body of shell broken up. A radial crack caused in plate, running from edge of circle to upper right-hand corner. Projectile penetrated to a depth of 5 in. Velocity, projectile and charge the same.
Seemth Shot.-Plate, nickel-steel, high carbon Bethlehem Company. Fired at lower left-hand corner. Projectile penetrated to a depth of 13 in, same as in the case of the first shot. The projectile rebounded in an injured condition and fell to the rear at a point 15 ft. from the front of the plate. Bulge and fringe of the same dimensions as the two previous shots at this plate. Eighth Shot.-Plate, nickel-steel, low carbon; Carnegie, Phipps & Co. Fired at lower left-hand corner. Projectile penetrated until about 2% in. of hase was left in dimeter. Fringe regular and 1% in. Bulge 18 in. in diameter. Fire regret and that very fine and charge same as before.

Nower edge of point of impact to the lower left-hand corner of the plate. Velocity, projectile, and charge same as before. Tenth Shot.—Plate, nickel-steel, high carbon; Bethle-hem Company. Fired at lower right-hand corner. Pro-jectile penetrated a depth of 10% in. Bulge 17% in. wide, Fringe regular, with two radial cracks running to the right and measuring respectively 3 in and 4 in. in length. Projectile and charge same as before. Eleventh Shot.—Plate, nickel-steel. low earbon; Car-negie, Phipps & Co. Fired at lower right-hand corner. Projectile penetrated to a depth of 13% in. forming a pertect air tight plug. Bulge 17% in. in width. Fringe regular and 13% in. in teight. Velocity, projectile and charge same. Tweifth Shot.—Plate, low carbon steel. Harvey process. Fired at lower right-hand corner. Projectile and charge have a bound of its own length. Bulge nil. Fringe nil. Projectile atter entering appeared to have expanded, enlarging the aperture. On the conclusion of the twelfth shot the 6 in.

On the conclusion of the twelfth shot the 6 in. hreech-loading rifle was dismounted, and in its place was put an eight-inch breech-loading rifle, and the test was continued :

place was put an eight-inch breech-loading rifle, and the test was continued : Thirteenth Shot.-Eight-inch rifle. Flate, nickel-steel, high carbon; Bethlehem Company. Fired at center of plate. Projectile penetrated to a depth of 13½ in. meas-ured from base of projectile to face of plate. Two seri-ous cracks developed, one leading from edge of circle to upper left-hand corner, and extending clear through the plate, and the other from the edge of the circle to the lower right-hand corner. The projectile rebounded from the plate to a distance of 54 ft. Projectile used. Firmini, Weight of projectile, 210 bs. Weight of charge, 74½ bs. Muzzle velocity, 1,850-foot seconds. Fourteenth Shot.-Plate, nickel-steel, low carbon; Car-negie, Phipps & Co. Fired at center of plate. Projectile penetrated, teaving a distance of 3½ in. from the base of the projectile to the face of the plate. No cracks devel-oped, except a light one a fraction of an inch in depth and not more than 3 in. in length. Face of plate to all sup-carances perfectly sound. Velocity, projectile and charge same as previous shot. Fifteenth Shot.-Plate, low carbon steel, Harvey process. Fired at center of plate. Projectile penetrated to a depth of 23 in. Plate hadly cracked un many direc-tions. Demolition of plate assured. Bulge, 22½ in. Fringe, nil. At the end of the last shot the test ended. As will be observed from the ahove, the vietory lies with the Carnegie, Phipps & Co. plate. Up to the firing of the first 8-in. shot the Bethlehem nickel. steel, high carbon plate showed similarly to the Creusot all steel plate in last year's test. Then it was only when the 8-in. gun was put to work that nickel-steel showed a better face than all steel. WOBLD'S FAIE NOTES.

WORLD'S FAIR NOTES.

The State of Idaho has applied for 10,000 sq. ft. of space in the Mines and Mining building for a display of minerals.

The Quebee Steamship Company, operating the lew York, Bernuda & West India Line, has greed to bring government exhibits to the fair ree. Half rate is granted on the exhibits of indi-iducle. New agreed free. I viduals

A \$10,000 model of a stamp mill for milling cop-per, now the property of the State Museum, of Michigan, will be shown at the World's Fair. It is a model which was made and presented by the Calumet and Hecla Mining Company.

The great initiation coast-line battleship, which is to constitute and contain the Government's naval exhibit, is in an advanced state of construction. It will be all inclosed before winter weather sets in and all of the interior work will be completed hy powder.The great imitation coast-line battleship, which
is to constitute and contain the Government's naval
carhon: Carnegie, Phipps & Company. Fired at upper
left-hand corner. Shot penetrated to a depth of 11% in.,
shot formed an effectual plug in the hole
shot.—Plate, low carbon steel. treated with
Harvey process; Bethlehem Steel Company. Fired at
upper left-hand corner. Projectile penetrated to use
of point and hroke off outside the face of the plate.The great imitation coast-line battleship, which
is to constitute and contain the Government's naval
cashibit, is in an advanced state of construction. It
will be all inclosed before winter weather sets in
and all of the interior work will be completed hy
spring.and charge same as in first case.Muzzle velocity, projectile
spring.The number of intending exhibitors who have
applied for space at the exposition reached 1,623
than the Centennial had at a corresponding

early date. The number does not include any fore ign applications, all of which are made to their respective national commissions.

The roof iron work on the Mines and Mining Building has been much advanced. Nine out of the ten great cantilever trusses for the central arched roof are now placed. More than 1,500,000 lbs of steel and iron will enter into the construc-tion of this building. This week "staff" filling tion of this building. will begin on the sides.

The Board of Control of the World's Fair has decided that exhibitors from Latin American countries may display their goods in either of the departmental buildings or in the collective exhibit of the Latin American nations. The assumption heretofore has been that such exhibits would be given place in the Latiu American department.

Customs regulations for foreign exhibits to the fair are being prepared by Assistant Secretary Spaulding, of the Treasury Department. These regulations are substantially the same as were asked for by the foreign commissioners who re-cently visited Chicago. Mr. Spaulding says that he has no doubt that the regulations will be found entirely satisfactory to foreign exhibitors.

California is the first state to respond to Chief California is the first state to respond to Chief Buchanau's request that each state contribute the trunks of three of its most characteristic trees, to be used in constructing a rustic colonnade for the Forestry building. California's contribution in-cludes a sugar pine furnishet by Towle Bros. & Co., of Alta; a redwood, by J. F. Cunningham, of Santa Cruz, and a sequoia, by Smith Comstock, of Tulare. Tulare.

Tulare. There is to be new a kind of staff used in the orna-mentation of the Fine Art Palace. Some time a zo bids were asked and received for the staff work. In the meantime the Medusaline Manufacturing Company, of New York and Chicago, had entered the contest with a different preparation and since then all previous hids have been declared off. This new staff is more expensive than the ordinary staff, but is susceptible of heing molded into the forms of material which usually require hand cutting and polishing.

cutting and polishing. Mr. Thomas A. Edison, the famous electrician, has applied for 35,000 ft. of space, or about one-seventh of all that the Electricity building con-tains. "I have it from Mr. Edison himself," said Chief John P. Barrett, "that this display at the Fair is to be the greatest achievement of his life, In talking of his applicatiou for space Mr. Edison admitted that be was asking for a large section of the building; 'but every inch will be put to good purpose,' he added. 'I shall not waste a foot of the area assigned to me, but will present a series of the most interesting electrical inventions ever produced.'I happen to know," added Mr. Barrett, "that Mr. Edison is doing just as he says. He is making an almost innumerable list of novel and spectacular exhibits. Other electricians are not building, and if the demand continues as it has begun I dou't know how we will accommodate all the exhibitors."

Begin 1 dou't know now we will accommodate all the exhibitors." Florida's exposition building will be a full-sized reproduction of Fort Marion, which was built at St. Augustine in 1620, and is believed to be the old-est building in the United States. It is of stone and covers a space of about 150 ft. square. The walls are 20 ft. high and 9 ft. thick at the base. It is a rec-tangular structure, the interior court being about 75 ft. square. Within the fort are 24 rooms. The reproduced structure on the fair grounds will be frame, covered on the outside with the phosphate rock of Florida, to give it the appearance of stone. The walks on the parapet and within the inner court will be covered with the celebrated pebble phosphate of Florida. This use of the material will constitute the State's phosphate exhibit. The old fort is encompassed about with a deep moat. This moat will also be reproduced, and will con-stitute a sunken garden in which will be shown all the tropical plants of Florida-the pineapple, banana, rice, sugar cane, oranges, &c. It is con-templated to partition off a portion of the moat and fill it with water and have there several alli-gators and, perhaps, crocodiles. Several of the old spanish cannon that once did service at the fort will be taken to Chicago.

EXPORT NOTES.

An important submarine cable soon to be laid is that between Pernambuco, in Brazil, and Senegal, in Africa. A British company is the promoter of the project. It is expected to be in operation in six months.

The Spanish-American Transportation Company recently incorporated, will place upon the route between New Orleans or Mobile and Colou (Aspin wall) a line of fast steamships for freight and enger traffic

The Old Alcalde furnace, at Rusk, Tex., recently shipped 300 tons of first class foundry pig iron to Mexico. This is said to be one of the largest con-signments of pigiron ever sent from the United States to the Republic of Mexico.

Trade in Siam is increasing, says Mr. S. H. Boyd, U. S. Consul-General at Bangkok, but noth-ing is imported direct from the United States but

kerosene oil. All, or nearly all, of the flour used there is from Hong Kong, and has the California brand. Corn meal, flour, bacon, and groceries. properly canned, ought to be supplied from the United States United States

A keen competition between American and Russian petroleum, in the Straits Settlement, has been going on for some years, says Mr. R. Wildman, U. S. Consul at Singapore, in a re-cent report, and in 1890 for the first time Russia outstripped the United States; 12,000 cases more were received that year, the total import being 882,300. Of this, the United States sent 436,900 cases and Russia 444,900 cases.

The New York and Brazil Steamship Company was incorporated at Charleston, W. Va., on the 31st ult. The concern is composed of New York aud Brazilian capitalists, and has an authorized capital of \$3,000,000. The president is Judge A. J. Dittenhofer; the vice-president is ex-Postmaster-General Thomas L. James; the treasurer is John N. Hayward, and the directors are Messrs. Ditten-hofer, James Hayward, Frank S. Gray, Rufus R. Wilson, Wylie J. Rouse, and Meyer Hillman.

Wilson, Wylie J. Rouse, and Meyer Hillman. The Mexican International Steamship Company has been organized in Philadelphia, to run a line of steamships between Philadelphia and Mexico, via Havana. The following are the officers of the company: William B. Bement, president; George E. Bartol, secretary and treasurer; James W. Porch, general manager. The capital stock of the company is \$500,000. It is expected that the first ship will sail about January 1. The ships will be chartered vessels, of about 2,500 tons capacity, and the ports at which they will touch are Progreso. Campeche, Frontera, Vera Cruz, Tuxpan and Tampico, on the Gulf coast of Mexico, calling at Havana, Cuba, each way.

Havana, Cuba, each way. "I doubt if there are 20 American commercial houses in all Mexico," says Mr. E. O. Fechet, U. S. Consul at Piedras Negras; and "there is probably a German house in every town of fair size in the Re-public. The heads of these houses, as a rule, come to Mexico as junior clerks; one might call them commercial apprentices seut out by the great German houses of Hamburg and Bremen. These men speak Spanish, know the Mexican people socially and study their commercial needs, and are keen, shrewd traders. Every German com mercial house is a center from which to watch the trade of a large district; credits can be intelligently given with a minimum risk, and are much longer than can ordinarily be secured in the United States, running from 9 to 15 months. Commercial agencies might profitably be established in the larger towns by the co-operation of several large other people, like to see what they may buy. The heads of such agencies will soon learn whom to trust and give credits on sales accordingly; they should be fully posted as to freights, modes of packing, customs duties, and final cost to buyer." Mr. Frank D. Hill, U. S. Consul at Montevideo, packing, customs duties, and final cost to buyer."

should be fully posted as to freights, modes of packing, customs duties, and final cost to buyer." Mr. Frank D. Hill, U. S. Consul at Montevideo, speaking of American trade prospects in Uruguay, in a recent consular report, says: "A passive, un-prejudiced observer on the spot would often be tempted to think that we are not, after all our protestations to the contrary, over-anxious for a larger share of the River Plate trade. Most travel-ing men whom I have met this year have belonged to the class of bold, zealous young men of ideas, who seem to have induced the heads of their firms at home to allow them to make this South Ameri-can trip as a sort of venture. Nearly all have been hampered by the inexorable necessity of husband-ing their allowances with closest care, while their competitors, representing great English, French, and German houses, travel and live in a way be fitting the interests they represent. Parsimony in these matters is, at the present juncture, ill ad vised. Every traveling agent must do missionary work for the next few years, in order to even get for his line of goods a standing-much less to get control of the trade-and liberality in his personal expenditures will be amply repaid. Our share (about \$5,000,000 out of over \$60,000,000 in 1889) of Uruguayan trade is manifestly small and plainiy much less than we should have. We hear much of the United States 'competing' for this trade. She does not, however, at present 'compete' at all with her European rivals. She furnishes what Uruguay cannot else where get-lumber, petroleum, agricultural ma-chinery, etc.-and she takes from Uruguay hides. hair, and a little wool. I have no doubt that we can compete successfully in many lines of goods, uotably cotton fabrics, after adequate means of transportation shall be established. I have no confidence whatever in such enterprises as 'float-ing exhibitions' as a means of increasing trade by ealing attention of foreign merchants to our products. I am assured that not over 200 persons went out into the

Ind that if the native or local taste differs from ours we may 'educate' it to an appreciation of the proper thing. This last is a most erroneous assumption. Our goods must be made, marked, and packed to meet, not the desires, but the demands, of these markets. If we do not care or cannot do it they will buy of those who will and can All the countries of Europe are bidding for South American trade and she takes her choice among all comers. The atmosphere here is charged with European influences. There are few Americans and fewer Americanisms. Europe here, as else-where, fears us as a rival of great potential strength, and her merchants, who now handle our goods, cannot be relied upon to take any part in extending our trade. We need American houses, branches of establishments in home cities, under the control of live, earnest American managers." the control of live, earnest American managers.

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, bis "Want" will be published in this column, and his address will

be furnished to any one desiring to supply him. Any one wishing to communicate with the parties whose wants are given in this column can ob-tain their addresses from this office.

No charge will be made for these services

We also offer our services to foreign correspondshall be pleased to furnish them information concerning 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.

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

GOODS WANTED AT HOME. 2,430. Wood and metal working machinery and tools for car works. New York. 2,431. A round and flap hoop machine for kegs, barrels and tierces. Virginia. 2,432. A second-hand hoisting engine, 30 to 40 H. P. double cylinders and double independent drums (or two smaller engines), to be used for hoisting from two shafts 150 ft. apart. Also a sinking pump, capacity of lifting 200 gallons a min-ute, a distance of 225 ft., with necessary piping. Machinery must be in perfect condition and very cheap for cash. Georgia. 2,433. A small diamond drill, hand or steam. New York. 2,434. A good second-hand hot blast dry kills of

New York. 2,434. A good secoud hand hot blast dry kiln of 5,000 to 6,000 ft. daily capacity of 1-in. green lum-ber. North Carolina. 2,435. A 35 or 40 H. P. engine for saw mill, and an exhaust fan or blower for three machines in planing room. West Virginia. 2,436. A hot water heating plant, electric bells, electric lighting by water power and a hy-draulic passenger elevator for a 100-room hotel. Florida.

and the passenger crother for a fast form here a sector of the formal and the formal an

7 irginia. 2.442. Tools for foundry and machine shops.

Virginia.
2,442. Tools for foundry and machine shops, Virginia.
2,443. A cord wood saw. North Carolina.
2,444. Dredge, steam shovel, washing, drying and conveying machinery for phosphate mining.
2,445. Stone cutters and blasting tools to he used in procuring and dressing rock and ore specimens. North Carolina.
2,445. Stone cutters and blasting tools to he used in procuring and dressing rock and ore specimens. North Carolina.
2,417. Steel engravings. A Spanish correspondent wants to know the cost of putting up an establishment for engraving and printing bank bills.
2,419. A correspondent who is largely interested in the mining industry of South Africa wants catalogues and price lists of everything counected with mining or milling. and in all branches of gold, silver, copper, coal, petroleum, etc. South African Republic.
2,424. A stove polish machine of about 100 lbs. an hour output. Canada.
2,429. A' dredging machine for constructing about 50 miles of dike, averaging 15 ft. high, for sendation of laud from spring overflow; soil sandy and gravelly, with little or no rock; timber and saw mills near. British Columbia.

GENERAL MINING NEWS.

ARIZONA.

Work upon the north-south railroad through Arizona is being vigorously prosecuted between Phœnix and Prescott.

A railroad from Globe, to counect with the

TOMBSTONE MILL AND MINING COMPANY.—This company, operating under the management of Mr. George W. CheyLey, is shipping steadily about 500 tons of ore per month to El Paso, Tex.

GILA COUNTY.

BUFFALO COPPER COMPANY.—The Buffalo mine at Globe, which has been worked under lease by Alex. Trippel, Henry Lyman and others, has been bonded.

CALIFORNIA.

SAN DIEGO COUNTY.

CALIFORNIA. SAN DIEGO COUNTY. SALTON SALT COMPANY.—A SURVEY of the new fresh water lake that formed in the Colorado Desert early this year has been completed by this or pany, whose property at Salton has been yith other sufferers, is desirous of cutting off the survey was made for the purpose of determining the feasibility of constructing a levee het ween the survey was made for the purpose of determining the feasibility of constructing a levee het ween the survey was made for the purpose of determining the river and the present lake bed. Manager Dur-how of the company says the main break through which a large hody of water is constantly flowing is 15 miles below Ynma. The other openings in the river bank are about 35 miles down the river from Yuma, and to effectually stop the flow of water it would be necessary to extend the pro-posed dike for some miles between these two sec-tions. The depth of the main creaks was found to be as great as the depth of the river itself, and, would subside when the river became lower herefore, all hope that the waters of the lake would subside when the river is now much lowing in winter—the stream being highest when han it was in midesummer, and yei the intensely tho the rapid evaporation caused by the intensely to the rapid evaporation caused by the intensely to the rapid evaporation caused by the intensely to the rapid evaporation of the Salton Lake, but is probable that no attempt to reclaim it will be the rate of a quarter of an inch per day; but is probable that no attempt to reclaim it will be the rapid evaporation of the Salton Lake, but is probable that no attempt to reclaim it will be the rapid evaporation of the Salton Lake, but is probable that no attempt to reclaim it will be the of the lake is 31 in, and the water is falling to the rapid evaporation of the Salton Lake, but is probable that no attempt to reclaim it will be the of the lake is a line. Along the river bank to an the server server bank and the server bank and

COLORADO.

BOUI DER COUNTY.

BOUI DER COUNTY. TREMBO.—A rich strike of telluride ore is re-ported in this mine at Gold Hill, not far from the Harsfal. This property has been lying idle for years, and was not considered worth anything until the present owners took hold of it. The mine is hut 55 ft. deep. Levels are being run east and west at a depth of 50 ft. The vein cut is about 10 in. wide, and the pay streak 2 to 4 in. Assays of the ore have run from 99 oz. gold and 140 oz. sil-ver up to 2,000 oz. gold and 450 oz. silver per ton. GILPIN COUNTY. GILPIN COUNTY.

NEW CALIFORNIA, LIMITED.—The September output amounted to 394 tons, yielding 182 oz. of gold, valued at ±580. Mining and milling expenses amounted to ±660. Expenditure on exploration and development work was ±100.

and development work was £100. TOPEKA.—According to the Central City Regis-ter Call, a mining deal was closed at Central City on the 28th ult. by which this group of mines in Russell district was transferred by its owners, Edward W. Williams and Charles L. Harker, to Henry P. Lowe, Percy C. Hamilton, and others, of Chicago, for \$100,000. The group consists of the Topeka, Concession, Connemara, and two other claims. The Topeka claim covers 1,248 ft. on the vein patented, and the Connemara 1,300 ft. pa-tented. The principal development consists of a main shaft 500 ft. deep and at an angle of 45°. The surface of the vein was worked out to a depth of from 90 ft. to 125 ft. in early days, and some \$350,-000 worth of cre is said to have been taken out. The j purchasers 'propose to' organiz the Argyle Gold Mining Company, which will develop the property. property.

HINSDALE COUNTY.

GOLDEN FLEECE.—According to local papers, the owners of this mine are very chary about giv-ing any information regarding the property. How-ever, it is reported that they struck a larger and richer hody of ore there last week than has ever shown up in the mine before.

LAKE COUNTY.

(From our Special Correspondent.) (From our Special Correspondent.) A. Y. AND MINNIE.—About 1,000 tons of lead carbonate ore is being mined and shipped from these mines each month. No attempt is being made to break any of the immense reserves of sulphide, hence the mill is lying idle. A great deal of prospecting in the four ore chutes goes on, how ever, and the outlook for large shipments soon is good. These can be made anything the manage-ment chooses, when contracts are effected. arbonate ore is being mined and snipped from hese mines each monta. No attempt is being adde to break any of the immense reserves of ulphide, hence the mill is lying idle. A great deal of prospecting in the four ore chutes goes on, bwy ver, and the outlook for large shipments soon is yod. These can be made anything the manage-enent chooses, when contracts are effected. CONTINENTAL CHIEF.—The 100-ton concentrat.

Southern Pacific at Tucson or another point, is among the probabilities. COCHISE COUNTY. TOMBSTONE MILL AND MINING COMPANY.—This company, operating under the management of Mr. George W. CheyLey, is shipping steadily about 500

tance between these being about 67 ft. LITTLE CHIEF MINING COMPANY.—IN NO. 6 Pittsburg the lessees have struck a good vein of lead carbonate ore, inclosed in the main iron ore body. The shaft is down about 260 ft., and in a drift run to the north, a raise was sent up, which cut the vein about 35 ft. above this drift. The com-pany is doing but little more than prospect work, though it is understood that contracts have been made for large quantities of argentiferous iron. MALD or FEWS UN VER MARS (INUERD).—More

made for large quantitles of argentiferous iron. MAID OF ERIN SILVER MINES (LIMITED).—More than 1,500 tons of ore were shipped from these mines during the past week, the value of which approximated \$30,000. The two headings from the hottom of the Adams Discovery shaft are being rapidly driven out into Wolftone ground, the breasts having reached a point within 100 ft. of the Standard shaft on that property. Some ex-tremely rich ore is being met with in the so-called "crooked drift" in the Maid of Erin ground, native and leaf silver being frequently encountered in bunches. hunches

NEW ENGLAND MINING COMPANY.—Drilling has hegun in the Ohio Bonanza shaft of this company, and the porphyry-lime contact is expected to be met with at about 600 ft. from the surface. The shaft is now down 455 ft., and in stringers of steelzalena ore.

galena ore. Sr. LoUIS.—About 800 ft. from the mouth of the tunnel on this mine a raise was made, which disclosed a vein of siliceous gold ore dipping rapidly to the south. It was thought best to drive the tunnel ahead to intercept this ore on its dip, and this work is now going on, the tunnel having already attained a length of 920 ft. It is expected that the vein will he met in about 30 ft. of further driving. Meanwhile, some ore is heing mined from the south workings from the raise, which ore is concentrated to reduce the cost of hauling to the smelters, by a system of sluice boxes, the resulting product paying quite well. TER+IBLE MINING COMPANY.—Shipments from the Ward shaft of the Adelaide are continuous, and now average 35 tons a day. This is of a dry siliceous nature, the silver value of which is, how-ever, quite good. DURAY COUNTY.

OURAY COUNTY.

ever, quite good. OURAY COUNTY. PAYMASTER AND AMERICAN GIRL.—The sale of the Paymaster and American Girl groups of mines near the Guston and Silver Bell mines, Red Mount-ain, has been consummated. The properties were owned and sold by F. Durgy, of Ouray, to James Hopkins, of St. Louis, Mo., and L. A. Dunham, of Denver. The two groups include 8 claims and are located in the midst of the great ore belt of Red Mountain. The consideration is not made public, but it issaid to be approximately \$300,000. Mr. Hop-kins is president of the American-Nettie company, and represents St. Louis capitalists, while Mr. Dun-ham represents ex-Governor Grant and others, of Denver. Extensive operations, it is said, are to be hegun immediately In addition Messrs. Hop-kins and Dunham purchased the Puzzle and Scotch Chief, adjoining the American-Nettie on the gold belt. These properties were owned hy Colonel Nash and others of Ouray. The considera-tion for the Puzzle and Scotch Chief is said to be h:tween \$30,000 and \$50,000. An English syndi-cate, it is said, has been figuring on these Red Mountain properties for some time past, but was no nearer closing the deal than when it began. <u>PITKIN COUNTY.</u>

PITKIN COUNTY. LITTLE RULE MINING COMPANY.—The control of this company has passed into the hands of Messrs. Taylor & Rathvon, of Denver. Mr. C. N. Perkins, who held a majority of the stock, dis-posed of it on private terms. Messrs. Taylor & Rathvon assumed the management of the property on the lat inst. on the 1st inst.

on the lst inst. SAN MIGUEL COUNTY. BELMONT CONSOLIDATED GOLD-MINING COM-PANY.—In speaking of the Belmont mine on the Savage Fork, of Marshall basin, the Telluride Journal gives the following description of the mine and the mill that is being erected upon the property: "It is worked by several tunnels, also a cross-cut 300 ft. long, which gives a depth of 340 ft. on the vein. About 900 ft. of development work has been done in the ore body. The vein has an average width of 8 ft., consisting of crushers, duplex rollers, three 5-ft. Huntingtons and six Frue vanners, is being crected below the mine, and the ore will be transported hy a 1,600-ft. gravity tramway. The power will be furnished hy a 3-ft. Pelton water wheel under a 670-ft. head from 2,200 ft. of pipe, driving the 250-ft. P. dy-namo, and connected with the mill by 2½ miles of wire."

SUMMIT COUNTY.

(From our Special Correspondent.)

The main tunnel has advanced about 2,700 ft., and near the breast a streak of ore has just been en-countered, and it is more than probable that the Giant ore chute will soon be cut into. This has been the objective point of all this work.

FLORIDA.

FLORIDA. The meeting of phosphate miners recently held at Ocala, Fla., was attended by about 100 persons interested in the industry, among whom were representatives of 37 phosphate mining comnanies. A committee appointed to formulate a plan re-ported recommending that all organized companies or individuals engaged in the mining of phosphates in the State be invited to meet in convention at Ocala, Fla., on November 19th, for the purpose of formulating plans for concert of action and con-trolling the output. IDAHO. (From our Special Correspondent.) ELMIRA.—This mine at Bavner turned out 4,000

ELMIRA.—This mine at Bavner turned out 4,000 bz. of fine silver hullion last week. The regular yield is from 400 to 700 oz. per day.

WOLVERINE.—The vein at the 500-ft. level is said to he larger and richer than at any other point and furnishes ore faster than the stamp mill can re-duce it. An addition will probably soon be made to the present 20-stamp mill. The 3500-ft. tunnel, which will be used as a working tunnel, will tap and drain the Banner mine

CUSTER COUNTY.

CUSTER COUNTY. DICKENS-CUSTER MINING COMPANY, LIMITED.— At the third ordinary general meeting of this com-pany in London, on the 14th ult., the chairman stated that the titles to all the company's property had been finally placed in its own name, that the mill was in good working order, and that the com-pany had over $\pounds 6,000$ at its bankers and did not owe a farthing. The mines are looking better and prospects, generally, are considered favorable.

pany had over £6,000 at its bankers and did not owe a farthing. The mines are looking better and prospects, generally, are considered favorable. OWYHEE COUNTY. SILVER CITY REDUCTION COMPANY, LIMITED.— The statutory meeting of the shareholders of this company took place in Lordon on the 10th ult. Mr. H. Cavanagb presided. and in the course of some remarks upon the position of the company said that it was registered on June 13th last, with a nominal capital of £10,000 in 19,000 shares of £1 each. No promotion money was paid to the ven-dors, but the company directly entered into an agreement with the contractor to furnish the com-pany with a plant capahle of reducing 30 tons of ore per day, for the sum of £4,000 in cash and £2,000 in fully paid shares in the company. A plant had al-ready been secured which would treat about 10 tons per day, which would have to he enlarged by the contractor during the next spring, the earliest period at which he could commence such opera-tions. Meanwtile, the company was in the satis-factory position of being pressessed already of a plant to commerce business with, and did so commence by crushing ore on September 1st for the Poorman Mines, Limited, an English company whose property was in close proximity to the mill. Their company had entered into a contract to crush the ore of the Poorman Mines, Limited, and from reports received there was an abundance of ore to come from this source for treatment. They had no concern about the extraction or hauling of the ores, or about the milling values, but charged so much per ton for their treatment only, and ran no risk of incurring had debts in respect of work done. It was the inten-tion in the space the plant to about the ca-pacity of 30 tons per day estimated for by the con-tractor. The company splant was situated in the midst of very many mines, and there was every reason why they should look forward to a length-ened period of success and prosperity, accompanied by a substantial rate of interest upon the money invested in the un

SHOSHONE COUNTY. (From our Special Correspondent.)

(From our Special Correspondent.) BUNKER HILL & SULLIVAN MINING AND CON-CENTRATING COMPANY.—This company, which suspended operations for a short time recently on account of an accident to the tram way, has resumed work. The contract for the erection of a 350 ton addition to the dressing works has been let, which will give the mine when completed a concentrat-ing capacity of 750 tons of crude ore perday. Five years ago the capacity of this mine was but 50 tons per day. years ago th tons per day.

tons per day. CCEUR D'ALLEE SILVER LEAD MINING COMPANY. —The quarterly statement of the Poorman mine at Burke, just published, for the months of July, August and September shows the following: Total receipts, \$126,000; running expenses, \$76,000, leaving a profit of \$50,000. Superintendent Clark says: "The 500 level west has 33 ft of good mill-ing ore, and the 500 east has 34 ft. of very clean ore which will assay 70% lead, with the usual amount of silver. The last car shipped assayed 62 6% lead and 32 oz. silver." The electric plant will probably be in operation in another month. he in operation in another month.

LAST CHANCE MINING COMPANY.-This com-pany has resumed operations and its concentrator

pany has resumed operations and its concentrator is again running. LITTLE CHOP.—Wharton Brothers and W. A. Abernethy have bonded this mine for \$62,500 to Messrs. P. W. Dillon, D. T. Anderson, and A. W. McMonan. Two per cent. of the above sum was paid down, and sureties were given that the mine would be worked continuously for one year. The Little Chop is an extension of the Mammoth, from which unusually high grade ore is being taken. The mine, which is but a prospect as yet, is close to the Standard, and about half a mile from the Tiger. Men, tools and supplies will at once be sent to Burke, and development work will be pushed with vigor.

NELLIE. 4 4-ft. vein of gray copper ore, assaying 800 oz, silver per ton, was struck in this mine at Osborn about 4 weeks ago. The shaft in the main tunnel and two crosscut tunnels has been main tunnel and two crosscut tunners has been filled with the rich ore taken from the vein, aone of it having been displayed on the dump. The strike has been kept very quiet, and no one but the miners admitted to the tunnel under any cir-cumstances. This mine has paid ever since it was cumstances. first opened.

PAYMASTER.—This mine has been bouded for \$36,000, the bond running until June 1, 1892. This property is supposed to be on the same vein as the Hunter mine on Mill Creek, near Mullan.

TIGER.—This company is operating at Burke and now erecting a hoisting engine of 1,600 ft. ca-acity at its new working shaft, now down 400 ft. his shaft is located about 100 ft. south of the old orking tunnel working tunnel.

working tunnet. UNION.—This mine is ready to ship ore, but owing to its ore bin laving between the Union Pacific and Northern Pacific tracks and both roads wanting to carry the ore, neither will let the other have the business. A compromise is, how-ever, soon looked for.

WAR EAGLE.-A good body of ore has been struck in this mine, and the owners are well pleased with the outlook.

You LIKE MINING COMPANY.—The annual elec-tion of directors of the company was held at Mul-lan last week. Ore is being shipped to Helena and Omaha and arrangements have been made with the Tacoma smelter to take part of the output. Three gangs of men are at work and arrangements have been made to put in steam drills for driving the lower tannel. the lower tunnel.

ILLINOIS.

Dr. Lindahel, State Geologist, has discovered kaolin in large quantities in Southern Illinois, particularly that section of the State in the vicin-ity of Union 'ounty. The clay is said to be of ex-cellent quality for the manufacture of porcelain.

KANSAS.

LEAVENWORTH COUNTY.

 EANSAS.

 ELATENVORTH COUNTY.

 Inted States Altorney J. W. Ady began an indicative with sith in the United States Circuit Count of this State at Topeka on the 3th inst. The demonstrative of the Leavenworth Coal Mining Company a full accounting of every ton of coal mined for the military reservation since 1888. In the leaven worth Coal Mining Company a full accounting of every ton of coal mined for the military reservation. As a consideration the demonstrative of the mines at the place free at the devery reservation. As a consideration the devery reservation and the coal required by the Government at the fore and the reservation of the shaft, and to pay a royalty of a cent per ton for all other coal mined there for a small sum and confirmed the formang & Co., afterward incorporated as the seven worth of the mines has been enormout. The lease the seven y and confirmed the fourth of the mines has been enormouted the trans the that the coal required by the other worth of the mines has been enormouted the the fourth of the trans the the fourth of the shaft and to pay a royalty of the other worth of the mines has been enormouted there was been any report to the Government of the shaft the coal mined there was been any report to the Government of the top of the top

SALINE COUNTY.

SALINE COUNTY. ACME CEMENT-PLASTER COMPANY.—This com-pany of Salina, Kar., which is furnishing much of the material used in the preparation of the staff for the World's Fair buildings, held a meeting last week at which it was decided to transfer the company's headquar ers to Chicago. The company is incorporated under the laws of Illinois, with \$500,000 paid up capital. The officers are: Presi-dent, W. W. Watson; vice president, O. P. Ham-ilton: secretary an I treasurer, M. J. Wellslayer; directors, G. W. Clowson, Paul Franke, J. A. Fınkler, A. M. Claflin. directors, G. W. Clov Finkler, A. M. Claffin.

MICHIGAN.

The Supreme Court by a decision directing the Auditor General to reapportion the state tax be-tween Dickinson, Menominee, Iron and Marquette counties, practically upheld the act creating the first named county. In this county is located the Chapin, Ludington, Hamilton and other ir:port-ant mines of the Menominee range.

COPPER. The outputs of mineral made by the different Take mine during the month of October were as follows :

| | Tons. | LUS. | | TOUR. | L05.] |
|----------------|-------|-------|-----------|-------|--------|
| Allouez | 140 | | Kearsarge | 100 | |
| Atlantie | 209 | 1,205 | Osceola | 302 | |
| Calumet & Hec- | | | Peninsula | 117 | |
| ła | 4,229 | | Tamarack | 910 | |
| Centennial. | 90 | | Quincy | . 570 | 990 |
| Central | 100 | 760 | Wolverine | 47 | |
| Copper Falls | 80* | | | | |
| Franklin | 200 | 1,000 | | 7,125 | 1,955 |
| * 13-41 | | | | | - |

showing made in the quite extensive opening. PENINSULA COPPER MINING COMPANY.—An ENGINEERING AND MINING JOURNAL reporter learns from the office of this company, No. 80 Broadway, that the decision reached some time ago to either sell the property or shut it down has been reconsidered. It is still on the market, but instead of being shut down in lieu of a purchaser it will be continued in operation. This change in policy has been brought about by the improved condition of some of the lower levels. No. 1 shaft is being sunk to the twelfth level, and other devel-opment work is being carried on. Wol VELINE MINING COMPANY —We learn from

WOLVERINE MINING COMPANY.—We learn from Mr. John Stanton that Nos. 1 and 2 shafts on this company's property are being sunk to the 6th and and 3d levels respectively. The mine is looking well. The product of 47 tons last month is not as great as was expected, owing to the fact that de-velonment work did not permit of a complete se-lection of rock.

(From our Special Correspondent.)

RED JACKET, Nov. 2. RED JACKET, Nov. 2. CALUMET & HECLA MINING COMPANY.—Work at the electric station is progressing. Two pumps have been put up and tested. Everything seems to be working well. A complete telephone system, reaching all parts of the mine, both sufface and underground, is in operation. A new arc light circuit has been constructed. No. 5 shaft, Calumet branch, has been eliciting much interest lately. It is now a few feet below the 41st level. From the 40th level down it has been in a remarkably rich run of ground. Many of the pieces of rock have been at the very least half copper.

Mineral is being shipped regularly to the new smelting works near Buffalo.

half copper. Mineral is being shipped regularly to the new smelting works near Buffalo. TAMARACK, JR., MINING COMPANY.—Your cor respondent recently explored the diggings of this company's mine with Capt. James Cruse, the min-ing superintendent. The shaft is now down 2,680 ft. The lode was cut at about 2,500 ft. from the surface, and 15 or 20 ft. below that another cross-cut was started west to the lode. Sixty feet below that another crosscut was run west, and at 2,640 ft. a crosscut to the third level was started. The levels will be 60 ft. apart per-pendicularly, and 100 ft. on the pitch of the vein. At the point where the vein was cut, the rock was not of the very best quality throughout the entire width of the vein. In the winze that was sunk from the first to the sec-ond level, the rock was much better, and kept improving as it was opened out. The drifts in the first level were run about 50 ft. each way. The ground is as good as was expected in this drift. The second level is a revelation. The south drift is now in about 43 ft., and is looking well. The south part of the mine is supposed by every one to be almost proved by the ground in the Calumet & Hecla lying in close proximity. In No. 5 shaft of the latter mine they are working at the 41st level, or 4,100 ft. on the incline. This would be nearly 2,500 ft. perpendicularly, or in other words just about on the same level in the lode that the Tamarack, J., strinck the lode. This is conclusive proof to the miner is considered proved work has been pushed more rapidly in the north drifts. The orth drift in the second level is now in about 275 ft. It is full of copper and over 9 ft. in width. The ground through the whole drift was estimated by Capt, Cruse to carry at least 5.7 mineral. The drifts at the third level are in about 40 ft. each way, and are looking well. At the second level landing the tram road is nearly finished. The new rockhouse will be ready for dity soon. The rock will be taken to the Tamarack mill

IRON-GOGEBIC RANGE. BESSEMER CONSOLIDATED IRON COMPANY.-The foreclosure sale of this company's property took place last week. The interests involved were the Iron King, Bonnie, Blue Jacket, First National and Valley-the old Burton properties. They were bid in at \$50,000 by G. D. VanDyke. of Mil-waukee, attorney for W. W. Wright and the new trustee for the American Loan and Trust Com-pany. pany.

MISSOURI.

JASPER COUNTY.

(From our Special Correspondent.) JOPLIN, Nov. 2.

JOPLIN, Nov. 2. There was no change in the ore market during the past week, zinc ore continuing to ru'e at an average of \$22.50 per ton. Lead ore was in good demand at \$23 per 1,000. Following are the sales from the different camps

Joplin mines, 1,327,620 lbs. zinc ore and 304,710 lbs. lead; value, \$21,935. Webb City mines, 613,950 lbs. zinc ore and 63,970 lbs. lead; value, \$8,379,50. Carterville mines 2,009,950 lbs. zinc ore and 161,-580 lbs. lead; wales \$292

Zincite mines 25,832. Zincite mines 215,300 lbs zinc ore and 2,380 lead; value, \$2,688.

Value, \$2,688.
 Lehigh mines 141,360 lbs. zinc ore; value, \$1.762.
 Oronogo mines 95,280 lbs, zinc ore and 19,670 lbs.
 lead; value, \$1,377.25.
 Carthage mines 350,000 lbs. zinc ore; value, \$4,287.50.

lead; value, \$1,377.25.
Carthage mines 350,000 lbs. zinc ore; value, \$4,287.50.
Galena (Kans.) mines, 978,000 lbs. zinc ore and 171,050 lbs. lead; value, \$14,288.
District, total value, \$25,000 lbs. lead; value, \$14,452.50.
Lead and zinc belt; total value, \$96,001.75.
The thousand-acre tract of land has been the center of attraction during the past week, and today there are 10 organized mining companies operating on the land, besides not less than 80 individual prospectors. A number of shafts are producing zinc ore at a depth of 28 to 35 ft. These surface deposits are what is attracting so much attention among the prospectors and miners, asit enables them to get quick returns for their labor. Many of the miners predict that. Therefore, and will be as great a producer as the noted Pitcher field of 15 years ago. The Pitcher field is now a part of the Oswego Mining Company's land, and in the early days was noted for its large deposits of surface lead and zinc ore. Some of these old abandoned mines have been recently reopened and sunk to a greater depth, and the second run of ore has proved as productive as the first.
The Wilcox & McCarty concentrating plant now being erected on the Brooks land west of Joplin will soon be completed, and when in running order the mine will make a large production, as there is a large amount of concentrating ore in sight.
MONTANA.

will soon be completed, and when in running order the mine will make a large production, as there is a large amount of concentrating ore in sight. MONTANA. ANACONDA MINING COMPANY.—This company has \$12,500,000 capital stock and \$7,000,000 bonds outstanding, but as Mr. Haggin finds that bonds upon mining property are regarded as of no especially uncreased value in this country, com-pared with mining shares, he is moving to in-crease the capitalization to \$25,000,600 for the pur-pose of taking up the bonds. These bonds have never been generally distributed and are in \$100,-000 pieces. The worst mining accident of the year in Mon-tana took place at the Auaconda mine on the morning of the 4th inst., when seventeen miners were killed. At midnight, when the shifts change, a cage full of miners returning from work arrived at the surface. Their places were at once taken by nineteen men, and the cage was started down-ward. The rope had been unwound but a couple of times from the drum of the winding engine, when there was a sudden snap and a cry of horror from the shaft in which the cage had but a moment before disappeared. The rope had broken, and the cage with its nineteen inmates was precipitated to the bottom of the shaft. It was some little time before any assistance could be given. The shaft down which the men had plunged was useless, and other ways of getting at the place where they had fallen were roundabout. Fortunately there was some help for the dead and dying men in the mine itself. A number of miners who were through work and waiting to be hoisted to the surface were at the bottom of the shaft waiting for the cage to take them out. Amid them, narrowly nissing some, whey were awaiting. There was little, however, that could be done. Of the 19 men who made the fearful ride 17 were dead, their forms crushed out of all semblance to those of human beings, while the two who were yet breathing had no hopes of recovery. the two who were yet breathing had no hopes of covery.

recovery. BOSTON AND MONTANA CONSOLIDATED COPPER AND SILVER MINING COMPANY.—At the annual meeting of the stockholders of this company, at Builte City, on the 29th ult., 80,158 shares were represented, and the following were unanimously elected trustees: A. S. Bigelow and A. W. Spen-cer, of Massachusetts; Franklin Fairbanks, of Vermont; Charles Van Brunt, of Massachusetts; Leonard Lewisohn and H. Wallerstein, of New York; Tho mas Couch, of Montana.

NEVADA ELKO COUNTY.

(From our Special Correspondent.)

(From our Special Correspondent.) BELLE ISLE MINING COMPANY.—The line cross-cut, 350 level, after being extended 23 ft., has en-tered better looking rock, and No. 1 raise from No. 3 south drift is now producing some good ore. DEL MONTE MINING COMPANY.—No. 1 raise, third level, has been carried up 25 ft., the ore showing 4 ft. wide, some of which is very high grade. Last week there were taken from this raise 22 carloads of ore.

NEVADA QUEEN MINING COMPANY.—The north drift from No. 2 shaft has been extended 20 ft. The ore passed under the hottom of drift 14 ft. from shaft, the drift being turned to connect with south drift from second level of the Common-wealth, which has been extended 29 ft., showing high grade ore in top of the drift.

NORTH BELLE LISE MINING COMPANY.—The ore continues good in No. 3 north drift, 400 level, and No. 1 winze from this drift, having been extended 14 ft., shows the vein 2 ft. wide, some of the seams yielding very rich ore. No. 1 raise, 500 level, has been extended up 11 ft., the vein showing larger and improving. The stopes continue to produce usual amounts of good ore.

NORTH COMMONWEALTH MINING COMPANY.— The south drift, second level, has been carried 15 ft. through the vein, exposing rich ore which has assayed \$112 per ton. A drift has been started to follow the ore north under present stopes. The stopes are looking well. Last week there were hoisted 6 cars of first-class ore, averaging \$200 per ton, and \$8 cars of second class.

ESMERALDA COUNTY.

(From our Special Correspondent.)

(From our Special Correspondent.) HOLMES MINING COMPANY.—A shipment of 10,628 oz. of silver was received at San Francisco last week. The Sutherland tunnel near the south end has been discontinued. The stope above this level is yielding ore which assays \$34 per ton. A winze is being sunk near the old Callison shaft, the bottom now being in ore assaying about \$55. The bottom of the winze near the north end of the stope, same .evel, is showing a seam of ore at a depth of 47 ft., which assays \$75 per ton. The other stopes are producing ore assaying very well. LA PAUTA CONSOLIDATED MINING COMPANY.— This company declared a dividend of one cent per share this week, payable at once. EUREKA COUNTY.

EUREKA COUNTY.

CORTEZ MINES, LIMITED.—The September prod-uct amounted to 34,940 oz. silver, 603 tons of ore being crushed. Expenses were \$15,495; develop ment expenditure, \$4,185.

(From our Special Correspondent.)

(From our Special Correspondent.) (From our Special Correspondent.) At the present date there are over 50 mines , roducing ore in the Eureka district. About 300 uniners are at work in these mines, two-thirds of whom are leasing or tributing. The balance are working on day's pay. The aver-age quantity of ore shipped out of this dis-trict by railroad to date this year has been 750 tons per month. This is exclusive of the ore shipped from the Diamond mine and that which was prechased by the Eureka Consolidated Mining Company. The present output of the camp is about 80 tons per diem. As there are no furnaces running in Eureka a sampling mill would proba-bly pay there. In addition to the products of sampling the ores of White Pinc and Nye counties. If no other company antic.pates them Salt Lake parties will put up a sampling mill here next, spring. spring.

DIAMOND.—A shaft was started on the main fis-sure of this mine a short time ago from the level of the lower tunnel, which, with present facilities, will be carried down to a depth of 500 or 600 ft. The tunnel level at this point is about 1,100 or 1,200 ft. helow the surface, near where one was first struck, and ore in paying quantities has been found from the croppings to the lowest depth yet attained in the mine. It is estimated that drifts from the depth of 500 ft. below the lower tunnel level will reach a working depth of 2,000 ft. or more below the apex of Prospect Mountain, in the Diamond group of claims. This is the most important ex-ploration work being carried on at present in Eureka District, and is calculated to determine the value of this section of Prospect Mountain.

LANDER COUNTY.

LANDER COUNTY. BIG CREEK ANTIMONY MINING COMPANY, LIMITED.—This company paid an interim dividend, being its first, of 1s. per share on October 14h. The sceretary of the company states that the Beulah claim, as developments go on, proves to be of ex-ceptional richness with a widening of the vein or lode as depth is reached; as an example of what the lode is like, blocks of 70% ore have been ob-tained weighing between 1,500 and 2,000 lbs.; the largest is being preserved for exhibition at Chicago as the finest specimen ever yet obtained in any antimony mine in the world. Rails have been laid down in the drift. The cable tramway from the mine to the canon below has been completed, and is working successfully at a great saving over mule transit. New ore houses have been erected, and all is in first-class working order at the mine. Owing to the low prices ruling for regulus, the directors have not deemed it wise to sell largely, as such a

high quality of ore should not be sacrificed, but nixin quanty of ore should not be sacrificed, but only sufficient to pay costs at mine and a moderate interim dividend. The market now having an up-ward tendency, better results by thus waiting may be more satisfactory to the shareholders. Develop-ments of the Genesee claim are being actively pushed forward.

LYON COUNTY.

LYON COUNTY. OEST.—Suit to recover \$50,000 damages has been brought against Fred Oest, of this mine at Silver, by A. A. Pollard, a well known mill man. Mr. Pollard was an owner in the Oest mine some time ago. In the complaint, says the Virginia City Enterprise, he alleges that he was damaged to the extent of \$50,000 by heing induced to sell his interest in the mine for a comparatively small sum by Oest and others, who led him to believe that the mine was of little value; that at the time this was heing done Oest and the other partners were concealing a rich body of ore, of whose ex-istence he was ignorant. STOREY COUNTY—COMSTOCK LODE.

STOREY COUNTY-COMSTOCK LODE.

(From our Special Correspondent.)

The following is the weekly statement of ore extracted from Comstock mines and sent to the mills, with the average battery assays: Tons Tons -Assay Value.

| Mine. | extracted. | milled. | Oct 24. | Oct. 17. |
|--------------|------------|---------|---------|----------|
| on Cal. & Va | 942 | 980 | \$21.10 | \$20,16 |
| hollar | 423 | 423 | 16 62 | 17.33 |
| ccidental | 280 | 280 | 17.20 | 16.25 |
| verman | 396 | 380 | 16.50 | 17.22 |
| avage | *590 | 525 | 17.00 | 18.15 |
| ellow Jacket | +245 | | | |
| ** ** | :700 | | | |

*Cars. † Gold bearing ore. † Silver bearing ore.

BELCHER MINING COMPANY.—From five to six earloads of pay ore is being saved each day as it is taken from the quartz body cut in the east crosscut, 200 level.

CROWN POINT INCLINE.-The sinking pumps was lowered which will enable workmen to go down to the diamond drilling machine, and bore another hole in the bulkhead. The water in the Belcher incline is 61 ft. helow the 1,600 station, and 12 ft. lower than at the time of the last report.

Bolcher incline is 61 ft. helow the 1,600 station, and 12 ft. lower than at the time of the last report. HALE & NORCROSS MINING COMPANY.—The suit instituted by M. W. Fox against the officers and directors of this company has heen set for hearing on November 16th, in the Supreme Court. The depositions taken to date have disclosed a most extraordinary mode of operating on the Com-stock, and when the case comes to trial the dis-elosures regarding the manipulations of the "Mill Ring" in collusion with the officers of certain of the mining companies will be of a startling nature and a sad commentary on the supineness and criminal negligence of stockholders. R. P. Keating, the superintendent of this company, was subpoenaed to appear last Monday by the plaintiff in the above named suit to depose concerning what he knew re-garding the mining and milling of Hale & Norcross ore. As Mr. Keating, in common with many other of the Comstock magnates, is, presumably, well aware of the amount of damaging testimony elleited during the last few romths, he has thought "discretion the better part of valor." and instead of answering the subpoena he left San Francisco on the day his deposition was to have been taken, in hot haste for the Comstock. A bench warrant has been issued for his arrest, and an order to show cause why he should not he committed for contempt. As superintendent of the mine it might have been thought that he would gladly avail himself of the opportunity afforded to repu-diate and prove untrue the various allegations made against him in common with other oficers of the company. He has evidently thought otherwise and has sought shelter within the safe houndaries of a State which is carried in the pockets of two or three men. Justrice MINING COMPANY.—The face of the north drift, 822 level, is now in a distance of 908

JUSTICE MINING COMPANY.—The face of the north drift, 822 level, is now in a distance of 908 ft., and is in fair grade ore.

OCCIDENTAL CONSOLIDATED MINING COMPANY. —The mine is yielding the usual amounts of ore, and at present there is on hand \$8,000 in bullion and \$14,000 in concentrates.

SAVAGE MINING COMPANY.—On the 1,100 level the west crosscut No. 1, started at a point 20 ft. back from the face of the north lateral drift, has been advanced 35 ft., and is now in low grade quartz. The northwest drift, 1,450 level, has been advanced 20 ft. showing fair grade ore.

NEW JERSEY.

NEW JERSEY. SUSSEX COUNTY. Mr. Marcus Sayre, of Newark, says the Dover Iron Era, is giving steady employment to a num-ber of meu in the development of his copper mine, located on the Ogden range, ahout a third of a mile distant from the Ogden mine. There are now about 1,000 tons of rock on the bank, all of which appears to contain copper, hut scarcely in paying quantities. It is thought that the iron ore, however, is better than that which is taken from the Ogden mine and crushed at the Edison works.

and Central mines in the Black Range, about 12 miles southwest of Kingston. The capital of the company is £200,000, divided into 25,000 prior divi-dend and 175,000 ordinary shares of £1 each. The prior dividend shares, which are now offered for subscription are the only ones upon which dividend will be paid, until 100% has been paid, after which their priority will cease. In the prop-erty, which consists of 9 claims and covers an area of 180 acres, a large hody of silver-lead zinc ore has heen exposed which can he worked by open pit. The vendors are to receive for the mines £170,000 in fully paid ordinary shares, and £16 000 in cash. in cash.

NORTH CAROLINA.

NORTH CAROLINA. (From an Occasional Correspondent.) The native copper vein in Allcghany county and Ashe county, which adjoins it, has been prospected for the past six months with very promising re-sults by a number of open cuts and small shafts. The ore is essentially native copper and cuprite with small quantities of malachite, azurite, bornite, chrysocolla, and some argentiferous galena. The gangue is hornblende, epidote and quartz, and occasionally some calcite. The walls are hornblende-schist. The strike is about N. 60° E., and dip 45° to 65° S. E. The opening on the Ahsher place, on the south fork of the New river, in Ashe County, shows 9½ ft. of vein material. The Gam-bill shaft in Ashe county is 25 ft. deep, at which point the vein has dipped away from it. Solid blocks of native copper weighing over 7 lbs. have been taken from here. The Smith shaft in Alle-ghany county is 38 ft. deep, the thickness of the vein varying from 3½ to 5 ft. near the outcrop. An assay of a 12-lb. sample from this shaft showed 97% of copper. The vein has been traced some 3 or 4 miles, and the wall-rest to either side is found to he impregnated with malachite. More thorough prospecting with the diamond drill is contem-plated in the near future. PENNSYLVANIA. (From an Occasional Correspondent.)

PENNSYLVANIA.

COAL.

The coal operators of the Monongahela River district have reduced the wages of the miners one half cent a bushel, in order, they state, to meet the competition of the railroad mine operators.

The average of anthracite coal prices in Schuylkill councy in October was \$2.307 as against \$2.292 in September, and \$2.298 in October last year. Wages are only 6% below the \$2.50 basis, the best condition for nearly two years.

best condition for nearly two years. It is said that the Lehigh Valley Railroad Com-pany, whose coal region terminus is at Mt. Carmel, intends extending its road through Shamokin in order to reach its valuable coal lands lying be-tween Shamokin and Treverton. The company has been using the Northern Central tracks from Shamokin to Mt. Carmel, but owing to the big royalty paid its profits have not heen large. It is reported that the Lehigh company may build a road through to Sunbury and thus secure a west-ern outlet. The hig strike of coal miners of the Pittsburg district for an advance of 10 cen's per ton is over,

The big strike of coal miners of the Pittsburg district for an advance of 10 cen's per ton is over, and the 12,000 men who have heen idle for several weeks have returned to work at the operators' terms. This decision was arrived at at the con-vention of the strikers on the 3d inst. when it was unanimously decided to declare the strike off. The strikers have lost in wages nearly a million and a half dollars and are in destitute circum-stances, many having suffered for the necessaries of life. H. C. FRICK COKE COMPANY.—This company has introduced incandescent electric lights in one of its coal mines in the Connellsville region. The lamps used are50 c p. and are placed 20 ft. apart. They are fitted with overhead reflectors. The com-pany will equip nine more of its mines with electric lights as soon as possible. READING COAL AND IRON COMPANY.—The offer

lights as soon as possible. READING COAL AND IRON COMPANY.—The offer of this company to extend for five years the divi-sional coal land honds maturing in 1892 has, it is said, been generally accepted, but one or two re-fusals having been received. The bonds now bear 7% interest, but the company offers the extension at 6%, and guarantees besides payment of principal and interest in gold. It is probable the other issues maturing in 1893 will be extended on the same terms. same terms OIL

The oi' field report for Octoher shows increase in wells completed, 10; iucrease in production, 31,-450 harrels; decrease in dry noles, 21; dccrease in wells, 16

wells, 16. The McDonald oil field, near Pittshurg, beat its own record on the 2d inst. by producing 77,000 barrels of oil in 24 hours. The performance was accomplished without bringing in any new wells, the drills having suspended operations over Sun-

for the construction of substantial piers and docks. It was stated that the Reading had no financial interest in the improvements it was making, which had nothing to do with its coal trade, but that it was acting for other parties. The announcement now, that Mellon Bros. & Carnegie are going to establish a new pipe line which will cost from \$2,000,000 to \$2,500,-000, is naturally coupled with the Marcus Hook improvements. Marcus Hook is situated just above the Delaware state line. Immense quanti-ties of both crude and refined oil are shipped from Philadelphia to all parts of the world, and it is presumably to secure a portion of this export trade that Mellon Bros. & Carnegie have planned their pipe line. It will tap the new oil fields in Southwestern Pennsylvania and West Virginia, which have proved so wonderfully pro-ductive. TENNESSEE.

TENNESSEE.

ductive. TENNESSEE. On the night of the 31st ult, the convicts work-ing in the mines at Briceville and Coal Creek, 305 in number, were released by an armed body of miners. The latter surrounded the stockades and guards of the latter seeing that resistance was useless complied. The stockade at Briceville was afterward burned. The convicts at these two places were employed by the Tennessee Coal Min-man Company. On the 1st inst. 155 eonvicts at Officer Springs were liberated in similar manner and the stockades, hospital, and other buildings at Company. which suffered a loss of \$15.000. The make their escape, most of them going into Ken-Springs are operated by the Cumberland Coal Company, which suffered a loss of \$15.000. The make their escape, most of them going into Ken-Springs are operated by the Cumberland Coal Company, which suffered a loss of \$15.000. The make their escape, most of them going into Ken-Springs are operated by the Cumberland Coal Company which suffered a loss of \$15.000. The make their escape, most of them going into Ken-Springs are operated by the Cumberland Coal Company which suffered a loss of \$15.000. The make their escape, most of them going into Ken-Springs and escape do the theory serious, however, Springe at those points, but at this writing no situation is regarded as very serious, however, Sporthe capture of each of the convicts that have see apped and \$5.000 for the arrest and conviction of whore placed at the prior show and conviction of the spring set and \$5.000 for the arrest and conviction of the see apped convicts have already been recap-where leaders of the mob, which released them; also where here the roots have already been recap-tion and the roots have already been recap-ment of the secaped convicts have already been recap-tion and the root of the secaped been common of the secaped convicts have already been recap-tion and the root of the secaped been common of the secaped convicts have already been recap-tion and the roo

UTAH.

In reference to the reports, from Salt Lake City, that the owners of the Cove Creek sulphur mines had guaranteed the Denver & Rio Grande West-ern Railway a shipment of over 100 tons of sulphur daily if the road were extended to that point, mention of which was made in our issue of October 3d. we are informed that these reports are incorrect.

IRON COUNTY.

IRON COUNTY. BLAIR MINING COMPANY.—According to the Salt Lake Herald, this company will be incorporated shortly by George S. Blair and Robert S. Camp bell, of Salt Lake, J. T. Hammond and Ed. Han sen, of Logan. The properties to be developed by the company are situated in the Pinto mining district, seven miles from Iron City. The prospects were discovered and opened 20 years or more ago by the father of George S. Blair, but while the indica-tions were very promising, work was abandoned because of the distance of the wagon haul at that time. Some few weeks ago, however, the old claims were relocated and a number of men put to work upon them A vein of of ore 18 in. wide was uncovered, which has been traced for a distance of 5,000 ft. An assay gave 768.57 ounces silver and \$3.01 gold per ton. Mr. Blair says the entire vein will average at least \$100 per ton, and that the ore can be laid down at the smelters in Salt Lake for \$15 per ton. A force of men is now at work on an incline which is being run, and it is expected that shipments will soon be commenced.

SALT LAKE COUNTY.

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 SALT LAKE COUNTY.
 The sum of J. E. Galicher, W. H. Remington and count of the sum of \$40,985 s7, with interest amounting to the set of the sum of \$40,985 s7, with interest amounting to the plaintiff secks of the same of patients of the off the sum of \$40,985 s7, with interest amounting to the plaintiff secks of the same of a lained to the declaration of the same of a lained to the declaration of the same of a lained to the same of a lained to the same of the same of a lained to the same of a lained to the same of the

continuously held and worked the mines in " the same careless, improper, imprudent, improvident, neglectful and unminerlike manner," very seriously injuring defendants to the extent of \$10,000; that they have extracted there-from, marketed and sold in large quantities first class ore, alleging the quantity to be 700 tons, of the total value of \$175,000; also second class ore, extracted and transported reaching about 6,000 tons of the total value of about \$30,000. They ask that the plaintiffs be held to account for the ores both extracted and shipped to the value of \$475,000; also for \$7,500 unnecessarily expended and lost through their imprudent handling and concen-trating of second class ores. The plaintiffs during said period, they say, have furnished no monthly reports of their operations, and defendants have been consequently kept in ignorance of their operations, receipts and disbursements. After some discussion, Judge Anderson referred the case to D. C. Lyle to try all the issues and report his findings to the Court. SUMMIT COUNTY.

SUMMIT COUNTY.

SUMMIT COUNTY. ANCHOR MINING COMPANY.—A survey for a tramway line from the Anchor tunnel to the union concentrator is being made by this company. Another party of surveyors is measuring the quantity of water in the lakes above Bonanza flat, owned by the company. It has been determined to connect the lakes and survey a pipe line from the lakes to the division line between Snake Creek mining district and Uintah mining district near the White Plain discovery, where a distributing reservoir, to hold 1.000,000 gallons of water is to be constructed. This is being done, says the Park Ci'y Miner, under an arrangement recently made between Mr. Ferry, manager of the Anchor Company, and Mr. Cham-bers, superintendent of the Daly and Ontario. This pipe line will be contario Nos. 2 and 3. The surplus water will he furnished to the Park City Water-Works Company by a branch pipe. TOOELE COUNTY.

TOOFLE COUNTY.

UTAH .-- A one-sixth interest in this mine in the Trade--A one-sixtn interest in this infine in the Fish Springs district was sold for $\frac{8}{20},000$ at Salt Lake City on the 24th ult. The property was one of the first discovered in the camp. Its croppings were rich, and it has been a paying shipper from the moment a pick was first struck in the ground.

WASHINGTON.

The United States Geological Survey is about to undertake a survey of the State.

(From our Special Correspondent.) Tin has been discovered on Peshastin Creek near the base of Mount Stuart in Central Washington by Henry Bush, of Seattle, and R. A. Vaughn, of Snohomish. The find is in two parallel ledges lying between two heavy walls of porphyry. The ore is reported to assay 4% to 8% tin. KITTITASS COUNTY.

(From our Special Correspondent.) (From our Special Correspondent.) RosLYN-October 15th was a red letter day in the history of Roslyn, the output being greater than any other day in its history, the total amount mined was 3,475 tons, No. 2 producing 1,907 tons and No. 3, 1,598 tons. This coal is worked by means of drift and tunnel, but a shaft is con-templated The coal does not contain as great amount of carbon as that of Whatcom and Skagit counties counties.

KING COUNTY.

(From our Special Correspondent.) (From our Special Correspondent.) SEATTLE COAL & IRON COMPANY.—The strike at Gilman inaugurated March 12th has been declared off by the strikers themselves, who after fight-ing for seven months find themselves defenceless. The company has announced that all except cer-tain agitators will be re-employed provided they sign an annual contract. The miners of the Oregon Improvement Company are also working and the trouble between operators and miners dating from last spring appears to be settled.

and the outcome of each clean-up shows the ore in both the War Eagle and Black Bear mines to be getting richer as work in the mines progresses. When the company shuts down this winter it will put in a 10 stamp mill. A rich strike was made in the Black Bear recently. The vein is 2 ft. wide, and running through it is a streak which assayed \$985 in gold and \$1.70 in silver per ton.

STEVENS COUNTY.

STEVENS COUNTY.
(From our Special Correspondent.)
CAPITOL. —Mr. R. J. Davis, one of the principal owners of this mine, located about sixty miles north of Spokane, is contemplating the location of a paint works at Spokane, providing he can get sufficient encouragement from Spokane people. The development at the mine shows a ledge 25 to 50 ft. wide developed by several tunnels, which are about 200 ft. in length, and shafts sunk to a depth of 30 ft. There are seven openings all in ore. The ore carries from 50% to 58% of iron, and is free from phosphorus, titanic acid, or sulphur. A soft ore is also found that can be used for mineral paint. At present three carloads per week are shipped to Tacoma smelter, where it is used as a flux. It brings \$2.50 more per ton than any other fluxing iron ore in the state. The owners claim to be able to mine 50,000 tous of ore within 50 ft. of the surface. If Mr. Davis can not make favorable arrangements for a site at Spokane, he will build his paint works at the mines.
DAISY.—A part interest in this mine, near Colville, has been sold to Mr. I. N. Terry, of Utica, N. Y., for \$15.000 cash. Mr. Terry has been working the mine hitherto under a bond. Three weeks are a 3-ft. vein of ore was struck, assaying about \$0 oz. in silver per ton. The vein is now 6 ft. wide, and increasing daily both in width and in grade. Work is being pushed as rapidly as possible, and new machinery will soon be purchased. The ore is free milling.

OLD DOMINION MINING COMPANY.—This com-pany is pushing the work on its new concentrating mill as rapidly as possible, and hopes to have it running by Dec. 1. Fifty men have been put to work on the plant and about the mine.

work on the plant and about the mine. QUEEN MINING COMPANY.—This company has been organized with the following officers: J. T. Hamilton, president; O. B. Nelson, vice president; Geo. E. Adams, secretary; W. H. McFarlan, treasurer. The capital stock is \$600,000, divided into 60,000 shares. As soon as the necessary ma-chinery is secured work will commence and be continued through the winter. The mine John L. is located at Fort Spokane, near the Colville In-dian Reservation. dian Reservation.

WHATCOM COUNTY.

(From our Special Correspondent.) (From our Special Correspondent.) A syndicate composed of Tacoma and Eastern capitalists has quictly secured leases upon nearly the whole Nooksack Valley, which lies between Fairhaven and the international boundary; this company has ordered a complete oil-rig from Penn-sylvani4. Before passing judgment upon the probabilities of finding oil in this county, D. J. Wynkoop, who assisted Prof. John F. Carll in the survey of the oil regions of Pennsylvania, made extensive and thorough examinations. This com-nary leases for a term of 50 years, promises to start. extensive and thorough examinations. This com-pany leases for a term of 50 years, promises to start immediately and expend no less than \$1,600 every year, and further agrees that in case it succeeds in striking oit one-eighth of the product goes to lessor.

striking oil one-eighth of the product goes to lessor, BELLINGHAM BAY & BRITISH COLUMBIA RAIL ROAD COMPANY,—This company, which now con-trols several thousand acres of the land upon which coal was first discovered in this State, nas begun exploration with a diamond drill three niles north of Fairhaven. When coal was dis-covered in 1852 work was immediately commenced and continued until 1878, when, on account of quantity of gas, the mines were abandoned.

quantity of gas, the mines were abandoned. BLUE CANYON COAL COMPANY.—The construc-tion of the railroad to tide water has been com-menced and the contractors are under bonds to complete it in 60 days; the franchise of the railroad eompany has been secured, and the eitizens of Bellingham Bay have guaranteed amounts suffi-cient to cover all damages to private parties.

miles from the mill, where there is ample water power. It is proposed to put in a plant of Pelton wheels and furnish all the power needed in the camp. Green Bros. & Johnson have put their mines against working capital furnished by a com-pany from Holyoke, Mass., and the chief of the Holyoke company is now visiting the property. The sum of \$25,000 is in the bank at Saratoga to be expended on its development.

FOREIGN MINING NEWS.

CANADA.

PROVINCE OF NOVA SCOTIA. COAL.

(From our Special Correspondent.)

(From our Special Correspondent.) In Cape Breton the trade continues steady, and every exertion is made to finish the shipments up the St. Lawrence, preparatory to filling local orders. It is understood that an order for about two dozen Harrison coal cutters has been placed by one of the larger mines. The sub-committee of the Explosive's Commission has been experiment-ing with roburite and other flameless explosives with satisfactory results. In Pictou County a powder magazine of the Acadian Coal Company exploded a few days ago, fortunately without loss of life. The coal from the Ford pit will be hand-picked on belts, which are being placed in position. Trade continues fair in this county. Recent ex-periments have shown that the culm from these mines can be washed to reduce the ash to 8%, and that the product makes an excellent coke. In Cumberland County collieries are being worked steadily, as the railways are stocking for the winter. winter.

GOLD.

GOLD. Mining prospects are improving, and several new discoveries are reported. Attachments bave been filed against the Lake Catcha mine by the Rand and Acadia explosive companies. Rich strikes are reported from the Hardman mine at Oldham, and from the Armand mine at Montagu, the latter yielding as the result of one day's work \$4,000, with equally rich ore in sight. A mill is being built to test the conglomerate at Burnside, Colchester County. IRON.

IRON.

The New Glasgow Iron Company has completed the grading of its road. Its furnace is well under way and the stores are completed. A range of 30 ovens on the modified Coppé system is half built. A bed of rich hematite, 6 ft. thick, and suitable for Bessemer purposes, has been found near the Tor-brook mines, Annapolis County.

GYPSUM.

At St. Anns, Victoria County, Messrs. McCurdy hae built 2½ miles of railway to their plaster quarries and have shipped several cargoes to Phil-adelphia.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Nov. 6.

New YORK, Friday Evening, Nov. 6. Heavy Chemicals,—The market is quiet, healthy and responsive. With the exception of the hard-ening of bleaching powder, and the heavy stocks of carbonated ash, there are no marked features. Caustic Soda,—There has been more inquiry for spot, owing to the demand for goods for interior water shipment. This has strengthened the market. We quote : 60%, 3/25@3/30c.; 70@74%, 3%c.; 76%, quite active at 3 15@3/20c.; 77% is scarce of spot, at 3/05c. Carbonated Soda Ash—Stocks are accumulating, owing to a dropping off in the glassmakers' de-mand. We quote : 48%, 1/57/4@1/60c.; 58% on basis of 48% old process ashes, 1/55@1 57/3c. Alkali.—The activity continues both in spot and far ahead futures. Prices do not change, and are as follows: B. M. 48%, 1/57/2@1/60c.; high test B. M. 1/47/4@1/50c. Bleaching Powder.—The syndicate has gained complete control of the local market, as is mani-fest by the almost entire absence of stocks seeking a purchaser, and the rapid climb of the quota-tions. Spot commands 2/43@2/50c.; futures, 2/10 @2/15c. Sal Soda.—Stocks and demand are both light. We quote 1/10@1/15c.

Acid.-The demand continues to increase. Manu-

Acid.—The demand continues to increase. Manu-facturers have all, and in some cases more than they can do to keep up their orders. Prices are hardening in all quarters, and advances are quite generally talked of. The situation certainly promises much. We quote per 100 pounds in New York: Acetic, \$1.60(@\$2; alum, lump, \$155@\$2; muriatic, 18°, \$1@\$1.25; 20°, \$1.25@\$1.37; 22°, \$1.37(@\$1.50; nitric, 40°, \$4.50 and upward; 42°, \$56@\$5.50; 66°, sulphuric, \$1½@\$1.75; oxalic, \$7.25@\$7.75. Blue Vitriol.—Prices remain unchanged at 3½@ 3½c.

3%c. Brimstone, — The manipulators have played

another card and once more the market has taken an upward turn. Spot stock is exceedingly light; \$31 is quoted. There is little demand for futures which are held at \$29 for seconds and \$28 for thirds.

Fertilizers.-This market does not present any marked feature for review. A moderate amount

of business is being done at sustained values. In-quiry is becoming quite general and indications are favorable.

are favorable. The ammoniates are quiet. Stocks are light. We quote sulphate at 3'05@3'07½c. for spot, the same for November, and 3'10@3½c. for December shipments. Bone sulphate commands 3'05c.; dried blood, \$2 per unit; tankaze. \$19@\$21; azotine, \$2 per unit; bone meal, \$22@\$23; acidulated fish scrap, \$11.50. Dry fish scrap is rather scarce at \$2.60.

scrap, \$11.50. Dry fish scrap is rather scarce at \$21.50. Double Manure Salts.—The demand is fair. There is little or no stock on hand. We quote the syndicate price of 1'10@1'12%c. for 48%. For 90%@ 95%, basis 90%, foreign invoice, weights and tests, 207%@2'10c. Lots under 50 tons are proportion-ately higher. Kainit.—There is very little stock in the market. We quote, \$8,75@\$9.25, according to quantity. Muriate of Potash.—Arrivals continue heavy, most of which go into consumption. Nitrate of soda is quoted at 2'10c. for spot and 207%c for futures. Its position has weakened considerably. From Mortimer & Wisner, we learn that there were imported into Atlantic ports from the west coast of South America from Jan. 1st. 1891, to Nov. 1. 577,492 bags; from Europe 18,802 bags, total 596.294 bags. South Carolina Phosphates. -Shipments have been behind on account of bad weather. We con-tinue to quote: \$6.50@\$7.50, wet and dry, respec-tively, f. o. b. vessels and mines, and \$6,75@\$7.75 f. o. b. cars. Florida land rock is very quiet. Pebble and river rock is moving forward at its customary pace. customary pace.

NOTES OF THE WEEK.

The Berkeley Phosphate Company's mill burned on the morning of the 6th inst., at Charlestown, S. C. It was fully insured. The acid chamber and storehouse were saved.

At the annual meeting of the acetate of lime manufacturers held at Binghamton, N. Y., last week, the the advisability and importance of re-stricting production was discussed. It was shown that the trade is suffering from overproduction. No agreement was reached.

MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Baltimore, Denver, Kansas City, Birmingham, Ala., Pittsburg, St. Louis, London, and Paris, see pages 542 and 548].

Paris, see pages 512 and 543. NEW YORK, Friday Evening, Nov. 6. Another week utterly devoid of interesting fea-tures has gone by. It is the same old story of dull-ness in the mining share market. Meantime, the reports from the West indicate a continued pros-perity at the mines themselves. New York has ceased to take much interest in mining specula-tion and it is due to this feeling that we report weekly an undesirable condition in the mining stock market. In San Francisco a similar state of affairs pre-vails; in the latter case, however, the reason must be in the uncertainty, not to say well-grounded suspicion, with which the doings of the Comstock mines are regarded. Under the head of correspond-ence we publish this week a criticism on the last annual report of the Consolidated California & Virginia Mining Company, by Mr. J. H. Tingman, of San Francisco. The letter deserves a careful perusal at the hands of every person interested in the great lode.

Virginia Mining Company, by Mr. J. H. Tingman, of San Francisco. The letter deserves a careful perusal at the hands of every person interested in the great lode. During the week there were sold 8,150 dividend-paying shares and 17,950 non-dividend shares, making a total of 26,100 shares sold. Last week there were 19,960 dividend-paying shares sold and 21,735 non-dividend, making total of 41,695 shares. This shows a decrease of 15,595 in the number of shares sold, and tells the tale as forcibly as any-thing we could say. Of the Comstocks, Belcher was quiet at \$1.80; Consolidated California & Virginia had sales of 230 shares at \$5.25; Crown Point was quiet at \$1,100@\$1.15; Gould & Curry shows but one sale of 100 shares at \$1.50; and Hale & Norcross one of 200 shares at \$1.50; and Hale & Norcross one of 200 shares at \$1.50; only advanced from \$2.89 to \$3.25, while Savage declined from \$1.75 to \$1.50; only 110 shares of Sierra Nevada were sold at \$1.20@\$1.40; Yellow Jacket was in some de-mand, and was traded in to the extent of 900 shares at \$1.35@\$1.75; the first price obtaining at the close. Of Alpha 300 shares of Best & Belcher sold at \$2.50@\$2.70, and 300 shares of Builion at \$1.20; Comstock Tunnel stock shows sales of 500 shares at 76c.@17c. There were 400 shares of Exchequer dealt in at 45c;; and an equal number of Julia at 20c. We note sales of 300 shares of Mexican at \$1.90@\$2.30. There was a solitary sale of Scorpion at 35c.; Seg. Belcher, which has not been dealt in for some time, shows a sale of 300 shares at 70c. Of Union Consolidated 200 shares were sold at \$1.90@\$2.30. There was a solitary sale of 50 shares at 70c. We note sales of 300 shares at 70c. Of Union Consolidated 200 shares at 40c. Of the other Nevada stocks there was a sale of 50 shares of Eureka Consolidated 200 shares of the stock having been sold at 1c. Of Brunswick Consoli-dated 400 shares changed hands at 9c. and 10c., i

and 200 shares of Plymouth were sold at \$2.60@ \$2.65. The preferred stock of the Quicksilver Mining Company, was dealt in once more this week,910 shares being disposed of at \$19.50@ \$22.50; there was a sale of 100 shares of the common stock at \$4.50. We note a single sale of 200 shares of Standard at \$1.20. Among the Colorado stocks there sales of 500 shares of Lron Silver at \$1.45. This week 1,200 shares of Leadville Consolidated were sold at 13c@ 15c. Mr. C. A. Cameron, secretary and treasurer of this company stated that the company now has a dividend fund of \$21,000. As mentioned in the Ex-GINEERING AND MINING JOURNAL two weeks ago, the returns for August and September were very good, the royalties averaging about \$4,000 per month. The full returns for October have not yet been received. In regard to a dividend Mr. Cam-eron said that the question was entirely in the hands of the Board of Trustees. It may be added that a dividend of 5c. per share would amount to \$20,000. There were 300 shares of Little Chief sold at 20c.

that a dividend of 5c, per share would amount to \$20,000. There were 300 shares of Little Chief sold at 20c., and 700 shares of Robinson Consolidated at 40c.@ 45c. At the office of the Small Hopes Consolidated Mining Company we learned that the Emmett shaft is being sunk to the second contact, and it is proposed to dritt from there over into the R. A. M. and Cyclops properties, which have been leased by the company. The machinery is in position, and as soon as the water is pumped ont the shaft will be sunk about 50 ft. deeper. The Forest City mine is producing regularly and 73 men are employed. The company has a dividend fund of over \$39,000, and a surplus fund of over \$59,000. Among the Black Hills stocks dealt in there were sales of 200 shares of Caledonia at 64c.; and a sale of 100 shares of Deadwood Terra at \$1.95. Of Horn Silver 700 shares were sold at \$3.50@ \$3.60.

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Boston.

Nov. 5.

(From our Special Correspondent.)

(From our Special Correspondent.) (From our Special Correspondent.) The financial disturbance of the week has had a depressing influence upon the stock market gen-erally, and the copper stocks have shared in the depression. The market has been extremely dull, and the few orders received by the brokers have mostly been to sell stocks, and of course on a weak market there is only one result, viz., lower prices. At the same time there has been no great pressure to sell, and, all things considered, the market has not declined as much as might be expected. The Montana stocks have shown the greatest de-cline, although some of the Lake Superior stocks show lower prices, notably Osceola and Tamarack. There has been very little gossip in copper circles during the past week; the general opinion seems to be that ingot copper has reached its lowest point for this year, and there ought to be an improve-ment with the closing of navigation. The out-puts for eight mines for October show only a slight increase over last year. Calumet & Hecla sold at \$252 early in the week, but later sales advanced prices to \$255% \$253/4. Tamarack declined from \$160 to \$155, a small lot selling to day at \$152. Boston & Montana sold down from \$44% div-idend on to \$401% ex-dividend (\$1) a decline of \$22% to \$14. Both of these stocks were heavy at the close. Osceola has shown considerable weakness, and

close

Close. Osceola has shown considerable weakness, and after selling quite freely at \$33, dropped to \$31¼, very near the lowest price of last week Kearsarge has been fairly steady at \$12% to \$12½ showing rather more strength than last week. Atlantic was also quite firm with sales at \$12¼@ \$12

At lattice was also durie firm with sales at \$12%. Centennial sold at \$13@\$121% and a small lot of Franklin sold at \$13@\$121% and a small lot of Franklin sold at \$16%. Allouez declined to \$2 on small sales; and Santa Fe sold at 30c., same as last week. Ridge appeared this week selling at 75c., the last sale previous (May 20th) being at 50c. The pros-pects of the mine are said to be improving. We have not heard of any sales of Quincy dur-ing the past week, but the stock was offered at \$110 with no takers. At the afternoon board the weakness in copper stocks continued. Boston & Montana sold down to \$40, Atiantic to \$12, while Calumet & Hecla was steady at \$255\. There has been nothing doing in silver stocks of stocks seems to have died out.

of stocks seems to have died out.

San Francisco. Oct. 29.

(From our Special Correspondent.)

The market has continued weak with a soften-ing tendency on the part of the leading stocks. No heavy operators are taking any interest in the game at present, and consequently the market

Nov. 7, 1891

. 50,600

sags from its own weight, the small chippers, being utterly unable to sustain any such burden. While prices are easily advanced, owing to the sensitive condition of the market, they are as easily broken for the same reason. The leading stock has deelined during the past week 32 cents. On early call 230 shares were sold for \$4.80, and in the afternoon regular session that figure was beaten down to \$4.50 under the sale of 1,020 shares. Ophir, which sold last Thursday for \$3.20, opened to day at \$2.70, and deelined later to \$2.55 under moderate sales. Mexican ruled this afternoon at \$2, in contrast with \$2.30, the ruling price a week ago. Sierra Nevada is quoted at \$1.60, and Union Consolidated at \$3.
Of the Middle Comstocks Savage continues to be most in demand, selling this morning for \$1.80, and this afternoon in regular session at prices varying from \$1.80 down to \$1.60, with 925 shares sold. A week ago it was selling steady at \$2.35. Of the other middle stocks, Best & Belcher is ruling at \$2.30; Gould & Curry, \$1.40; Hale & Norcross, 95 cents, and Chollar, 85 cents.
Of enerse the Gold Hilland south end stocks have suffered, in common with the other Constocks, rom the hreak in prices. Bullion is ruling to day at \$1, a decline of 35 cents during the week; Con. New York at 25 cents; Exchequer at 45 cents; Justington at 15 cents; Oceidental at 40 cents; Overman at \$1.20, and Yellow Jaeket at \$1.35. All show a proportionate decline on the week's trading.

show a proportionate decline on the week's trad-ing. The Bodies have been in request the last day or two, Bodie Con. selling for 50 cents, Bullion for 10 cents, and Mono 30 cents. Of the Tuscaroras the only stock quoted to-day has been Nevada Queen, at 35 cents. The show-ing being made at the mines will, however, prob ably soon cause a movement in this group of stocks, although. for reasons heretofore men-tioned, trading will be on a gambling rather than a speculative basis. The Quijotoa stocks, with the exception of Peer, have been ignored. That stock is selling at 10 cents, with limited sales. What the future may bring it is impossible to say, but as the year draws to a close it will be a surprise to no one here if prices generally do not reach a lower point than yet obtained. SAN FRANCISCO, November 6th. [By telegraph.]

yet outamed. SAN FRANCISCO, Novemher 6th. [By telegraph.] To-day's quotations show a slight advance. They were as follows: Best & Beleher, \$2.55; Bodie Con-solidated, 50c.; Belle Isle, 30c.; Bulwer, 10c.; Chol-lar, 80c.; Consolidated California & Virginia, §5½; Eureka Consolidated, \$1.40; Gould & Curry, \$1.45; Hale & Norcross, 85c.: Mexican, \$2.15; Mono, 30c.; North Belle Isle, 45c.; Maxajo, 15c.; Ophir, \$3.25; Sierra Nevada, \$1.95; Union Consolidated. \$1.95; Yellow Jacket, \$1.35.

St. Louis.

Nov. 4.

(From our Special Correspondent.) Mining matters were brisk during the past week, and business was decidedly an improvement on that of a week ago. Prices seemed to be going a trifle higher on the whole and many trades were made in stocks which have long been idle on the all

triffe higher on the whole and many trades were made in stocks which have long been idle on the call. American & Nettie opened at 52½c., with a sale of 200 shares, and later 1,000 shares sold at 53%c. @ 57½c. On Friday 200 shares sold at 60c.@70c., and later in the week 75c. and 73%c. was ohtained on sales amounting to 200 shares. The stock appears very strong, and is in very good demand. Silver Age opened at 32%c. and closes at 45c. Only on one day was there any trading, 600 shares being sold. On Monday the stock was quoted at 47%c. the stock is now quoted at 9%c. with a lively trade. Sales for the week amounted to 11,600 shares, the greater part going at 7@10c. Montrose, while still low, was in fair demand, and a small amount of huying was done. The stock opened and closed at the same figure, 20c At one time the stock was quoted at 17%c. Sales aggregate 2,100 shares. Elizabeth was quiet and fluctuated only a few cents in price. It closes at the opening figure, \$1.60. During the week it sold at \$1.60@\$1.70, 500 shares sold followed later hy asale of 35 shares at the stane figure. On Friday 65 shares sold at \$20, 90 shares sold followed later hy a sale of 35 shares at the same figure. On Monday the stock sold at \$20, 90 shares sold followed later hy a sale of 35 shares at the same figure. Tum was very quiet, and only one sale of 500 shares at 36%c. was made. To-day the stock is quoted at the opening figure, Tum awas very quiet, and only one sale of 500 shares at 36%c. was made. To-day the stock is quoted at the opening figure, 35c. Small Hopes opened at 70c. and closes at \$00 shares at 36%c. was made. To-day the stock is quoted at the opening figure, 35c. Small Hopes opened at 70c. and closes at 80c. During the week 200 shares sold at 800,82%c. Adams was firm at \$1.90 and Bi-metallic at \$34.

Adams was urm at \$1.50 and Drinetante at \$34. Next Thursday the annual election of the Mining Exchange for officers for the next year takes place. The following constitute the official ticket: R. D. Kohn, President; B. O. Clark, Vice-presi-dent; Ernst Michaelis, Treasurer; with the Board of Directors as follows: J. J. Mulally, Geo. M, Huston; A. H, Bauen and W. H. Hensden,

The following delegates have been appointed to represent St. Louis at the Mining Congress, to be held at Denver, November 18: R. D. Kohn, P.J., McMorrow, A. Singer and B. O. Clark. At a public sale of Mickey Breen Stock, 1,000 shares sold only at 26c. @ 27½c. to Mr. Sonderman. Denver.

Prices and sales for the week ending October 31st, 1891:

| | Company. | Upen- | | | Clos- | |
|---|-------------------|--------|----------|---------|-------|-------|
| • | | ing. | H. | L. | ing | Sale |
| | Mines. | 0 | | | Bid. | |
| | Alleghany | 20a | | | 20a | |
| | Amity | 02¼h | *03 | 021/2 | 0216 | 12.10 |
| | Bangkok-CB | 0416b | 1061/4 | 05 | 05 | 2.70 |
| | Bates Hunter | 70a | | | 70a | -, |
| | Brownlow | 11 | *11146 | 103/ | 108/ | 13.90 |
| | Callione | ** | **/2 | * 0 / m | 14 | 20,00 |
| | Cash | 12h | | | 11 | |
| | Clay County | 114b | | | 114 | |
| | Gattychurg | 91h | 99 | 00 | 111 | |
| | Gold Pool | 69h | 174 | 24 | *00 | 0.90 |
| ł | Log wommonth | 051 | 114 | 00 | -09 | 2,30 |
| l | Leavenworth | 000 | | | 1110 | |
| 1 | Little Rule | THUD | | **** | 1110 | |
| | May-Mazeppa | 1258 | 110 | *108 | 101 | 20 |
| l | Matchless | | | | 250 | |
| | Oro | 75b | | | 101 | |
| | Pay Rock | 021/4 | 021/4 | 021/4 | 021/2 | 2.00 |
| 1 | Puzzler | 02%h | *03 | 0234 | 0216 | 1.10 |
| 1 | Reed National | 40b | | | 80a | |
| 1 | Rialto | 110a | | | 110a | |
| 1 | Running Lode | 22h | | | 9916 | |
| 1 | Whale | 13h | 14 | 13 | 10 | |
| 1 | Bal Smuggler | 61.0 | ** | 10 | 639 | - |
| 1 | D D | 010 | | | 000 | |
| 1 | Prospects. | | | | | |
| 1 | Argonaut | 15b | | | 16 | |
| 1 | Big Indian | 109 | | | 06 | |
| ł | Big Six, W. T. | 07h | *08 | 07 | 08 | 1.80 |
| ł | Claudia . | 061/h | *07 | 0614 | 061/ | 9 90 |
| ł | Century | 109 | 24 | 30 | 127 | 2,00 |
| 1 | Diamond B | oth | *048/ | 028/ | 04 | 00 00 |
| I | Not C & Oil Co | 111 | \$1.01 C | 1012 | 101/ | 20,20 |
| I | Wat. G. & On Co | #401 | 1279 | 10%9 | 10%2 | 13,70 |
| ł | Calden Warmen | 10.11 | -10 | 40% | 148 | 11,30 |
| ł | Golden Treasure | 1920 | 88 | 81 | 87 | 1,60 |
| ł | Ironciad | 12/40 | 11/4 | 12/2 | 1594 | 19,60 |
| 1 | John Jay | 018 | 94 | 94 | 1/2 | 3,04 |
| 1 | Justice | 131/2b | *21 | 13 | 20 | 6,70 |
| 1 | Morning Glim | 47a | | | | |
| 1 | Park Consolidated | 05b | | | 05 | |
| 1 | Dotool | 098/h | 098/ . | 0917 | 0914 | 9 10 |

Lake Superior Iron, Gold and Silver Stocks

| (Special Report by A. M. | Helmer, Milwaukee, Wis.) |
|--------------------------|--------------------------|
| Iron. | Mllwaukce Iron Co. \$4.5 |
| GOGEBIC RANGE: | Negaunee |
| nvil | Pittsburg and Lake |
| shland 51.00 | Angeline 145.0 |
| urora 10.00 | Republic 27.0 |
| lessemer Consoli- | Riverside 2.0 |
| dated Bonds 20% | MENOMINEE RANGE : |
| rotherton 2.50 | Aragon |
| ary | Cbapin |
| oldy | Commonwealth 10.0 |
| armania 7.00 | Florence |
| ogebic Iron Syndi- | Hamilton Ore Co |
| cate | Manafold |
| ron Belt 2.00 | Mansheld |
| Aetropolitan Land | Mastouon |
| and Iron Co 62.00 | Norway |
| Iontreal 10.50 | Paint River |
| orth Pahst 2.00 | Pewahic |
| orthern Chief 25.00 | Quinnesee |
| danah 13.50 | Sheldon and Shafer |
| anst | Sberidan 4.0 |
| ann 1.19 Dence 1.95 | Vulcan |
| enokee and Goge. | Youngstown |
| hie Developm, Co. | VERMILION RANGE: |
| uhv | Chandler 40.0 |
| yan | Chicago and Minne- |
| ection 33 9.50 | sota Ore Co 105.0 |
| Vindsor | Clingstone2 |
| Visconsin 1 ron and | Inter Ocean |
| Steel Co50 | Minnesota Ore Co., 83.0 |
| MARQUETTE RANGE: | Nortbwestern |
| merican \$2.00 | Vermilion 9 |
| hampion 80.00 | Vermilion P & L |
| leveland 15.50 | Co 22 |
| leveland Cliff Iron | |
| Co | Gold and Silver. |
| ast New York 2.00 | Badger Silver Min- |
| | Michigan Gold Go |
| ackson 105.00 | Peningula Gold Min |
| ake Superior 60.00 | ing Co |
| MARQUETTE RANGE: | Rones Gold and Sil- |
| lichigamme. | ver Co 1.2 |
| | |

PIPE LINE CERTIFICATES.

(Spcially reported by Watson & Glbson.

(Spcially reported by Watson & Gibson. There has been but little news from the oil re gions for the past week and hut slight material changes in the oil markets. With the large pro-duction still shown in the fields of Western Pennsylvania and Ohio it is not prohable that higher prices will be recorded for some time to come. This, coupled with the general indisposi-tion of the largest consumers to make an active market, tends to keep out all the smaller traders who used to look to this commodity as their favor-ite speculation.

| CONSOLIDA | TED STO | CK AND | PETROLE | UM EXCH. | ANGE. |
|------------------|----------------------|------------------------|---------------------------|--|----------------------------|
| Oct. 31 | pening. 59 60% | Highest. 59¼ 60% | Lowest. 587/8 599/4 | Closing. 59 ¹ /4 59 ⁷ /8 | Sales 427,000 64,000 |
| 3 4 5 6 | 605% 5934 575% | 6056 5934 58 | 597/8 58 573/4 | 597/8 583/4 573/2 | 32,000 87,000 82,000 |
| Total s | ales in b | arrels | | | 692,000 |

| otal | sale | es i | n | barrel | 8 | | | | ****** |
|------|------|------|---|--------|---|--|--|--|--------|
|------|------|------|---|--------|---|--|--|--|--------|

NEW YORK STOCK EXCHANGE. Opening. Highest. Lowest. Closing. Sales Oet. 31... Nov. 2.... 591/4 591/4 59 59 8,000 •••• 3..... [4. 5. 6. . . . 591⁄4 57 591/4 571/2 59 57 59 57 28,000 14,000

....

ASSESSMENTS.

Total sales in barrels....

| | | | and the second se | | |
|----------------------|-----|-----------------|---|--------------|-----------------------|
| Company. | No. | When levied. | D'l'nq't ln office. | Day of sale. | Am'. per share, |
| Alta Nev | - | Oct 6 | Nov 11 | Dec 9 | 30 |
| American Gulch. | | 000. 0 | 1.01.11 | DUU. 2 | |
| Mont | 40 | Sept.18 | Oct. 26 | Nov. 16 | .00% |
| Bodie Con., Cal | 13 | Sept. 22 | Nov. 5 | Dec. 9 | .25 |
| Brunswick Con., Cal. | 2 | Sept.11 | Oct. 15 | Nov. 9 | .02 |
| Butte King, Cal | 2 | Sept. 21 | Oct. 31 | Nov. 18 | .10 |
| hollar, Nev | 31 | Oct. 26 | Nov. 30 | Dec. 2? | .50 |
| combination, Mont. | • | Sept.19 | Oct. 24 | Nov. 21 | .03 |
| on.NewYork. Nev. | 6 | Sept.28 | Nov. 2 | Nov. 24 | .15 |
| on.St.Gothard,Cal. | 3 | Sept.10 | Oct. 14 | Oct. 31 | .05 |
| Jel Monte, Nev | 5 | Sept. 28 | Nov. 3 | Nov. 30 | .10 |
| Last Best & Bel Nev. | 2 | Oct. 22 | Nov. 24 | Dec. 12 | .20 |
| ureka Con., Cal . | 4 | Oct26 | Nov. 30 | Dec. 21 | .02 |
| quitame, S. Dak. | 4 | Sept 9 | NOV. 1 | Nov. 30 | |
| and an Granal Gal | 0 | Oct. 20 | NOV. 20 | Dec. 21 | .02 |
| arden Gravel. Cal. | | Sept. 1 | Oct. 21 | Nov. 17 | .10 |
| Jolo & Nononosa | | Sept. 2 | Oct. 20 | NOV. 14 | .01 |
| Nov | | | | | 50 |
| Cavetone Cal | i | Sont 16 | Oot 91 | Nov 92 | 9 50 |
| ling of the West | * | Sept. 10 | 000. 41 | 1101. 20 | 2.00 |
| Ida | 4 | Oct 10 | Nov 10 | Nov 30 | 10 |
| Cingman, Ariz | i | Sept. 30 | Nov. 19 | Dee. 1 | 05 |
| ammoth No. 2. | | Sept.00 | | | .00 |
| Utab | 1 | Sept. 25 | Nov. 10 | Dec. 10 | .015 |
| CDonnell, S. Dak. | 5 | Sept-16 | Nov. 2 | Nov. 24 | .005 |
| Iono | 31 | Sept.17 | Oct. 27 | Nov. 30 | .25 |
| ecidental, Nev | 8 | Oct. 19 | Nov. 23 | Dec. 16 | 25 |
| phir, Nev | 57 | Oct. 2 | Nov. 4 | Nov. 24 | .50 |
| verman, Nev | 62 | Sept.26 | Oct. 30 | Nov. 20 | .50 |
| eerless, Ariz | 17 | Sept.17 | Oct. 21 | Nov. 15 | .10 |
| ierra Nevada, Nev. | 100 | Oct. 6 | Nov. 11 | Dec. 1 | .50 |
| iskiyou Con. Qulck- | | | | Dec. 4 | |
| silver, Cal | 1 | Oct. 9 | Nov. 12 | | .04 |
| tah, Cons, | | | | | .25 |
| | | | | | |

MEETINGS.

California Water and Mining Company, at the office of the company, No. 47 Broadway, New York, November 19th at 12 o'clock noon.

Occidental Consolidated Mining Company, at the office of the company, Room 69, Nevada Block, No. 309 Montgomery street, San Francisco, Cal., November 16th at 1 P. M.

COAL TRADE REVIEW.

New York, Friday Evening, Nov. 6. STATEMENT of shipments of anthracite coal (approxi mated) for the week ending October 31st, 1891, compared with corresponding periods of last year:

| | The second se | | | |
|---|---|-------------------------------|----------------------|-----------------------------|
| Regions. | Oct. 31, 1891. | Nov. 1, 1890. | Dif | ference. |
| Wyoming Region.Tons Lehigh Region " Schuylkill Region " | 591,704 164,487 356,175 | 438,064 147,399 265,841 | 1nc. Inc. 1nc. | 153,640 17,088 90,334 |
| TotalTons | 1,112,363 | 851,304 | Inc. | 261,062 |
| Total for year to date Tons | 32,721,341 | 29,400,832 | 1nc. | 3,320,509 |
| PRODUCTION OF BITT October 31st, and year | MINOUS (from Janu | COAL, for lary 1st. | wce | k ending |
| EASTERN AND | NORTHER | N SHIPME | INTS. | |
| | | - | | 1890. |

| umberland, Md | 90.266 | 3 453 444 | 3,218,823 |
|--------------------|---------|------------|------------|
| arclay. Pa | 4,436 | 157.173 | 128,987 |
| road Top. Pa | 12,731 | 415,362 | 421,221 |
| learfield. Pa | 90,596 | 3,318,428 | 3,110,022 |
| llegheny, Pa | 23,163 | 1,051,092 | 1,064,468 |
| each Creek, Pa | 45,176 | 1,998,302 | 1,594,154 |
| ocahontas Flat Top | 42.919 | 1,902,190 | 1,569,771 |
| anawha, W. Va | 65,999 | 1,984,307 | 1,743,130 |
| | | | 10.000 100 |
| Total | 377,048 | 14,420,569 | 12,963,136 |
| | | | |

WESTERN SHIPMEN'TS.

| Pittahurg Pa | Week. | Year. | Year. 689 650 | | | | |
|-------------------------------------|-----------------|----------------------|--------------------|--|--|--|--|
| Westmoreland, Pa Monongabela, Pa | 41,858 9,793 | 1,617,776 497,029 | 950,374 441,621 | | | | |
| Total | 80,673 | 3,141,120 | 2,081,645 | | | | |

Grand total.... 457,721 17,561,689 15,655,781 PRODUCTION OF COKE on line of Pennsylvania R. R. for the year ending Octoher 31st, 1891, and year from January 1st, in tons of 2,000 lbs.: Week, 114,454 tons; year, 3,521,736 tons; to corresponding date in 1890, 4,454,-879 tons. 879 tons.

Anthracite.

The production for the week ending the 31st inst. was the largest in the history of the trade, viz., 1,112,366 tons, an increase of 261,062 tons over the corresponding period in 1890. The production for the four entire weeks in October in tons was

as follows: 939,791, 984,759, 995,662, 1,112,366, or 4,032,360. In addition thereto is the production of the first three days in October, which we will esti-mate at 431,750 tons, and we have a month's out-put of 4,464,110 tons.

The present anthracite coal trade of the tide-water market is made up of three distinct inter-ests, viz., that of the operator or producer, the retailer and the speculator. The last named is rep-resented by an element that has been heard from frequently of late. It consists of a very pronounc-ed Wall Street bear movement based on pessi-mistic reports and predictions relative to the future of the market, and is directed against the coal stocks. Of late it has heen gaining ground with startling rapidity, as is manifest by the tumble which that class of securities is taking. The reasons therefore can best be determined by a consideration of trade conditions. For some time past the bulk of the tonnage has The present anthracite coal trade of the tide

with starting rapidity, as is manifest by the tumble which that class of securities is taking. The reasons therefore can best be determined by a consideration of trade conditions. For some time past the bulk of the tonnage has been going west, north and south at full prices, re-lieving the tide water market of excessive or ac-cumulating stocks. This fact, in the face of weak prices and a very light demand, has had its strengthening effect. The same line and western movement continues to-day. However, as was ex-pected toward the close of the season, it shows signs of abatement. The Eastern market must once more take the bulk of the tonnage. The ques-tion is, will it do it? In a week the situation has weakened. Prices are not as high or firm, and there has not been the expected increase in the volume of husiness. The secret of this back ward movement is found in the half a million tons excess in October's production and the 4,000, 000 tons allotment for November. The susceptible retailer has had his bearish nature aroused. He predicts, and firmly believes, that there will be a "go-as-you-please" for tonnage, and an utter collapse in prices, and is holding off in anticipa-tion, merely meeting immediate wants by hand-to-m uth buying. There is another and still more important condition which rises in the background like an ominous cloud, and which is likely to over-spread the coal world. It is the threatened allotment war. The "wise men" of the trade, evidently allow-ing the wish to be parent to the thought, shake their heads and declare nothing will come of it. There are others equally wise who say that "something may come of it," and if certain manifestations ripen into action they look for a radical departure of the coal producers from the beaten hut somewhat zizzag path. The issue hinges upon the action of the Sufficiently canvassed the trade to state that the companies directly intrested will not consent to an increase of the Read-ing's percentage, and the only alternative the Reading has, is that it m by our conser tinued peace.

tice. These preparations can hardly be interpreted by our conservative friends as indications of con-tinued peace. Wall street has had its finger on the somewhat feverish pulse of the anthracite trade for some time. In that realm of Mammon coal dumps have been made to appear as gigantic storage yards filled to their limits. Indications have all been bearish, and outside yet relative condi-tions becoming favorable, a tumble in prices resulted. The slump has another and more potent cause. It is one which is but imper fectly understood by the outsider, as it does not appear on the surface. In the case of Coxe Bros. & Co. against the Lehigh Valley, the Inter State Commerce Commission, it will be re-membered, decided that the carrying rate to tide water was 20 cents per ton too high. This is the key to the situation. So long as the roads obtain the prevalent rate for transportation they will continue anxious to move all the coal possible to tide water. If they are owners of this coal they derive a heavy profit through its car-riage. If they are transporters only their profit still remains. A termination of the Coxe Bros. & Co. case will cause a settlement of this rate question. The Lehigh Valley is evidently in no hurry to have the decision tested in the courts, as is evidenced by the frequent postponements. Wall street has commenced to figure on the earn-ing capacity of certain property in case a reduction of tolls should be ordered. Hence the decline. Trade is light for this season of the year. Prices are openly cut by independent operators, and the October circular is a standard in name only. Pro-duction is going on at an enormous "free for all" gait, its only restriction this month will be the capacities of the different companies. It is yet too early to predict the outcome. The feeling among wholesalers seems to be that the trade will ab-sorb all the coal that can be produced at the pres-ent ruling circular, or about \$4,15 net for stove,

Bituminous,

The demand for soft coal is moderate. There is very little new business being done. Ocean freights have advanced, and the situation of to day is charhave advanced, and the situation of to-day is char-acterized by a scarcity of vessels at lower ports. We quote: 90@95c. from Philadelphia, 95c. from Norfolk and 95c.@\$1.00 from Baltimore, all to Bos-ton. To shoal water points \$1.10@\$1.20 is quoted. The car supply has very materially improved. A meeting of the Vessel Owners' Association was held in Philadelphia last week and an agreement reached fixing the minimum rate of transporta-tion on coal during 1892 as follows: From Philadel-phia and Newport 95c., and Baltimore \$1.00, all to Boston. Rates to other ports to be based upon those given. The move is one which is warranted, owing to the starvation rates which have ruled during the season. The shippers declare them-selves in favor of it. The only obstacle which will be met with in carrying out the agreement will be the rebates, which, if history repeats itself, will be offered during periods of depression in order to secure tonnage.

NOTES OF THE WEEK. The Lehigh Coal and Navigation Company has eclared a semi-annual dividend of 2½%, payable declared a November 25th

Judge Dean, the president of the Cresson and Clearfield Coal and Coke Company, has been re-elected president-judge of his district (Penn.), for a term of ten years. Boston. Nov. 5.

(From our Special Correspondent.)

(From our Special Correspondent.) The anthracite coal market op-ned very firm this month, and naturally would after the difficulty experienced in freights last month and the good demand from the retailers. Spot anthracite is especially firm, as vessels are scarce. Dealers here expect no relaxation until the advent of Decem-her. Retail dealers are not stocking up far ahead, however, waiting to see what the outcome of the prospective difficulties between the producing companies will be. None of the Boston dealers have ordered heyond February 1st, which is un-usual at this time of the year. In past seasons it has been common to buy up to March 1st, and often April 1st. In stove coal there is a fair business doing, but prices here rule 15 cents below the circular. Egg is in rather short supply, yet sales are made from \$3.85@\$4. Excidet rates are dealedly fumer than there

is in rather short supply, yet sales are made from \$3.85@\$4. Freight rates are decidedly firmer than they were last week, owing, as above stated, to the scarcity of tonnage. The rates quoted are : From New York, 60@70c.; from Philadelphia, 90@95c.; from Baltimore, \$1. Rates from Baltimore are es-pecially firm, one large dealer here expressing his willingness to take a dozen vessels at \$1. Nothing since ^ovember 3d has been chartered for this port from Baltimore at less than that figure. The bituminous market, like the anthracite, has been troubled with the difficulty of getting coal forwarded. It is consequently firmer. The de-mand is good. The retailers and mill people do not need to buy very much just now, as they stocked up when freight rates were low. One of the greatest troubles at present is to get cars to ship the coal that arrives. One large wholesale concern has had a cargo of 1,000 tons here since Octoher 17th, and it has been able to get only a few hundred tons out, in consequence of the present shortage in cars. Rates on the latter are \$3.75 strong. Betail dealers are doing a very good business at strong

Retail dealers are doing a very good business at present, realizing satisfactory prices Their stocks as noted under anthracite are hut moderate.

Buffalo. Noy. 5. (From our Special Correspondent.)

(From our Special Correspondent.) There has been and is a good demand for anthra-cite and bituminous coal. Prices are unchanged. Indications all tend to help the belief that a large business will be done during the next six months. Coke is fairly active. Lake freights on coal to Chicago and Milwaukee are again higher. The rates are now 60c. to Chi-cago, Milwaukee, Sheboygan and Green Bay ; 65c. to Marquette ; 40c. to Saginaw ; 30c. to Port Huron and Bay City; 25c. to Superior and Duluth; 25c. to Toledo and Windsor. Vessels could not get coal for freight to Duluth, but the demand for tonnage was good to Lake Michigan ports. ports.

ports. The quantity of coal shipped by lake westward from Buffalo from October 29th to November 4th. hoth days inclusive, was 83,110 net tons, distributed about as follows: 41,500 tons to Chicago; 14,380 to Milwaukee; 12,100 to Duluth; 5,300 to Superior; 1,500 to Sheboygan; 1,400 to Marquette; 1,610 to Toledo; 400 to Port Huron; 1,000 to Windsor; 350 to Saginaw; 160 to Port Dalhousie; 40 to Port Stanley; 20 to Port Burwell; 1,000 to Detroit; 1,100 to Green Bay, and 1,250 to Bay City. Coal shipments by canal were made during Octo-her as follows: seven loads to Syracuse at 55c. net ton, and one to Fulton at 65c. net ton, all free on and off.

Coal shipments by canal were made during Octo-her as follows: seven loads to Syracuse at 55c. net ton, and one to Fulton at 65c. net ton, all free on and off. Shipments hy lake westward for month of Octo-ber: 355,740 net tons, as compared with 355,010 tons in 1890 and 317,250 tons in 1899; for season to Novem-ber 1st: 2,043,050 net tons, as compared with 1,790,-\$70 tons in 1800 and 1,901,390 tons in 1898. The receipts of coal by canal for the month of October: 192 net tons, as compared with 10 Cotober: 192 net tons, as compared with 1,890 and 1,120 and 11,986 tons in 1889; the shipments: 4,414 net tons, as compared with 7,449 tons in 1890 and 1,120

tons in 1889. Total receipts by canal thus far this season to November 1st: 817 net tons, as compared with 31,452 tons in 1800 and 30,484 tons in 1889, the total shipments, 28,741 net tons, as com-pared with 16,074 tons in 1800 and 9,993 tons in 1889. The aggregate shipments by lake thus far this sea-son, to November 1st, show an increase of 252,180 net tons over 1890, and 52,660 net tons over 1889. The rates of freight hence to points named during October this year were 40c.@50c. to Chicago; 40c.@ 50c. to Milwaukee; 25c. to Duluth and Lake Supe-rior ports; and 20c. to Toledo and Detroit. The rate to Chicago on November 1st, 1800 and 1889 was 60c., and to Duluth 30c. in 1890 and 25c. in 1889, per net ton.

ton. The shipments of coal by lake from Buffalo thus far this season to November 1st were distributed about as follows:

| То | Net tons. | То | Net tons. |
|-----------------|-----------|-----------------|-----------|
| hicago | 778,160 | Luddington | 1.117 |
| lilwaukee | 491,205 | Pt. Dalhousie | 160 |
| equaming | 100 | Bay Mills | 1.960 |
| ut-in-Bay. | 250 | Hancock | 3.055 |
| elly Island | 510 | Ft. William | 20 7. 0 |
| erpent River. | 420 | Traverse City | 350 |
| erry Sound | 160 | Toledo | 59 297 |
| ake Linden | 3,780 | Dulnth | 193,910 |
| wen Sound | 1.000 | Kincardine | 900 |
| andusky | 200 | Escanaba | 4 330 |
| ort Arthur | 2.680 | Menominee | 7,570 |
| fanitowoc | 4.250 | Pt. Rowan | 89 |
| comney | 4 | Amberstburg | 1.030 |
| las stone | 23.270 | Green Bay | 26 720 |
| heboygan | 11,980 | Saginaw. | 21,615 |
| loughton | 4.320 | Pt. Calborne | 240 |
| t Clair | 800 | De Pere | 1.210 |
| uperior | 137.010 | Detroit | 22,000 |
| acine | 37,410 | Alpena | 1.030 |
| enosha | 8,610 | Washburn | 6.090 |
| beboygan | 1.350 | Marinette | 1.510 |
| Vindsor | 1.666 | Marquette | 18.240 |
| ortage | 2,350 | Huron | 300 |
| lacklnaw | 150 | Manistique | 60 |
| farine City | 860 | Sundry places |) |
| t. Huron | 650 | by vessels from | |
| shland | 10,150 | Tonawanda | 1 |
| ay City | 8,960 | not reporting | 165.572 |
| 9 was | 240 | at custom- | |
| scoda | 200 | house at this | |
| ault Ste. Marie | 3,730 | port |) |
| t. Burwell | 20 | | 1 |
| | | | |

Chicago.

Nov. 5.

Chicago. Nov. 5. Vessel rates have again advanced, and before the week is out we look for the 75c. mark. This has had some little effect in hardening dock prices for coal, and another twist of the tariff screw will probably further stiffen them. October prices are to rule for November, and they will douhtless be fully maintained. Lake shipments are coming for-ward a little more rapidly, with dock capacity overtaxed, and a number of coal vessels are ly-ing in the river waiting for dock room to unload their cargoes. It is the general opinion among the trade, and we have sounded it thoroughly, that the proportion of the in-creased output which is to come west will be readily absorbed without affecting values. This opinion is based upon the climatic conditions being in unison with the demand for artificial heat. Of course, in the event of another open winter, prices would go all to pieces and stocks would be heavy. All-rail small egg and nut sizes are scarce and very near to circular price; \$2.52 can be got for all offered on track. Steam sizes are in better demand every week, so that the effect of the more rigid e-forcement of the smoke ordinance has been to develop a large trade for this class of coal. Coun-try orders have improved during the past week, and while not up to expectations as far as tonnage is concerned, are on the whole satisfactory. Re-tail coal has also improved, and new orders have been sufficiently numerous to call the demand fairly active, although there is room for further improvement. Much of the future business in this line will depend largely upon weather conditions, which at present are unfavorable to much, if any, consumption of coal. Retail prices are unchanged at \$5.75@\$6. Bituminous coal is more active for manufactur-ing, industrial, and domestic purposes. The miners in the Brazil coal field went out on

to as the second second

\$2.95; Youghiogheny, \$3.40; Indiana block, \$2.40; Illinois block, \$1.90@\$2.

Pittsburg.

(From our Special Correspondent.)

Nov. 5.

(From our Special Correspondent.) (From our Special Correspondent.) **Coal.**—The railroad strike is off. The miners, after being out five weeks, decided to go to work at the rates they left off at. The railroad coal oper-ators had concluded to wait no longer; they noti-fied the men to either go to work at once, or their places would be filled, and they would be com-pelled to quit the company's houses, which would be wanted by new men. By their unjustified ac-tion the men had lost the good opinion of the com-munity generally. Common sense prevailed for once, and they are now at work again. The river miners refused to join them, and are still at work and well satisfied with the situation. The amount of coal loaded in the pools and the Pittsburg harbor will reach about 14,000,000 hushels. This will leave at the first water. A rise in the Ohio is expected from the 15th to the 20th. The last shipment by water was in August. Prices hy retail have advanced 2¼ cents, caused by the railroad strike. **Coke.**—The coke trade shows signs of improve-

hy retail have advanced 2½ cents, caused by the railroad strike. Coke.—The coke trade shows signs of improve-ment. The total shipments are 6,667, against 6,480 for the previous week; increase, 187 cars. After January 1st better things are looked for, accord-ing to information furnished by an extensive oper-ator, who says that dull trade here makes it bet ter in the Punxsatawney and West Virgiuia dis-tricts. During the late strike the operators of the districts named, it is said, refused to inrnish coke to furnace men, badly in need of it, unless they would enter into yearly contracts, and sooner than close down their fur-naces they did so. These contracts terminate in January and February and the Connellsville oper-ators expect to regain them, as Connellsville coke is preferred, even at a higher price. Week's ship-ments were: To points west of Pittsburg, 3,617 cars; points east of Pittsburg, 1,200; to Pitts-burg, 1,800, showing a falling off of 78 cars west of and 128 cars to Pittsburg. The output in tons was 120,000. Prices are the same, as have ruled since January 1st. since January 1st.

FREIGHTS.

From Philadelphia to: Alexandria, †85c.: Boston, 75@90c.: Charleston, 70c.; Marbiehead, 105; New Bedford...75; New York, 190e; Norfolk...50; Port-land, 1.00; Portsmouth. 1.00; Providence, 70@75c.; Salem, 90; Washington, †85c.

*And disebarging. †Alongside.

METAL MARKET.

NEW YORK, Friday Evening, Nov. 6, 1891. Prices of Silver Per Onnce Troy.

| Oct. | Sterling Exch'ge | Lond'n Pence. | N.Y. Cts. | Nov | Sterling Exch'gə. | Lond'n Pence. | N. Cts |
|----------|---------------------|------------------|--------------|-----|----------------------|------------------|-----------|
| 31 | 4.831/2 | 141% | 951/2 | 4 | 4 831/2 | 433/4 | 915 |
| N'v 2 | 4.831/4 | 14 1 16 | 95% | 5 | 4.831/2 | 131/2 | 941 |
| 3 | 4.831/2 | 117/8 | * | 6 | 4.831/2 | 431/2 | 94 |

*Holiday.

Silver has receded to a point where shipments to India can be made, but it is uncertain to what extent we may look for inquiries from that quar-ter. At any rate a portion of our surplus over Government needs is being absorbed in this way.

The United States Assay office at New York re-ports the total receipts of silver for the week to be 103.000 ounces

Silver Bullion Certificates.

Price

| | X | | |
|--------------------------------------|----------------------|-------------------|------------------------------|
| Oet. 51 | H. | L. 9584 95½ | Sales. 49,000 103,000 |
| Nov. 3 Nov. 1 Nov. 5 Nov. 6 | 95 941/4 941/2 | 9434 9114 | 115,000 90,000 121.000 |
| | | | - |

Total sales..... 481.000 Coinage at the Mints of the United States. The following statement shows the coinage exe-cuted at the mints of the United States during October 1891.

| Could a could | | |
|---|---|-------------|
| Denomination. Double eagles Fagles Half eagles | Pieces. 90.000 9,000 18,000 | Va \$1,8 |
| Total gold | 1.7,000 | 1.9 |
| Standard dollars. Ualf dollars. Quarter dollars. Dimes | 940,000 41,000 2,588,000 2,169,000 | 9 6 2 |
| Total silver | 5,732,000 | \$1.8 |
| Five cents | 2,060,000 4,110,000 | 1 |
| Jotal minor | 6,170,000 | 1 |
| Total coinage | 12 010 000 | 0.9 |

Domestic and Foreign Coin.

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

| | Bid. | Asked. |
|----------------------------------|---------|--------|
| Trade dollars | .\$.74 | \$.76 |
| Mexican dollars | .73% | .74% |
| Peruvian soles and Ch.lian pesos | 7016 | .721/2 |
| English silver | 4.75 | 4.85 |
| Five francs | .93 | .95 |
| Victoria sovereigns. | 4.84 | 4.86 |
| Twenty francs | 3.81 | 3.88 |
| Twenty marks | 4.74 | 4.76 |
| Spanish doubloons. | 15.55 | 15.70 |
| Spanish 25 pesetas. | 4.78 | 4.83 |
| Mexican doubloons | 15.50 | 15.70 |
| Mexican 20 pesos | 19 50 | 19.60 |
| Ten guilders | 3.96 | 4.00 |
| Fine silver bars | .95 | .951/2 |

The governors of the Bank of England at their The governors of the Bank of England at their weekly meeting on Thursday made no change in its minimum rate of discount which remains at 3%. In the week the bank lost £355,000 bullion, and the proportion of reserve to liabilities was lowered from 38:52% to 38:67.3%, against a reduction from 35:33% to 34:90% in the corresponding week last year, when its discount rate was advanced from 5% to 6%. On the 5th inst, the bank gained £16.000 bullion on balance. The weekly statement of the Bank of France shows an increase of 3,000,000 frances in gold and 400,000 frances in silver.

france in gold and 400,000 frances in silver. **Copper.**—The flat tendency of the market con-tinues, especially on account of the discouraging quotations from London. There is daily a fair in-quiry for copper and prices are steady for Lake at about 11% (c., but the business done has not been large, and consumption certainly is not up to prc-duction. So far there has not been any pressure to sell; on the contrary, producers are rather hold-ing back in the hope that the market will recover somewhat, and had this not been the case we would undoubtedly have to report lower values, as there is no support to the market. For casting copper there is still a fair inquiry and prices are comparatively high as there are hardly any stocks, but nevertheless quotations must be lowered some-what, say to 10% @11% c., according to brand and quantity, but forward delivery is obtainable at somewhat less. In Arizona pig copper there has been hardly anything offering, while electrolytic is offered somewhat more freely at 11% @11½ c. The London market is rather disturbed by the solitical name from South America which has

The London market is rather disturbed by the political news from South America, which has again influenced all commodities, and the speculative market has been rather feverish on rather heavy realizations of holdings; prices have declined almost from day to day, closing at the worst at £45 10s, for spot and £46 7s. 6d for three months. months.

We quote for manufactured sorts: English tough, \$47 10s. (@ £48; best selected, £49(@ £49 10s.) India sheets, £55 10s.(@ £56; strong sheets, £57 10s. (@ £58; yellow metal sheets, 5½d.

According to cables received visible supplies during the second half of Octobor decreased 900 tons, making the net increase for that month 1,100 tons.

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

| To Liverpool— | Copper Matle. | Lbs. | \$15,000 |
|------------------------------------|---------------------------------|---------------------------|----------|
| S. S. Bothnia | 2,043 bags | 221,276 | |
| To Liverpool— | Cepper. | Lbs. | 8,500 |
| S. S. Garrick | 234 pigs | 69,888 | |
| To Hamburg— | Copper. | Lbs. | 14,500 |
| S. S. Scandia | 89 casks | 111,250 | |
| To Havre— | Copper. | Lbs. | 4,200 |
| S. S. Gascogne | 702 plates | 34,035 | |
| To Rotte: dam— S. S. Amsterdam, | Copper. 218 pigs 822 bars | Lbs. 56,018 112,284 | 7,000 |

822 bars 112,284 14,035
Tin.—Tin has been rather dull here, and the stronger tendency of the London market has hardly been felt. Several steamers have arrived, bringing sufficient supplies for present wants, and consumers have not shown any disposition to pay higher prices. We quote. spot, 20c.; November, 20c.; December, 20c.; and January, 20^{-10c.} In London the market has been rather firm with a strong upward tendency. After the troubles which we reported last week were over, the market gained quite considerably in strength, evidently on European orders; as we cannot learn of any heavy orders sent over from this side. Prices advanced steadily up to the 5th instant to £90 2s. 6d. for cash. but are somewhat lower again to-day, closing at £90 7s. 6d. @£90 10s. for cash and £91 5s.@£91 7s. 6d for three months.

£91 5s.@£91 7s. 6d for three months. Lead.—Lead has again been easier, and prices have declined to 4 10c., at which figure not inconsiderable business is being done, nearly 1,000 tons having changed hands. Nevertheless the market must be called dull, and consumers are buying very cautiously, hoping to get in at still lower prices. From the West there has been decidedly more desire to sell to the East, which indicates that consumers out there have abstained from purchasing. Closing quotations are 410@412½c. The European markets also are lower, Spanish being quoted in London at £11 12s. 6d., and English at \$11 17s. 6d. alue. 800.009 90.000 90,600 80.000 40,000 22,000 47,000 16,000 25,000 03,000 41,100

 141,100
 Chicago Lead Market.—Messrs Everett & Post
 Indenester, of and all point

 telegraph us as follows: "At the close of the week
 cludes McK

 \$3,949,100
 inquiry has picked up considerably and sales other places.

for the week will foot up from 300 to 500 tons at from 3.95c. to 4c."

from 3'35c. to 4c." St. Louis Lead Market.—The John Wahl Com-mission Company telegraphs us as follows: Lead is still weak with more sellers than buyers. Spot is worth 3'92/4c. and futures3'90c. **Spelter.**—Spelter, too, has declined, and although consumption is quite fair, the large production is not being consumed and stocks are accumulating somewhat with the smelters, who appear to be rather anxious sellers. We have still to quote 4%c. delivered New York.

4%cc. delivered New York. **Antimony.**—Antimony is exceedingly scarce, and the demand is very good, indeed. For Cook-son's 15c. has been readily obtained, and L X is not to be had at any price for the moment, while Hallett's is quoted at U%@12c. for delivery ex-ships now afloat, spot stocks being entirely ex-hausted. We hear that English smelters are fully sold out up to the end of January.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Nov. 6.

NEW YORK, Friday Evening, Nov. 6. The iron market continues indefinite, unsatis factory and void of incident. Buying is confined to the immediate and limited wants of the con-sumers. A few good sized orders would not be al-lowed to pass, in order that rates might be main-tained. This is the general feeling in the trade, and wherever manifest, it does not hespeak a very active market or a promising future. There are many who believe that the stocks at furnaces will show an increase for the month if the pres-ent rate of production be maintained. Even the optimist will not hazard the prediction that there will be any general improvement before January 1st. 1st.

1st. American Pig.—Northern brands are held firmly. Southern pig is sold ahead, and is already experiencing difficulty in obtaining transporta-tion, owing to the demands made upon the rail-roads by the cotton crop. There has been a little stocking up at points reached by fresh water routes. We quote prices as follows: Northern, No. 1 X, \$17.02\$18: No. 2 X, \$16.20\$(Southern No. 1 X, \$16.702\$17.00; No. 2 X, \$15.502\$(8).65.00; The American Pictron Storage Warrant Com

The American Pig-Iron Storage Warrant Company report as follows:

Net stock in yard. October 31, 1891..... 46,000

Spiegeleisen and Ferro-manganese.—Transac tions in these hrands have been only nominal. Spiegeleisen remains at \$27.50@\$25 for 20%. Ferro-manganese is weak at \$62.50@\$63.

Steel Rails.—We hear of an order for 30,000 tons of standard sections placed with an Eastern mill at \$30. The railroads generally stubbornly refuse to place orders, although they have begun to send out inquiries that may result in something tangi-ble soon. No general movement is looked for be-fore 1892 ble soon. fore 1892,

Rail Fastenings.—Business is light. Prices are at in quarters where desirable orders can be se-nred. We quote: Fish and angle plates, 175(*a*) 80c; spikes, 210(*a*)215c; bolts and square nnts, 75(*a*)280c.; hexagonal nuts, 280(*a*)285c.

To (2200c.; hexagonal nuts, 2'50(2'2'8)c. **Tubes & Pipe.**—At the monthly meeting of the sociation held on the 4th inst., no change was hade in the discounts, which stand as follows: intt, black, 57½%; butt, galvanized, 57%; boiler tubes nder 3 in., and over 6 in., 55%; 3 in. to 6 in., 60%. rade is said to be slightly improved.

Trade is said to be slightly improved. Merchant Steel.—The moderate demand is un-changed. Stocks on second hands are limited, and manufacturers can expect at least as heavy a volume of business as now rules. We quote: R. Mushet's special, 48c.; English, tool, 15c, net; American tool steel, 7@8c.; special grades, 13@20c.; crucible machinery steel, 475c.; crucible spring, 3%c.; open-hearth machinery, 250c.; open-hearth spring, 2'50c.; first quality sheet, 10c.; second quality sheet, 8c. Structural Iron and Steel—Savard heave

Structural Iron and Steel.—Several large con-tracts are in the market. The demand general y is light. Prices remain unchanged as follows: universal plates, \$2.20; bridge plates, \$2.10; beams, \$3.10.

NOTES OF THE WEEK.

Judgment for \$125,180 was on the 4th inst. en-tered against the Scranton Steel Company in favor of John A. Nicholson on promissory notes for pig iron purchased by William R. Hart & Co., of Phila-dolphia delphia.

delphia. A reduction in freight rates from Pittsburg to various points East on ingots, blooms, billets, pig iron, rails, and crop ends has been made and went into effect on the 2d inst. The new rates per gross ton are as follows: To Boston, \$3,20; New York. \$2,80; Philadelphia, \$2,40; Baltimore, \$2,20; Albany, \$2,80; Utica and Oswego, \$2,40; Syracuse, \$2.25 : Rochester, \$2. These rates apply from Pittsburg and all points taking Pittsburg rates, which in-cludes McKeesport, Beaver Falls, and several other places,

Foreign Bank Statements.

Jones & Lougblin, of Pittsburg, Pa., bave reduced the wages of 500 laborers from \$1.50 to \$1.35 a day. The notice was posted at noon on the 5th inst., and stated that the reduction went into effect at six o'clock the same morning. There is much grumbling among the workmen, but they feel that they must stand it. The laborers about the iron and steel mills are not included in the Amalgamated Asso-ciation. ciation.

Chicago.

Nov. 5.

(From Our Special Correspondent.) Business during the past week has shown no signs of improvement, but, on the contrary, both crude and manufactured iron were quieter and prices inclined to further weakness. This is more particularly noticable in Lake Superior charcoal pig iron, and is clearly traceable to the large stocks piling up in furnace yards. The general situation may be fitly termed a waiting one, and the deferred hopefulness of improvement in de-mand for iron and steel in nearly all its forms is gradually sapping the foundation of confidence upon which it was built. In bariron and plates the condition of trade is very unsatis-factory; on the former prices are not as strong as they were several weeks ago, and on the latter some of the quotations recently made were the lowest ever known in this market. The outlook for the immediate future is far from reassuring, although in the opinion of many leaders in the cloud, as shown in the large increases in traffic re-ceipts of northwestern railroad lines with termi-nals here. (From Our Special Correspondent.) nals here.

cloud, as shown in the large increases in traffic receipts of northwestern railroad lines with terminals here.
Pig 'ron.-Several of the northern furnaces producing Lake charcoal iron have recently gone out of blast. The fact is, the demand for this grade of iron is almost unprecedentedly dull, and the action taken by those furnaces will be undoubtedly followed by others at the close of navigation to await the advent of better times. We hear of a solitary large sale of 500 tons to a Missouri car company at about current figures. Ohio softeners and other American Scotch irons are moving in small quantities from car lots to 50 or 100 tons. Coke foundry iron is in moderate demand, though it requires much effort to induce consumers to take hold and buy even for current needs. Some architectural foundries are figuring on shapes, but many of those running on job work are quiet; hence demand from these sources is light just now. The tonnage sold during the week was small. Several Southern companies have advanced price on gregiforge to \$11 at furnaces. Coke iron from that section is selling fairly well, but the amounts are small, rarely exceeding 300 tons and from these strength than a week or ten days ago.
Quotations per gross ton f. o. b. Chicago are: Lake Superior charcoal, \$17.00@\$17.50; Lake Superior coke, No. 1, \$15.25(\$15.75; No. 2, \$15.60 \$15.25; No. 3, \$14@\$14.50; Lake Superior coke, soft, No. 1, \$15.50; No. 2, \$14.50; Ohio silveries, No. 1, \$18.00; No. 2, \$17.50 Ohio silveries, No. 1, \$18.10; No. 2, \$17.50; Southern coke, soft, No. 1, \$18.10; No. 2, \$17.50; Southern standard car wheel, \$20@\$21.
Structural Iron and Steel.-New business is tapering of, but deliveries continue large on contract.

standard car wheel, \$20@\$21. Structural Iron and Steel.—New business is tapering off, but deliveries continue large on con-tracts. There is quite a good inquiry for next sea-son, and prospects are excellent. Quotations for car lots f. o. b. Chicago are as follows: Angles, \$2@\$2.10; tees, \$2.40@\$2.50; universal plates, \$2.15 @\$2.25; sheared plates, \$2.20@\$2.30; beams and channels, \$3.20. Bittee are in bud down

(a.g. 2); sheared plates, \$2.20(\$2.30; beams and channels, \$3.20.
Piates.—Plates are in bad shape, so far as prices and new business are concerned, and there is nothing in the near future to bolster up agents an d large dealers. Steel sheets, 10 to 14, \$2.50(@\$2.60; iron sheets, 10 to 14, \$2.60(@\$2.70; tank iron or steel, \$2.10; \$2.15; shell iron or steel, \$3.25(@\$3.25; firebox steel, \$4.25(@\$5.50; flange steel, \$3.25(@\$3.40; boller rivets, \$4.25; boller tubes, 2% in. and smaller, 55%; 3 to 6 in, 60%; 7 in. and upward, 55%.
Merchant Steel.—The market during the past week was devoid of new features. October business was far in creess of the same month last year. Demaad for tool steel is well maintained at \$6.75(@\$7 and upward; tire steel, \$2.30(@\$2.50; to calk, \$2.50(@\$2.65; Bessemer machinery, \$2.20(@\$2.75; open-hearth machinery, \$2.50(@\$2.75; open-hearth spring, \$2.75(@\$3; crucible spring, \$3.75(@\$4.

sting, \$5.10@9*. Steel Rails.—A fairly good tonnage has been loced for next season, generally for early de-Steel Rails.—A fairly good tonnage has been placed for next season, generally for early de-livery. Some mills east of here are still reluctant to book business beyond winter or the very early spring months. Orders for quick shipment are numerous for small quantities. Quotations are steady at \$31.50@\$33. Other track supplies are in light demand. Hegular quotations are \$1.95@\$2 for steel and \$1.85@\$1.90 for iron; spike at \$2.15@ \$2.20 per 100 lbs.; track bolts, hexagonal nuts, \$2.80. \$2.80.

Galvanized Sheet Iron.—Demand continues enormous and embraces all classes of consumers. Mill shipments are very slow and stocks hard to keep in sbape. Discounts are steady at 65% and

 $2\frac{1}{3}$ % off on Juniata and to $67\frac{1}{3}$ % off on charcoal in large lots. Smaller quantities are quoted at $62\frac{1}{3}$ % ($665\frac{1}{3}$ from list.

@651/s from list.
Black Sheet Iron.—Mill agents report that demand from the jobbing trade and dealers is very light. Roofers are taking a good deal of sheet iron. Other than this trade is very dull. Mill quotations are \$275@\$2.90 mill, equal to \$2.90@\$2.95 f.o.b. Chicago for No. 27 common. Dealers quote 3⁻¹0c. for same gauge from stock.
B 4r Iron.—Trade, so far as new orders are concerned, is becalmed. Manufacturing consumers are taking small quantities—from 50 to 100 tons—and jobbers, of course, are only giving out sorting up orders, as the year is drawing to a close. Nearby and Ohio mills quote 1⁻⁷0c.@1⁻⁷2½c., according, to specification. Dealers' price is now 1⁻⁸0c.@1⁻⁹0c., according to quality, etc.
Nails.—From manufacturers' point of view wire

Nails.—From manufacturers' point of view wire nails are quiet, baving recently filled up with large orders, they are also firmer in price. Jobbing de-mand is only fair at \$2@\$2.05 from stock. Local makers of steel cut nails report a fair demand at \$1.65 regular average and Wheeling agents are doing moderately well at outside points at about \$1.50 regular average at mill. Dealers quote \$1.75 from store.

Irom store.
Scrap.—If dealers bad to depend on local trade they would soon be forced out of business. The market is very flat and prices nominal. Dealers quote: No. 1 railroad, \$18,50; No. 1 forge, \$18; No. 1 mill, \$13,50; fish plates, \$22,50; axles, \$22; horse-shoes, \$18,50; pipes and flues, \$11; cast borings, \$7.50; wrought turnings, \$9,50; axle turnings, \$12,50; macbinery castings, \$12, store plates, \$7.50; mixed steel, \$10,50; coil steel, \$14,50; leaf steel, \$15; tires, \$15,50.

Old Rails and Wheels.—There are lots of iron rails, but consumers do not want them at holders' figures, viz.: \$21.50. Steel rails are in some de-mand east of here, but locally there is nothing do-ing. They are quoted at \$13@\$15.50. A sale of 200 tons of old car wheels is noted at about \$16.

Louisville. Oct. 31.

(Special Report by HALL BROTHERS & Co.)

(Special Report by HALL BROTHERS & Co.) The general features of the market remain much the same as last week. With the exception of one or two large transactions there has been no trading of special note. One deal of 9,000 tons Southern No. 3 and grey forge is reported for eight months delivery into next year at about \$12.75, Louisville basis. This is a considerable change for the seller, who heretofore has refused to make prices for de-livery anything like that far ahead. Charcoal irons have had a fairsale, but notbing large. Rail-roads are still greatly short on cars, and in some cases deliveries of iron have been considerably de-layed in consequence of this. It is especially diffi-cult to get cars for eastern sbipment. Money is not quite so easy, but all legitimate demands are promptly met. We quote: **Hot Blast Foundry Irons.**—Southern coke, No.

Hot Blast Foundry Irons.—Soutbern coke, No. 1, \$14.25@\$14.50; No. 2, \$13.50@\$14; No. 3, \$13@ \$13.25; Southern charcoal, No. 1, \$16@\$17; No. 2, \$15.50@\$16; Missouri charcoal, No. 1, \$17@\$17.50; No. 2, \$16.50@\$17.

Forge Irons.—Neutral coke, \$12.50@\$12.75; cold short, \$12.25@\$12.50; mottled, \$11.75@\$12. Car Wheel and Malleable Irons.—Soutbern (standard brands), \$19@\$19.50; Southern, other brands, \$17@\$18; Lake Superior, \$20@\$21.

Philade'phia. Nov. 5.

Philade'phia. Nov. 5. (From our Special Correspondent.)
 Pig Iron.—The fact that pig iron is now as low as it can be made seems to have very little influ-ence with large buyers who ordinarily purchase from two to four or five months ahead. Buyers recognize the possibility of an upward tendency in prices as soon as the general improvement sets in, but for all that are hanging back without a decided reason for sodoing. Prices are still weak. Demand is irregular. Founders are buying iron just as they need it at \$17.50@\$18, and very often taking a poorer iron at 50 cents less. No. 2 has been neglected for a week, but it appears that the larger users of No. 2 have a good deal of iron under contract; enough to see them through to the end of the year. Forge ranges from \$14@\$14.75, and demand is light.

Muck Bars.—Very few new orders have been booked. Quotation is \$26.50. Steel Slabs.—Tbe dullness in the slab market is not due to any falling off in demand, but to tbe. fact that a good many of tbe larger buyers bave contracts in band covering the next few weeks. Quotations, \$26.50@\$27.

Quotations, \$26.50@\$27. Merchant Iron.-Large orders are unknown. Small orders aggregate sufficient to keep mills going. Sales are made at 160@170c. at interior mills, and very little iron is sold above 170c. Skelp Iron.-Business is not beavy. Buyers are indisposed to act, even where requirements are to be covered before the end of this month. Grooved, 170@175c.; sheared, 190c.; small sales. Wrongeht Iron Pine.-A few parties who have

Wrought Iron Pipe.—A few parties who have been talking about buying for a month past have made offers within a day or two which wrought iron pipemakers will very likely accept, as busi-ness is hard to get.

Sheet Iron.-Soft steel sheets have been called for this week, and card rates have been pretty

well adhered to, as the orders were mostly small. Stocks of galvanized are large.

Plate and Tank Iron.—Prices are way down, and some large buyers are taking advantage of the fact to get orders in for material that will be wanted for December and January. Iron tank is 1900c; steel, 2c.; shell, 2'30c.; flange, 2'75c., for steal steel.

Structural Material.—Quotations continue un-changed, and a fair week's business bas been done up to to day. Still large orders seem to be monop-olized by two or three concerns. Angles, 195c.; plates, 2c.; tees, 2½c.

Steel Rails.—Quotation is \$30 at mill. Two or tbree orders for large sections have been placed. Quite a number of railroads have been intending to place orders for unusually heavy sections this winter. Rail makers are anxious to have some of the companies anticipate their wants, but the managers are not inclined to do so. Old Rails.—Quid rails are support.

Old Rails .- Old rails are quoted in this market at \$22

Scrap .-- Railroad scrap is quoted at \$21 for best.

Pittsburg.

(From our Special Correspondent.)

Pittsburg. Nov. 5. (From our Special Correspondent.) This being election week sales bave naturally been restricted; still, taken as a whole, business shows up fairly well. In regard to the outlook there is still a difference of opinion. Several lead-ing iron men bave made up their minds that the worst is over, that trade will soon improve and that prices have evidently touched bottom. As an evidence of the last well-informed parties state that during the past 10 days the amount of Besse-mer pig that changed hands here and at the valley furnaces exceeds 42,000 tons, the deliveries extend-ing to April, 1892. It is not to be supposed that parties that require raw iron would purchase such large blocks if they had the remotest idea that prices would be any lower during that period. We learn of other parties who will be in the market for a similar amount in the very near future. There seems to be no probability of prices being shaded from those that rule at present, the consumption of pig-iron by all industries in this section being probably the largest on record. However, the output of crude iron is also unprecedently large, and is not diminishing. Should the finished iron markets at certain points there would be a demand for every ton of crude iron that is now being made. The situation may be said to hinge on the steel trade, which is very slow and has been so for some time. A more liberal business in rails would improve conditions in every branch of the iron trade, and supply the structural mills are busy, as a rule, throughout the country, altbough there is a rather uneven dis-tribution of business in some of the markets. The situation is faily satisfactory, and prospects are fivorable. There is considerable business doing in the East in steel raily satisfactory, and prospects are fivotion is faily satisfactory, and prosp

Coke Smelted Lake and Native Ores. 6,000 Tons Bessemer at Valley furnace, Nov. Dec., Jan., Feb., March 4.000 Tons Bessemer at Valley furnace, Jan.

| ,000 rons beseemer at vancy ranace, ban. | |
|--|---------------------|
| Feb, March | 14.55 cash. |
| 1000 Tons Bessemer, City furnace, Nov., Dec. | 15.25 cash. |
| 500 Tons Bessemer Nov Dec | 15 90 cash |
| 000 Tone Bessemer Nor Dec | 15 00 oosh |
| WO TOUS DESSELLER, NOV., Dec | 15.00 cash. |
| ,000 Tons Dessemer, Nov., Dec | 15.10 cash. |
| .000 Tons Grey Forge, Dec., Jan | 13.65 cash. |
| ,000 Tons Grey Forge, Jan., Feb., March | 13.60 cash. |
| .000 Tons Grey Forge | 13.85 cash. |
| .000 Tons Bessemer. | 15.15 cash. |
| 000 Tons Resemen | 15 15 cash |
| 000 Tone No. 1 Mill | 14.00 onch |
| 000 TOHS NO. I MIII | 14.20 Cash. |
| .000 Tons Grey Forge. | 13.85 cash. |
| 759 Tons Grey Forge, Nov., Dec | 13.70 cash. |
| 500 Tons Bessemer at furnace | 14.50 cash. |
| 500 Tons No. 1 Mill | 14.20 cash, |
| 100 Tons No. 2 Foundry | 15.25 cash. |
| 100 Tons Open Mill | 11 CO cash |
| 100 Tons Grov Forgo | 14.00 cash. |
| 100 Tons Grey Forge | 14.00 cash. |
| 100 Tons Shvery | 10.50 cash. |
| 100 Tons No. 2 Foundry, Southern | 14.75 cash. |
| Steel Slabs and Billets. | |
| ,500 Tons Billets and Slabs, Dec. and Jan | 24.40 cash, |
| .500 Tons Billets. Nov., Dec. Jan | 24.50 cash. |
| .000 Tons Billets, Nov., Dec | 24.25 cash |
| 500 Tons Billets | 94 50 cash |
| Muck Rare | stiou casili |
| 750 Tone Nontral Dog Lun | 00 HE on ah |
| 130 Tons Neutral, Dec., Jan | 20.15 cash. |
| 600 Tons Neutral, Nov., Dec | 26 50 cash. |
| 400 Tons Neutral | 26.50 cash. |
| 300 Tons Neutral, Nov | 26.50 cash. |
| Skelp Iron. | |
| 600 Tons Narrow Grooved | 1.70 4 m. |
| 400 Tong Wide Grooved | 1 7914 4 m |
| 200 Tons Shoand inon | 1.00 4 m |
| 200 1005 Sheared Iron | 1.30 4 11. |
| Ferro-Manganese. | |
| 250 Tons 80%, imported Delaware | 61.60 cash. |
| 120 Tons 80%, imported Delaware. | 64 40 cash. |
| 53 Tong 80% Seehoard | 62 10 cash |
| Ploom Page Lail and Chude | Jerio Caoii. |
| 1 050 Tome Discon and Dall Ends. | 10:10 ab |
| 1,250 Tons bloom and Kall Ends. | Jo bu easn. |
| ou Tons Rail Ends | 16.70 cash . |
| Steel Beams. | |
| 125 Tons Steel Beams | 62.00 cash. |
| Steel Wire Rods. | |
| 750 Tons American fives, f. o. b | 31.50 cash |
| Seran Material | cov cush. |
| 250 Tone No 1 P P W some not | 20.00 ongh |
| 160 Tong Conon Stool grage | 20.00 Cash. |
| | 201 1 B 1 6 10 G 11 |

Nov. 5.

Nov. 7, 1891.

| 1. Nov. 2. L. H. L. 1 80 | Nov. 8. Nov. 4 H. L. H. L. | Nov. 5. Nov. 6. H. L. H. | NAME AND LOCATION OF COMPANY. Oct. 31. H. Nov. 2. H. Nov. 3. H. Nov. 4. H. Nov. 5. H. Nov. 6. Sol Sale Aipha, Nev |
|---------------------------------------|--|--|---|
| L. H. L. | H. L. H. L | H. L. H. L. SALES. | OF COMPANY. H. L. H. L. |
| 1 80 | | | Aipha, Nev |
| 1 80 | | ······································ | Alta |
| 1 80 | ··· ····· ···· ···· ···· ···· ···· ···· ··· ··· ···· | | |
| 64 | · · · · · · · · · · · · · · · · · · · | | Andes, Cai |
| 64 | •• •••• •••• •••• | 200 | Astoria, Cal |
| 64 | ** ***** * *** ****** | | " bonds |
| 64 | | | Barcelona, Nev |
| | | | Best & Belcher, Nev 2.50 |
| | | 200 | Bonanza King, Cai |
| | | | Builion, Nev |
| | ••••••••••••••••••••••••••••••••••••••• | ••••••••••••••••••••••••••••••••••••••• | Butte & Bost, Mont. |
| | | | Chollar |
| | •• •••• ••• •••• •••• | nce | Comstock T., Nev |
| 1.10 | | 200 | Con. Pacific Cai. |
| •••• | 1.50 | 1.95 100 | Crescent, Colo |
| | | 50 | El Cristo, Rep. of Col. |
| | •• ••• • •••• • ••• ••• | | Emmett |
| | | | Exchequer, Nev |
| | •• •••• ••• ••• ••• | | Huron, Mich. |
| | | 200 | Julia |
| | 3.60 | | Lacrosse, Colo |
| | •• ••• •• •• •• •• •• •• •• •• | 38 | Lee Basin, Colo. |
| | | | Middle Bar, Cal |
| | | 13 1,200 | Monitor, Colo. |
| | | | Nevada Queen, Nev |
| ••• •••• •••• | •• •••• •••• •••• •••• | | N. Standard, Cal. |
| | | | N. Common weath, Nev. |
| | · ···· · · · · · · · · · · · · · · · · | | Overman |
| | | 3,10 3,25 300 | Pincenix Lead, Colo |
| | •• •••• •••• •••• ••• | | Potosi, Colo |
| 21.00 19.50 | 50 22.50 22.5 | 25 2.65 2.50 200 | Rappahannock, Va |
| | 4.50 | | Santa Fe, N. M. |
| | 40 | 45 | Scorpion, Nev |
| | | | Sec. Declar, Ver. 10 |
| | ••••••••••••••••••••••••••••• | . 1.40 1.20 110 | Sliver Queen. |
| · · · · · · · · · · · · · · · · · · · | | | Surro Turnel, Nev. |
| | | | Syndicat e |
| | | | Wanne allo Class March 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| | | 1.20 | Tornado Con., Nev |
| 21. | 00 19. | 00 19.50 22.50 22.5 4.50 40 | $\begin{array}{cccccccccccccccccccccccccccccccccccc$ |

BOSTON MINING STOCK QUOTATIONS.

| NAME OF COMPANY. | Oct. 30. | Oct. | . 81. | Nov. 2. | Nov. 3. | Nov. 4. | Nov. 5. | SALES. | NAME OF COMPANY. | Oct. 30. | Oct. 31. | Nov. 2. | Nov. 3. | Nov. 4. | Nov. 5. | SALES |
|---|------------|---------|--------|-------------|---|-------------|-------------|--------|------------------------|-------------|---|---------|---------|-------------|-------------|-----------|
| Atiantic, Mich Bodie, Cal. | 12.50 | . 12.75 | 12.50 | | | | 12.25 12.00 | 300 | Allouez, Mich | 2.25 | | | | 2.00 | | - 450 |
| Bonanza Development. | | | | | | | | | Arnold, Mich | | | | | | | |
| Bost. & Mont., Mont | 44.13 43.7 | 5 43 75 | | 42.25 42.00 | | 42 25 41 75 | 41 00 40 00 | 1 999 | Brunswick Col | | | | | | | |
| Breece, Colo | | | | | | | 11.00 10.00 | 1,600 | Butto & Poston Mont | 10 00 10 00 | | | | | | |
| Calumet & Hecia, Mich | 255 252 | | | | | 25516 255 | 25516 255 | 146 | Centenniai Mich | 10.00 15.50 | 15.50 | 15.00 | | 15.00 | 14.50 14.00 | 879 |
| Catalpa, Colo | | | | | | 40078 400 | 100/2 200 | 140 | Colchig | | | | | 13.00 12.50 | 12.50 | 400 |
| Central, Mich | | | | | | | | | Conner Fails Mich | | | | | | | |
| Cœur d'Alene, Id | | | | | | | | | Crescent Colo | | | | | | | |
| Con. Cal. & Va., Nev | | | | | | | | | Dana, Mich | | • | | | | | |
| Dunkin, Colo | | | | | | | | | Don Enrique, N. M | | | | | | | |
| Eureka, Nev | | | | | | | | | Gevser | | | | | | | |
| Franklin, Mich | 16.50 | | | | | | | 5 | Hanover, Mich. | | ***** | | | | | |
| Honorine, Utan | | | | | | | | | Humboidt, Mich | | | | ····· | | | |
| Horn Sliver, Utah | | | | | | | | | Hungarian, Mich | | | | ····· | | •••••• | |
| Kearsarge, Mich | 12.37 | . 12.50 | 12.37 | 12.37 | | 12.37 | 12.50 12.13 | 3 515 | Huron, Mich. | | | | ····· | | | |
| Little Chief, Colo | | | | | | | | | Mesnard, Mich | | | | | | | |
| Little Pittsburg, Colo | | | | | | | | | National, Mich | | | | | | 1 60 | |
| Minuesota fron. | | | | | | | | | Native, Mich | | | | | | 1.00 | |
| Napa, Cal | | |] | | | | | | Oriental & M., Nev | | | | | | | |
| Ontario, Utan | | | 103.00 | | | | | | Phoenix, Ariz | | | | | | | |
| Outpoy Mich | 33.00 | . 33.00 | 52.00 | 33.00 32.50 | | | 31.25 | 474 | Pontiac, Mich | | | | | | | |
| Guincy, Mich | | | | | | | | | Rappahannock, Va | | | | | | | |
| Riuge, mich | 61. | | | | • | | | . 300 | Santa Fe, N. Mex | .30 | | | | 25 | | 1 90 |
| Slerra Nevaua, Nev | | | | | | | | | Shoshone, Idaho | | | | | | | 1,40 |
| Shver King, Ariz | | | | | ••••• | | | | South Side, Mich | | | | | | | |
| Stormont, Utan | 100 100 | | | | | | | | Star, Mich | | | | | | | |
| Tantarack, Mich | 100 100 | 155 | | 130 | | | 152 | 53 | Washington, Mich | | | | | | | |
| recomscu, meaning | | | | | ***** ***** | | | | Wolverine | | | | | | | |
| | | 1 1 | | | | 1 1 | 1 1 | 1 | | 1 | 1 | | 1 | 1 | | · · · · · |
| Dividend shares sold, 3,081. Non-dividend shares sold, 3,429. | | | | | | | | | nd shares sold, 3,429. | Total sha | res sold, 6, | 510. | | | | <u>`</u> |

San Francisco Mining Stock

Quotations.

| | | CLOS | ING QU | OTATI | ONS. | |
|---|---------------------|----------------------|---------------------|----------------------|---------------------|---------------------|
| NAMES OF STOCKS. | Oct. 30. | Oct. 31. | Nov. 2. | Nov. 8. | Nov. | Nov 5. |
| Alpha Alta Beicher | .25 | .20 | .25 | .25 | .25 | .20 |
| Beite Isie Best & Beicher Bodie | .40 2.65 | .40 2.60 | .50 2.35 | 2.40 | 2.40 | .30 2.55 |
| Buiwer Chollar | .15 | .10 | .10 .85 | .10 | .10 .80 | .45 |
| Commonwealth Cons. Cal. & Va Cons. Pacific | 5.1216 | 4.95 | 4.65 | 4.80 | 4.70 | .10 5.25 |
| Crown Point Dei Monte, Nev | 1.05 | 1.05 | 1.00 | 1.05 | 1.00 | .95 |
| Eureka Consolidated Gould & Curry Hale & Norcross | 1.00 1.45 .95 | 1.00 1.40 .95 | 1.00 1.35 .95 | 1.40 | 1.50 1.30 .90 | 1.25 1.40 .75 |
| Mexican Mono. | 2.20 5.40 | 2.20 .80 | 2.10 | 2.10 .30 | 2.00 | 2.15 |
| Navajo Nev. Queen N. Beile Isie | .10 .30 .35 | .10 | .10 .30 .45 | .10 | .10 | .05 |
| N. Commonwealth Ophir. Potosi | 2.65 | 2.60 | 3.05 | 3.05 | 2.95 | 3.10 |
| Savage Slerra Nevada Unlon Con | 1.65 | 1.65 1.60 2.10 | 1.50 | 1.65 1.60 1.85 | 1.45 | 1.35 |
| Utah Yeliow Jack | . 1.35 | .40 | .35 | .35 | .85 | .85 |

| COAL STOCKS. | | | | | | | | | | | | | |
|---|---------------------|---------------|----------------------|----------------|----------|---------------|---------------------|--------------|------------------------------|--------------------|------------------------|--------------------|---------------------|
| | | Oct. 31. Nov | | v. 2. Nov. 3. | | v. 3. | No | v. 4. No | | ov. 5. Nov. 6. | | v. 6. | |
| NAME OF COMPANY. | н. | L. | н. | L. | H, | L. | Н. | L. | Н. | L. | Н. | L. | Sales. |
| American Coal Cambria Iron. Cameron Coal & I. Co Ches, & O. R. R. Chic, & ind. Coal R. R. Do, pref | | | | | | | | | | | | | |
| Col. C. & L Col. C. & Hocking C. L Consolidation Coal. | 361/2 | 36 | 3614 | 35% | | | 3634 | | 36 | 3536 | 363% | 85 | 3,0 |
| Del. & H. C D., L. & W. R. R. Hocking Valley. Hunt & Broad Top. | 129 1403 315% | 1281/4 139 | 129 14014 8116 | 12736 13934 | | | 130% 140% 31% | 128 13994 | 128 139 % 811/2 | 125 1375% 31 | 12616 13316 3114 | 1241 1361 31 | 11,5 82,8 1,7 |
| Do. pref. 11linois C. & Coke Co. Lehigh C. & N. Lehigh Valley R. R. | 47 50 4934 | 497/8 | 50 50 | 4976 | 50 50 | +4834 4976 | 4914 50 | 4876 | 4834 | 4816 | | | 1,5 |
| Lehigh & Wilk, Coal Mahoning Coal Do, pref Maryland Coal | | | | | | | | | | | | | |
| Morris & Essex New Central Coal N. J. C. R. R. N. V. & S. Coal | 1151 | 114% | 11514 | 11436 | | | 1151 | 1141/6 | 11414 | 1134 | 145 1131⁄2 | 1441/2 | 2,6 |
| N. Y., Susq. & West. Do, pref. N. Y. & Perry C. & I. | | | 91⁄2 | 914 | | | | | 93% 37 | 363% | 914 363⁄2 | 8\$4 35 | 1,: 1,: |
| Do. pref Penn. Coal | (1553) | 5514 | 5476 | ±5434 | 5436 | 5486 | 5434 | | 5176 | 5374 | 1136 | | |
| Ph. & R. R. R. Sunday Creek Coal. Do, Pref. | 3984 | 38% | 39 | 381/8 | | | 397/ | 39% | 391/8 | 3734 | 38 | 357/8 | 140, |
| Do. pref. Westmoreland Coal. | | 36% | 3694 | 36 | | | 3714 | 3634 | 37 | 36% | 87 | 36% | 3, |
| ‡ Ex-dividend. | | | Tota | l shar | es solo | 1, 261,1 | 49. | | | | | | |

THE ENGINEERING AND MINING JOURNAL.

| | | - | DIVIDEND-PAYING MINES. | | | NON-DIVIDEND PAYING MINES. | | | | | | | | | | | | |
|--|--|---|----------------------------------|--|--|----------------------------|---|--|---|---|---|--|---|-----|--|--------------------|---|--|
| | | | NAME AND LOCATION OF COMPANY. | CAPITAL STOCK. | No. | Par | Totai levied. n | Date and hount of last | Total pald. | Date & a | amount last. | NAME AND LOCATION OF COMPANY. | CAPITAL STOCK. | No. | Par Tot | Assessm ai Date | ENTS. | n't |
| G. Gold. S., Siver. L., Lead. C., Copper. Non-assessable. 4 This company and high statements and the second statements and | $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | | Adama, s. L. C | Cartral. Stroct. St | No. 150,000 400,000 300,000 300,000 300,000 300,000 301,000 301,000 301,000 301,000 301,000 301,000 301,000 301,000 301,000 301,000 300,000 30 | pr 10255 | Total review. | Date and bount of last ril 1875 \$1.00 ril 1875 \$1.00 ril 1875 \$1.00 ril 1875 \$1.00 ril 1875 \$1.00 ril 1895 .50 ril 1895 | Total pald. *67,500 *607,500 *607,500 *607,500 *50,000 *50,000 *50,000 *50,000 *50,000 *55,000 *55,000 *55,000 *55,000 *52,000 *52,000 *20,000 *52,000 *52,000 *20,0 | Date & a Date & a Otabel & a Date & a D | Am . Unit last. las | NAME AND LOCATION OF COMPARY. Allegheny, S. Colo. Anchor, S. L. G. With Amelonon, S. Colo. Anchor S. L. G. Utah Astoria, O. Cal. Belmont, S. Nev. Bechtel Con., G. Cal. Belmont, S. Nev. Belmont, S. Colo. Belmont, S. Colo. Proster, S. Mont Proster, S. Mont Carisa, G. Cal. Carisa, G. Wey. Carisa, G. Nev. Con. Imperial, G. S. Nev. Con. New York, S. G. Colo. Con. New York, S. G. Colo. | CAPTTAL -STOCIK. -STO | No | $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | Jan. | 1380 1 1380 1 | 20 70 20 |

| STOCK MARKET QUOT | ATI | ONS. |
|------------------------------------|--------|--------|
| Aspen. | Oet | . 31. |
| The closing quotations were | as fol | lows: |
| Argentum Juniata | \$1.25 | \$1.15 |
| Aspen Favorite | | .15 |
| Best Friend | .26 | .20 |
| Bushwacker | .34 | |
| Homer & Alta | | |
| Justice | .20 | 15 |
| Mollie Hibson | 7.00 | 6 00 |
| Nolan Creek Park. Mamie & Queen | .10 | •••• |
| Pontiae | .1216 | .121/2 |
| Betilment Parmineral | Nor | |

.20 .65

Baitimore, M Bid. Asked.

| | and a could | |
|----------------------|-------------|--------|
| COMPANY. | | |
| Atlantic Coal | \$ | \$1.10 |
| Balt. & N. C | .01 | .03 |
| Big Vein Coal | | |
| Conrad Hill | | |
| Cons. Coal | .27@.28 | .30 |
| Diamond Tunnel | | |
| George's Creek Coal. | | 1.10 |
| Lake Chrome | .10 | .20 |
| Maryland & Charlotte | | |
| North State | | |
| Silvor Vollov | 550 57 | 65 |

Birmingham, Ala. Nov. 4.

| | Bid. | Asked. |
|----------------------|--------|----------|
| COMPANY. | | |
| Ala. Coal & Iron Co | \$102 | \$1021/2 |
| Ala, Con. C.& C. Co | | \$23 |
| Ala, Roll, Mill Co | \$100 | \$105 |
| *Alice Furnace | \$100 | \$105 |
| Anna Howe G. Mg.Co. | \$3% | \$5% |
| Bessemer Land | \$2616 | \$29 |
| Bir. Mg. & Mfg | | \$35 |
| Cahaba Coal Mg. Co. | | \$61 |
| Camille Gold Mg. Co. | \$34 | \$1 |
| De Hardelehen Coal & | | |
| Iron Co | \$816 | \$916 |
| Decatur L. & Imp.Co. | \$834 | \$91% |
| Decatur Min. L | | \$19 |
| Ensley Land | \$716 | \$10 |
| *Eureka | | |
| Florence L & Mg. Co. | \$14 | \$15 |
| Gadsen Land | \$336 | \$416 |
| Hecla Coal Co | | |
| Hen S & M. Co | \$234 | \$4 |
| Lagger-Townl'y C. & | *-/* | |
| C Co | \$816 | \$9 |
| Mag-Ellen | \$100 | \$110 |
| Mary Lee C & R.Co | 4-00 | \$25 |
| Shoffield (& I Co | \$5216 | \$55 |
| Shemen C. C. I. Com | \$19 | \$21 |
| filos I & S | \$85 | \$87 |
| the Slong I & S | 840 | \$5214 |
| Top C & I Co | \$3616 | \$3816 |
| Tell. C. & I. Co | \$80.2 | \$95 |
| Tuccaloosa Coal Iron | 405 | 400 |
| f Lond Co | \$93 | \$25 |
| Vulcan C & C Co | \$5 | \$716 |
| Woodstook Iron ('o | \$28 | \$29 |
| WURDENDUR HULLUN | -40 | 240 |

* Bonds. † First mortgage bonds. ‡ S ond mortgage bonds.

Pittsburg, Pa. Nov. 5

| COMPANY. Bi | d. Aske |
|--------------------------------|---------|
| Allegheny Gas Co \$ | \$ |
| Bridgewater Gas Co | |
| Chartiers Val. Gas 5. | .25 6. |
| Columbia Oil Co | |
| Consignee Mining Co | |
| Consolidated Gas Co | |
| East End Gas Co | |
| Forest Oil | |
| Haziewood Oil Co | |
| Hidalgo Mining Co 3. | .50 4. |
| La Noria Mining Co | .25 . |
| Luster Mining Co 11. | .25 11. |
| Mansfield C. & C. Co | |
| Manufacturers Gas Co 25. | .00 25 |
| Nat. Gas Co. of W. Va | |
| N. Y. & Clev. Gas Coal Co. 39. | 00 41. |
| Ohio Valley Gas Co | |
| Pennsylvania Gas Co | |
| People' Nainral Gas Co | |
| People's N. G. & P. Co 4. | |
| Philadelphia Co | 11. |
| Pine Run Gas Co | |
| Pittshurg Gas Co. | |
| Red Cloud Mining Co | 3 |
| Algerton Mining Co | |
| South Side Gas Co | |
| Storling Silver Mining Co | |
| Sterning Silver anning Co | ••• ••• |
| Tuna Oli Co | ••• ••• |
| Inion Gas Co | |
| Washington Vil Co | ••• |
| W'moreland & Camb | |
| Wheeling Gas Co 20 | .00 21. |

Trust Receipts.

| Sales at the New York | SLOCK | EXCIN | ange |
|-------------------------|--------|-------|------|
| for week ending Nov. 6: | | -Pr | ice |
| | Sales. | H. | L. |
| American Cotton Oil | | | |

National Lead..... 5,828 161/8 151/2 Trust Stocks. Nov. 6.

| St. Loui | ls. | Nov. 4. |
|--|----------------|------------------|
| CLOSING PR | ICES. | |
| Adams, Colo | Bid. \$1.90 | Asked. \$2.00 |
| Colo | .733/4 | .76% |
| Bi-Metallie, Mont Central Silver | 34.00 | .0916 |
| Granite Mountain, Mont | 20,25 | 20,50 |
| Hope, Mont | | |
| Little Albert Vontrose Placer, Colo Mickey Breen | .20 | .04 .211/4 |
| Pat Murphy, Colo Small Hopes, Colo | .094/2 .80 | |
| Silver Age Yuma. Ariz | .45 .35 | .60 |
| | | |

Helena, Mont.

(Special report by SAMUEL K. DAVIS.) Prices highest and lowest for week end-1.10 ing Oct. 24, 1891 :

| T | 11 |
|--------------------------------------|-------|
| | 11. |
| Bald Butte (Mont.) 2.00 | 2.50 |
| California (Castle). Mont15 | .25 |
| Champion (Ora Fino), Mont | |
| Cleveland & Anchor, Idaho 121/2 | .15 |
| Combination(Phillipsb'g), Mont .75 | 1.00 |
| Copper Bell (Cataraet), Mont10 | 121 |
| Cumberland (Castle), Mont2.10 | 2.50 |
| Elizabeth (Phillinsburg), Mont. 1.50 | 1.75 |
| Florence (Neihart), Mont. | |
| Fourth of July Wash 10 | .15 |
| Glongery (Ruite) Mont 1 25 | 1 50 |
| Great Eastern (Castle) Mont 50 | 75 |
| Holong & Victor Mont 995 | 3 00 |
| Hierothe (Ceterat) Mont 05 | 10 |
| Inen Mountain/Missoula) Mont 771 | 4 85 |
| Tron Mountain(Missoura), Mont .117 | 2 .03 |
| Jersey Blue (Butte) | |
| Judge (Castle), Mont | |
| Jumbo (Castle), Mont | |
| Lone Pine (Vipond), Mont | |
| Mac (Unionville), Mont | .25 |
| Milwaukee (Butte), Mont02 | .071 |
| None Such (Unionville). Mont | |
| O. R. & N. (Missoula), Mont031 | 6 .05 |
| Poorman (Cœur d'Alene), Idaho1,10 | 1,25 |
| Queen of the Hills(Neihart) | |
| Silver Arrow (Cataraet), Mont | |
| Silver Crown (Ora Fino), Mont | |
| SouthernCross(DeerLodge), Mont20 | .95 |
| Wall Street (Elliston), Mont. | |
| West Cumberland(Castle) Mont | |
| Tost Outhouthand Oastie, Monte | |

Foreign Quotations.

Loudon. Oct. 24.

| | | Highest. | Lowest. |
|-----|------------------------|----------|----------|
| 1/2 | Amador, Cal | 43. 6d. | 48. |
| | American Belle, Colo., | 7s. 6d. | 58. |
| -0 | Appalachian, N. C | 31/6d. | 1d. |
| | Colorado, Colo | £3-16 | £1 16 |
| | Cong Esineralda Nev | 18 30 | 19 |
| | Do Lamar Idaho | £1 3-16 | £116 |
| a | Dielsong Custor Idaho | te Od | 10 32 |
| a. | Fast Aroyalo Idaho | 10.04. | 10, 04. |
| •• | Elliborn Mont | 210 24 | 180 04 |
| | Elmono Idaho | 61 | 20. |
| 00 | Enmo Utab | 10 | Gd. |
| •• | Ellima, UP40 | 15. | 50 2d |
| ••• | Flagstan, Otan | Js. 00. | os. ou. |
| | Garneid, Nev | 18. 30. | 10- 03 |
| | Golden Featber | 1/8. 00. | 105. 00. |
| | Golden Gate, Cal | 1/8. | 108. |
| | Golden Lear, Mont | 48. 30. | 3s. 9d. |
| 00 | Golden River, Cal | | |
| 33 | Jay Hawk, Mont | 2s. 9d. | 28. 3d. |
| 50 | Josephine, Cal | | |
| | Kohinoor, Colo | 1s. 3d. | Sd. |
| 50 | La Luz, Mex | 1s. 6d. | 18. |
| | La Plata, Colo | 1s. 3d. | 18. |
| 00 | La Valera, Mex | 23. 6d. | 28. |
| | Maid of Erin, Colo | £1% | £11/2 |
| | Mammoth Gold, Ariz. | 2s. 3d. | 28. |
| | Montana. Mont | £7-16 | £5-16 |
| | New California, Colo | 2s. 9d. | 2s. 3d. |
| 50 | New Consolidated | 18. | 6d. |
| | New Eberhardt, Nev. | 2s. 6d. | |
| | New Gold Hill, N. C | 1s. 6d. | 18. |
| 13 | New Guston, Colo | £31/8 | £27/8 |
| | New Hoover Hill, N.C. | 1s. 6d. | 1s. |
| | New Russell, N. C | 2s. 6d. | |
| | New Viola, Idaho | 91. | 6d. |
| | Old Lout, Colo | £3% | £1/8 |
| | Parker Gold, N. C | 9d. | 3d. |
| | Pittsburg Cons., Nev | 3s. 6d. | 2s. 6d. |
| •• | Richmond Con., Nev., | £116 | £7% |
| 50 | Ruby, Yey | 6d. | 3d. |
| 00 | Sam Christian, N. C | 1s. 3d. | · 9d. |
| | Sierra Buttes, Cal | £7-16 | £5-16 |
| | " Plumas Eur. Cal. | £11-16 | £9-16 |
| ge | United Mexican, Mey | £5-16 | £3-16 |
| 5 | U S Placer Colo | | 000 10 |
| L. | West Argentine Colo | 18 | 66 |
| | Vankao Girl Colo | £56 | £36 |
| 14 | I GHINGO OILL, COLO | ~78 | 04/8 |

Oct. 22.

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| | | | | | | | anos. |
|-----|---------|---------|------|------|------|------|--------|
| Ea | st Ore | gon, O | re | | | | 4.00 |
| For | rest H | ill Div | ide, | Cal. | | | 60.00 |
| Go | lden R | iver, | Cal. | | | | 130.00 |
| 1 . | 6 | 66] | part | 8 | | | 30.00 |
| La | urium | | | | | | 700.00 |
| Le | xingto | n, Mo | nt | | | | 90.00 |
| | 66 | par | ts | | | | 2.50 |
| Nie | ekel | | | | | | 805.00 |
| Rie |) Tinto | , Spai | n | | | | 543.50 |
| 1. | 6.9 | oblig | 5 | | | | 510.00 |
| 66 | 66 | 66 | | | | | 512.50 |
| Th | arsis, | Spain | | | | | 150.00 |
| Vi | eille-M | ontag | ne | | | | 510.00 |

| | CURBENT PRICES. | Powdered. # b |
|----------|---|--|
| | in New York unless otherwise specified. | Metallic Paint-Brown # ton. \$20@\$25 Red \$20@\$25 |
|) | Acid—Acetic, No. 8, pure, 1,040, # b05 Commercial, in bbls, and ebys.01%@.0214 | Ordinary rock |
| i | Carbonic, liquefied, # b | Mica-In sheets according to size. |
| | for batteries | Naphtha-Black |
| á | Hydrocyanic, U. S. P | Ochre-Rocbelle, # b \$1.35@\$1.50 Washed Nat Oxf rd Lump. #b.0656@.0634 |
| | Alconol-90%, @ gall\$2.30(@\$2.40 Absolute\$3.80 Ammoniated \$2.80 | Wasbed Nat Oxf'rd, Powder, #n.07@.07% Golden, # tb |
| | Alum-Lump, % b | Domestic, # b04@ 01% Oils, Mineral— |
| • | Powdered | Cylinder, light filtered, # gal |
| | Aluminum-# lb | Extra cold test, # gal18@.20 Dark stcam refined, # gal.10@.18 |
| | Amalgamating solution, # b | Precip., red, # b |
| | A muonia—Sul., in bol. 10ts, @ b.03 1-10 Carbonate, @ b., English | Plumbago-Ceylon, # b |
| | Aqua Ammonia-(ln cbys) 18° # tb .0334 | Potassium-Cyanide, # lb., C. P70 67%. # b |
| | 26°. # tb | 50%, # b |
| | Regulus, Hallett's, \$ton, London.£42 10 Argois-Red, powdered, \$1b | Chlorate, English, $\#$ 16 |
| | Arsentc-White, powdered \$ b.02%@.03 Red \$ b | Caustic, # lb., pure slick |
| | White at Plymouth, \$ ton£12 26 | Nitrate, refined, # 1b |
| | Italian, # ion, c. i. f. L'pool£18@£60 Ashes_Pot lat sorts # th 050.05 25 | Yellow Prussiate, # b |
| | Pearl | Pumice Stone-Select lumps, b.01@.12 Original eks., # b |
| | Prime Cuban, # b | Pyrites —Non-cupreous, p. units1?@.15 |
| | Trinidad, refined, # ton \$30.00 Egyptian, # 1b | Rotten Stone-Powdered, # b0314 |
| | at San Francisco, # ton. \$12.00 at San Francisco, # ton. \$15.00 | Original eks, # b |
| | Carbonate, commercial, # b | Sal Aminouiac-lump, in bbls., F b.80% Salt-Liverpool, ground, F sack |
| | Chloride, commercial, # b | Domestic, fine, # ton |
| 1 | Iodide, @ oz | Salt Cake - ₽ ton |
| | Sulph., Am. prime white, # ton.\$21@\$23 Sulph., foreign, floated, # ton\$21.5(@\$23,50 | Soapstone- Sodium-Prussiate, # b 1716@ 18 |
| | Sulph., off color, \$ ton\$1.30(\$14.00 Carb., lump, f. o. b. L'pool, \$ ton£6 No. 1 Casks Burgern " f. 100 | Phosphate, ₽ b |
| | No. 2, bags, Runcorn, " £3 15 0 Bauxite # ton | Tungstate, ₩ b Caustic, ₩ b |
| | Bichromate of Potash-Scotch, % h | Hyposulphite, # b., in casks |
| | American, # b | Flour, # b |
| | San Francisco | Talc-Ground French, # 160114@ 0114 Terra Alba-French, # 16 90@\$1.00 |
| 1 | Refined, Liverpool # ton £29 Bromine # b | English, # b |
| | Cadminm Minion-# lb, \$2.00 Cadmium Iodide-# lb\$5.50 | American, No. 2, # b |
| | Chaik—? ton | Muriate, single |
| | China Clay-Engliso, # ton\$13@\$18.00 Southern, # ton | Oxy, or nitro |
| | Chrome Veliow-# b | charcoal |
| | Francisco | Am. quicksilver, bulk |
| | Commercial, # 10 | Chinese |
| | Vitriol (blue), ordinary | American |
| | Nitrate, # h | Zine White-Am., Dry, # b. 04%@.05 Antwerp, Red Seal, # b |
| | Best, # 100 lbs | Muriate solution |
| | Flour, # lb | THE KARER METALS. Arsenic-(Metallic) per lb 40 |
| | Emery-Grain, 2 tb. (2 kg.) | Barium-(Metallie), per gram \$1.00 Bismuth-(Metallie), per lb \$2.40 |
| | Ep>om Salt-# b | Cadminm-(Metallic), per lb \$1.00 Caleium-(Metallic), per gram\$10.00 Careium-(Metallic), per gram\$10.00 |
| | Fluorspar-Powdered, No.1, # ton. \$30.00 | Chromium – (Metallic), per gram. \$1.00 Cobait – (Metallic), per gram. \$1.00 |
| | Fuller's Earth-Lump, # bbl | Didyminm-(Metallic), pcr gram. \$9.00 Erbium-(Metallic), pcr gram |
| j | Glass-Ground, & b | Gallium-(Metallie). per gram\$140.00 Gluciuum-(Metallie), per gram\$12.00 |
| | pure, 15 gr., c. v., \$ doz. \$5.40 liquid, 15 gr., g. | Indimm —(Metallic), per gram \$9.00 Iridium —(Metallic), per oz \$7.00 |
| . | s. V., # doz | Lithium-(Metallic), per gram\$10.00 Maguesium (Novdeled), per lb. \$1.00 |
| | Oxide, # oz | Mangauesc-(Metallic), per 1b \$1.10 Chem. pure, per oz.\$10.00 |
| | Land Plaster | Molybdenum—(Metallic), por gm .50 Niobium—(Metallic), ger gram \$5.06 |
| | Iron-Nitrate, 40°, 7 b | Palladinm -(Metallie), per oz\$53:00 Palladinm -(Metallic), per oz\$35:00 Palladinm -(Metallic) |
| | Kieserite -\$ton\$9@\$10 Lead -Red, \$ b\$9@\$10 | \$16.50@\$20.00 Potassinm-(Metallic), per lb\$'8.00 |
| | White, American, in oil, # tb031/2@.071/2 White, English, # tb., in oil081/2@.083/2 | Rhodinm–(Metallic), per gram \$5,00 Rutheninm–(Metallic), per gm \$5,50 |
| | Acetate, or sugar of, white | Selenium—(Metallic), per gram. \$2.00 Selenium—(Metallic), per oz\$1.8) |
| | Nitrate | Strontium – (Metallic), per 10 |
| | Litharge—Powdered, 9 b | Telurinm(Metallic), per gram. \$5.0; Thallium(Metallic), per gram. 20 |
| | Magnesite-Crude, # ton of 1,015 kilos | Titanium-(Metallic), per gram \$2.2) Thorlum-(Metallic), per gram\$17.00 |
| | Calcined, # ton of 1,015 kilos | Tungsten-(Metallic), per lb \$1.00 Uranium-(Oxide), per lb \$5.00 |
| | Manganese-Ore, per unit | Vanadium (Metall.c., per gm |
| <u>;</u> | sive Sublimate) & D | Zirconium-(Metallic), per oz\$65.00 |
| | A. Contraction of the second | in fairs a |
| | | |

Nov. 7, 1891.

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| Hand-Grained Blade, Beec handle, polished edge: 4 screws. 26 in. \$20.00 per doz. | Screws. STREL SCREWS ADD 50% TO LIST. | SCOOPS. Jones' patent plain back solid corrugated cast steel scoops. |
|---|---|---|
| Dis., 20%. One man Cross-Cut-Sup- | Hexagon Cap Screws. Heads on Steam-tight Screws not polished, unless so ordered. Can | 90. D. or long handle solid cast ste 12 \$13.50 \$14.50 91 |
| 3 ft. 3½ft. 4 ft. 4½ ft. 5 ft. 5½ ft. 6 ft. Great American, \$2.75 \$3.00 \$3.50 \$4.00 \$1.50 \$5.00 \$5.50 Champion Tooth 935 96 0.315 3.50 385 4.45 465 | Diam. head. 7-16 1/2 9-16 5/8 3/4 13-16 3/8 1 11/8 11/4 13/8 | 92. Cast steel D. or long handle2 13.50 14.50 93. """""4 14.50 15.50 94. """"6 16.50 17.36 Half politiced |
| One man cross cut handles, \$4.50 per doz. Dis., 45%. Sash Chains. | head. ½ 5-16 ½ 7-16 ½ 9-16 ½ 34 % 1 1½ Diam. serew. ½ 5-16 ½ 7-16 ½ 9-16 % ¾ % 1 1½ | 95. """"" |
| No. A. "Giant" metal, 15c,) ft., wts, not over 125 lbs. No. 1. "Giant" metal, 12c, pr. | g 1 3,25 3,50 4,00 4,70 5,70 7,00 9,50 g 1 3,25 3,50 4,00 4,70 5,70 7,00 9,50 1 14 3,50 3,75 4,25 5,00 6,00 7,50 9,50 12,20 ⊨ 114 3,75 4,00 4,50 5,39 6,30 8,00 10.00 12,20 16,00 | 98. "Long or D. nandle for salt heavy) |
| ft., wts. not over 75 lbs. No. 2. "Giant" metal, 10c. pr. ft., wts. not over 40 lbs. No. 4. "Giant" metal, 8c. pr. | $\begin{array}{c} \odot \\ 134. \\ 4.00 \\ 4.25 \\ 4.06 \\ 5.00 $ | furnace |
| ft., wts. not over 25 lbs. No. 1. Red metal, 10c. pr. ft., wts. not over 40 lbs. | b 2% 7.30 8.60 11.20 13.60 15.50 (20.00 26.90 34.40 □ 3 Phread | dle. |
| R B K K K K K K K K K K K K K K K K K K | 10 11 12 12 11 10 9 6 7 Add for each | D. nandle |
| No. 1. Steel, 8c. pr. ft., wts. not 75 lbs. No. 2. Steel, 6c. pr. ft., wts. not over 30 he | ½ in. 30 40 50 60 80 1.00 1.30 2.00 2.40 3.00 Dis., heads ground, 60 and 10%; dis., heads black, 60, 10 | 124. D handle ditching (flat) |
| No. 0. Steel, 4c. pr ft., wts. not over 15 lbs. No. 1. Steel, black enameled, 9c. | and by, int, its and it dis.; dis., heads polished after hardening. 45 and 10%. | Discount on shovels and spades, 50 and 10. "scoops, 50. Boxed f.o.b. New York, Boston or Montreal. |
| No. 2. Steel, black enameled, 7c. pr. ft., wts. not over 15 lbs. No. 0. Steel, black enameled, 7c. pr. ft., wts. not over 15 lbs. | | The solid shovels, spades and scoops are made from cast steel bars by a recently patented process, the blade and strap being in one piece, not welded. All goods are Vmerican patterns |
| Fastenings for hanging a window of 2 sashes for Nos. 1 and 2 chains, consisting of 4 hooks, 4 rings, 4 sash irons, a set, 18c. per set. Fastenings for hanging a window of 2 sashes for No. 0. | | Stencil Inks. Black. |
| Dis. on "Giant" metal chain | Fillister. Bevel Head. Button Head | $\begin{array}{ccccccccc} 17 \text{ cents} & 3 \text{ cents} & 3 \dots & 20 \text{ cents} & 12 \text{ cents} \\ 210 & 5 & 4 \dots & 30 & 20 & \\ & & & & & & Blue, \end{array}$ |
| " "Fastenings | Diam. Head 3-16 1/4 9/6 7-16 9-16 9/6 3/4 13-16 7/6 1 Length Head 4 | 10 cents. 6 cents 330 cents. 22 cents 15 " 9 " 450 " 40 " Red and Green. 8 cents 12 cents 42 cents |
| Postal scales. No. 1, capacity ½ to 9 oz. \$3.00. | Diam. } 1/8 3-16 1/4 5-16 3/6 7-16 1/2 9-16 5/6 3/4 | 220 "15 "490 "80 Per doz. cans or cakes, net, per gross, 20% less. Indelible Ink. |
| No. 2, capacity % to 12 oz. \$4.00. No. 3, capacity ½ to 34 oz. \$6.00 | $ \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c}$ | Small bottles per 100 |
| No. 4, capacity ½ oz. to Ibs., \$3.00 | $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | STENCIL COMBINATIONS. Contains Alphabet, Figures, Brush, and Ink. |
| Capacity, Scoop, Capacity, Scoop, 1-16 oz, to 8 lbs, Tin., \$10.00 1-16 oz, to 8 lbs, Brass, \$11.00 Even balance trip scales, second, with weights, | 50 234 7.00 8.25 9.50 12.75 15 25 3 3 8.75 10.00 13.50 16.00 | |
| No. 1, capacity ½ oz. to 2 lbs., tin scoop, \$5.50 brass scoop, \$6,50. | Head on Bevel and Button Head Screws, 1-16 larger in | S IST |
| 4 lbs, tin scoop, \$6.50: brass scoop, \$7.50. No. 2½, capacity ½ oz. | Trice, according to size of head. Discount, 50 and 10%; case hardened, 45 and 10%; case hardened ano polished, 35 and 10%. | STENCIL COMBINATION |
| \$11; brass scoop, \$12.50. | Spades and Shovels. JONES | ½ inch, per doz \$4.80 ¾ " 5.40 1 " 5.40 14 " 5.40 |
| | Patent solid steel shovel. | 174 " " 8,40 194 " " 10,00 2 " " 10,00 |
| | Per Per Doz. Doz. | 259 Dis., 20%. Tools. ARTISANS. |
| | No. No. Black. Pol's'p 20. 1). or long handle sqpoint shovels.2 \$15.50 21. " " 16.50 20. " " 4 17.00 18 for 4 17.00 18 for 4 17.00 18 for | Stope Sand So lb. pot |
| Counter. Capacity. Scoop. Capacity. Scoop. % oz. to 36 lbs. Tin\$10.00 1/2 oz. to 36 lbs. Brass\$12.00 | 23. " " " " 6 17.50 19.00 24. " " " charcoal.8 20.50 22.00 | Mill Picks. Cast steel, 2 to 3 lb. |
| Grocer. Capacity. Scoop. Capacity. Scoop. | Pt. plain back solid cast steel shovel. | Dis., 60 and 5%. Stone Axes, Cast |
| Meat or Butter Scales, with Slab. 14 oz. to 62 lbs., with Single Bean | 25. D or long handle round-point shovels.3 16.25 17.25 | All sizes, 50c. per lb. |
| Shears. The Patent "Eureka No. 1 cuts round | Patent solid cas: steel spade. | Dis., 70 and 10*. |
| metal up to ½ in. steel to ½, \$12. No. 2 cuts round | 29. "Dor roug name sparses | |
| metal up to ½ in., steel to 3-16, \$20. | Patent plain back solid cas. steel. 23 Long round joint shovel No. 2 | 4 |
| Steel Wire Mats. | 27. "square "No.215.50 16.50 32. D. handle square-point molders' shorels | Five lbs. and over, 40c.; with teeth, 45c.; 3 to 5 lbs., 45c.; with teeth, 50c.; under 3 lbs., 50c.; with teeth, 55c. Nos. 40 and 41, spalling or stone hammer, 5 lbs. and yer, 36c.; 3 to 5 lbs., 40c.; under 3 lbs. 45c. ner lb. |
| Galvanized (Style A) Galvanized "Hartman Steel Wire Flexible" | extra heavy | Nos. 40 and 41, spalling hammers, 9 to 201bs., steel face per lb., 17c. Dis., 70 and 10% Ship or Top Mauls, Steel Face t to the age per lb. |
| No. 2. Size 16x24. Each . \$1.50 No. 3. "18x30."2.00 No. 4. "22x36."3.00 | foot cap | Dis., 50, 10 and 5%. |
| No. 6. " 30x46. " | 50. D. or long handle sqpoint shovels.2 \$12.00 \$13.00 51. """""""""""""""""""""""""""""""""""" | Steel Wedges, wood, ls qual., 5c. lb. |
| Brass mats "list" double the price of galvanized Style A) for similar sizes. | 56. Binner Spectra 10.2 | 2 Cooper Frees. 8 in # doz. \$12.0 10 in # doz. 13.5 12 in # doz. 14.0 |
| 3 doz. lots, dis. 33%. 6 doz. lots, dis. 40%. 12 doz. lots, dis. 40 and 5%. | steel scoop. | 14 in 환 doz. 14.5 16 in 환 doz. 15.00 Discount. 60%. |

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