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THE DUTIES OF DIRECTORS.

On another page will be found an abstract of the report of the Tamarack Mining Company, to which we devote much space, both because it gives the information stockholders are fairly entitled to receive from their directors, and because it gives some useful information to the benighted stockholders of the Calumet & Hecla which may be of service to them by and by.

We shall have occasion to refer to the details of this report at an early day, when we propose reviewing the meager information given by the Calumet & Hecla Company to its stockholders.

It is with great pleasure we quote the following paragraph from the report of the directors of the Tamarack Company, for it sets an example to others occupying responsible positions of trust. Referring to the detailed information given, the directors say:

"It is a bold innovation on the modern policy where stockholders have no rights which directors are bound to respect. This we consider a grand mistake, which will in due time be better understood and appreciated here in Boston, for we think the good old orthodox idea will some day come into vogue again, that directors are simply trustees of stockholders, and are in good faith bound to communicate all that it is needful for them to know, so long as it does not conflict or interfere with pending negotations."

It would have been better to have applied this specifically to their great neighbor and to the Lake Superior iron ore companies, for nearly all the Lake copper companies give their stockholders the fullest information concerning their property, and as a consequence are also managed with exceptional economy.

RICHARD A. PROCTOR.

We regret to announce the death, from yellow fever, of Prof. RICHARD A. PROCTOR, the famous astronomer, which occurred on the 12th inst., at the Willard-Parker Hospital in New York. Professor PROCTOR arrived in this city on Monday, from Florida, where he had been spending several weeks with his family at Oak Lawn, Marion County. He was on his way to Europe. He was indisposed when he arrived, and very few hours elapsed before the symptoms of yellow fever were so pronounced that it was deemed advisable to remove him to the hospital where he died. Professor PROCTOR was born at Chelsea, England, in 1837, and was educated at Kings College, London, and St. John's College, Cambridge, from the latter of which he graduated with honors in 1860. He was appointed Honorary Fellow of King's College in 1873 and Fellow of the Royal Astronomical Society in 1866. Professor PROCTOR first lectured in this country in 1873–74, and on his second visit in 1875 he delivered 142 lectures in a period of seven months.

As an astronomer he made many important discoveries, and his pen was prolific with the result of his researches. Recently Professor PROCTOR had devoted his writing to popular science through the medium of the magazines. The most striking incident in his life to an onlooker, which certainly did not diminish the respect his friends and the public entertained for him, was when he announced in 1875 by a letter to the New York *Tribune* that he had left the Roman Catholic Church to which he belonged, because he was convinced by the authorities of the church that the scientific views he held were incompatible with loyalty to the faith, and feeling himself unable to surrender or ignore the correctness and truth of these views, he considered that he had no alternative but to sever his connection with the church.

THE PROFITS OF A GREAT MINE.

The Calumet & Hecla is, no doubt, the most valuable mine in the world. It *is supposed* to have some 6 to 10 years' ore blocked out in reserve, though this very important information for the stockholders, is carefully withheld by the directors, who, were they disposed to do so, might easily profit by this want of knowledge, buying when the stock was low and selling on a boom like the present. This would, in the case of a "Comstock management," be the expected action.

As an example of how profitable mining investments may be, we may take this magnificent example: The original assessments were $15 a share on the Calumet and $25 a share on the Hecla, each of which had 20,000 shares. This would account for only $800,000 paid in, but it is generally stated that the total amount of money paid in on the consolidated stock was $1,200,000. The mine has paid in dividends no less than $30,850,000, or about $25 for every $1 paid in, or about $1.20 a year on $1 invested.

This, however, is not all; out of surplus earnings immense sums have been invested in additional property, and in gigantic (though in great part unsuitable or unnecessary) machinery. So that the property to-day is selling at the rate of about $30,000,000, which would represent at least another $25 on the $1 invested. An investor who contributed to the original assessments, held his stock until the present time, and sold out this week, would therefore have received $50 for every dollar he originally paid in.

This immense profit might have been greater but for the wasteful extravagance of the management, which for some years past has practically squandered a sum that has been estimated at $1,000,000 a year. This, however, promises to be cut down; our criticisms and analysis of the company's accounts in the ENGINEERING AND MINING JOURNAL in 1887 having at least brought the appointment of a competent manager at the mines.

The original stock of the Calumet & Hecla was increased in May, 1871, from 40,000 to 50,000 shares by a stock dividend of 25 per cent, and in August of the same year another stock dividend of 20 per cent was declared, increasing the capital to 60,000 shares. In November of the same year a third stock dividend of 16.67 per cent brought the capita stock up to 70,000 shares, and in February, 1872, a fourth stock dividend of 14·3 per cent brought it to 80,000 shares. In February, 1880, a fifth stock dividend of 25 per cent brought the stock up to its present amount, 100,000 shares, $25 each, which were quote this week in Boston at $299 a share.

The cause of the recent rapid boom in this stock is partly due to the decision, supposed to have been arrived at by the management, to divide the property and thus increase the number of shares. The high price of copper

and faith in the stability of the French syndicate which has purchased the output of the mine for three years have, of course, been the foundation of the advance in the stock. Only eight months ago, in December, 1887, the stock of this company was quoted at $185 per share.

It would be very interesting to know the extent of the mine reserves, and their actual value in copper; they are certainly very large, and it is generally supposed that the lowest ten levels are practicably unstoped.

DAKOTA TIN MINES AND THEIR ENEMIES.

The Harney Peak tin mine deal is again reported "off" in London, though Mr. WILSON still remains there, and continues to expend more money than would have demonstrated the value of at least one of the company's prospects in Dakota. The managers of the company must have very little faith indeed in any of their "mines," judging from the fact that for some two years now they spend money in buying claims, in "booming" the London market, and apparently in subsidizing papers there, and in many other ways, but have done nothing to test the value of the mines, either by sinking on the veins or milling any of the ore since the Etta *fiasco*.

On the other hand, Prof. M. C. VINCENT, of London, who is chiefly known as, at the least, a very sanguine expert, and as president of the Flagstaff Company, Utah, and for his glowing reports on several concerns brought out in London which were sad disappointments to their shareholders, has, after many months of incubation, brought out his report on the Harney Peak properties.

This is a rather curious specimen of an expert report, and we make a few selections from the extracts of it published in some of our London exchanges.

The report and "specimens" and "assays" convince the London *Mining Journal* that there are not only "payable tin lodes in Dakota," but "large quantities of stream tin," and that the Harney Peak properties will soon "be in a position" to largely supply "the American market." All of which we sincerely hope may come true, but the evidence yet offered gives very little ground for belief that it will.

Professor VINCENT reports: "I must say that your mines, considering the number of them, are on a very favorable and even exceptional footing. Instead of being opened to great depth, your mines are practically untouched, except in a few instances, and in such cases are only sufficiently developed to more clearly show their real financial value." Since the result of development in the case of the Etta, the most extensively opened of all the company's mines (and which Professor VINCENT designates as a "columnar bonanza mine," whatever that may mean), was to demonstrate its total absence of value, it would appear that Professor VINCENT is somewhat of a wag, and must have been slyly "poking fun" at the eminent directors the company has or has had in London.

Concerning the ore, he says: "Generally speaking, the tin ores are of almost typical purity, the 83 assays (made by myself) averaging 74·31 per cent of white metal." After describing the properties, this "eminent expert" states that 15 groups of these "mines," after one year of opening, would be able to employ 1735 men, whom he estimates would produce 1605 tons of ore a day. There is nothing like "estimating" down to the odd ton of output from veins which the Professor says are "practically untouched," and of which he therefore can know absolutely nothing. Nevertheless, he goes on to say that after 18 months the same number of men should produce about 2200 tons, and at the end of two years, 2600 men and boys, at an annual wage price of about $2.75 per day, should produce about 2600 tons, and thereafter about "3000 tons of assorted ore per day, this to represent a general average of not less than thirty pounds of black tin to the ton." This figure is not far from representing the yield in *concentrates* (not "black tin") in the historic Etta mill-run; but the best of these Etta concentrates contained rather less than 50 per cent of tin, so that 30 pounds would represent only 15 pounds of tin, worth at present prices scarcely $3 a ton at the mine, out of which the miners wages would, according to Professor VINCENT'S very liberal estimate, amount to about $2.75, and smelting, supplies and the general expenses of an English company would certainly cost as much more, or say $5.50 a ton of ore.

This figure is not very much above the cost at the great Dolcoath mine, where underground wages average about three shillings, or 75 cents a day, and surface wages average 25 cents a day. Even if the 30 pounds were the "black tin" which assayed "74 per cent white metal," its value would not at present represent more than $4.40 a ton of ore, or considerably below any "probable" cost of production from ores which carry, according to Professor VINCENT, about 1¼ per cent of tin.

The following extracts from Professor VINCENT'S reports will prove interesting revelations to those who are acquainted with the properties, and also, probably, to one of the two or three "Commissioners" who came with the professor from England to examine the mines.

"The 'Etta' is of promising importance as a 'Columnar' bonanza mine, has considerable underground development and ample surface improvements." It was further reported "That the 'Sarah' represents in the main an assemblage of what might be styled 'semi-columnar' upheavals of tin bearing granitic material, the heaviest outcrop being 860 feet long, a second about 520 feet long by approximately 270 feet wide, and a third 428 feet long and 75 feet high, and all those tin-bearing masses can be worked by adit to important depths; that the 'Ingersol,' like the 'Sarah,' can be worked with marked economy (by adit) to a depth of 527 feet; that the 'Addie' group is characterized by a powerful and productive 'true fissure' vein or lode, which appears to extend an unbroken distance of 3000 feet, with an average of 4½ feet in width, and will be found most productive of tin; that the 'Excelsior and Champion' claims extend a length of 3000 feet, through most of which distance a powerful tin-bearing lode, averaging about 4 feet in thickness, and everywhere (where seen) carrying tin oxide in remunerative quantity, has been proved to exist; that the 'Mattine' claim covers one of the largest well defined lodes possessed by the company: that this lode has an open cut, in the central portion, which shows some tin oxide, is 11¼ feet wide, and crops out a distance of 856 feet; that the 'La Grande' shows a lode of unusual strength, with outcrops for a distance of 645 feet, the vein averaging 5½ feet thick; and that the 'Mohawk' lode of the 'Mohawk' group is notable for being a true quartz vein of great promise, averaging over 4 feet in width, and yielding ore of a high grade."

Professor Vincent concludes his curious report in the following appropriately unintelligible language:

"Though I have studiously avoided adding, by scientific allusion or treatment, to the encroaching length of this report, yet I have felt in dealing with the interesting and, perhaps, unparalleled system of stanniferous lodes under review, that I could not (even in the interest of the economic bearingof the facts) refrain from thus briefly pointing out, that as respects their physical environment no less than their intrinsic (mineralogical) features these Harney Peak lodes are practically identical—inc all important characteristics—with those of the leading tiu-producing enters of the world. Finally, I will state in distinct terms that which I have already indicated, namely, my conviction that, with proper and adequate management, the unique assemblage of magnificent properties under consideration will show commercial results such as have seldom been equalled in the achievements of industrial economy."

Dakota has no worse enemies to-day than the promoters of the Harney Peak tin deal. They are rapidly bringing the tin prospects of the Territory into disrepute, and making it far more difficult than it otherwise would be to induce capital to undertake the legitimate exploration and development of her fine prospects.

Instead of squandering the money trying to catch gudgeons in London, let those who have already put so much money into the Dakota prospects, go to work and test some of them and mill a few thousand tons of the ore under the supervision of competent and honest experts and thus demonstrate to a disgusted and now somewhat incredulous public that Dakota does actually possesses tin in payable quantities.

THE CRISIS IN COPPER.

Mr. W. B. LAWSON, city editor of the *Financial Nems* (London), has issued a pamphlet under the title of "The Crisis in Copper." It reveals the authorship of the famous article, "A Deluge of Copper," which appeared in the *Times* of August 26th, 1885, which excited so much curiosity on this side of the Atlantic, and which was undoubtedly influential in aggravating the distress in the copper market the world over. Other articles reprinted and a very clever introduction are in the same vein. Though his prognostications of low prices have been falsified, he still finds a plausible argument in justification of his former opinion in the increasing stocks of copper, and is satisfied that the same cause which operated in depressing prices before will reproduce the same effect. He applies the opprobrious title of *Ring* to M. SECRETAN and his associates in the various syndicates which have been formed to regulate the price of copper and enhance the value of copper stocks. He charges the same gentlemen with having, for years past, operated for a decline, who are now sustaining the advance. He therefore impugns the sincerity of their motives when they, as manufacturers, claim credit for steadying the price of a great staple of commerce, and he utterly denies the possibility of their being able to carry out their plans in the face of a rapidly reducing consumption and increasing production. He does not rely on statistics alone in proof of his proposition that higher prices have checked demand, but he adduces the stagnation in the shops and large factories of Birmingham and Selly Oaks as unquestionable corroboration of reduced activity in the copper, brass and yellow metal trades.

An element of supply which he claims the syndicate failed to make due allowance for, and which they could not possibly control, is the world's stock of old metal; an indefinite but very large quantity of which has been used by the enemies of the syndicate heretofore to thwart its plans by rendering the British manufacturers independent of the syndicate's control, and thus piling up copper on its hands. Mr. LAWSON thrusts his arguments trenchantly, and draws his conclusions with that unhesitating assurance which carries conviction. But like all *ex parte* pleaders, he omits every fact which militates against his view, and when his own evidence is capable of adverse interpretation he cleverly diverts attention from its weak points.

That the *visible* supply of copper has increased during the last six months is, of course, a mathematical certainty, but to what extent the *real* supply has increased is only a matter of speculation. If the syndicate has bought the product of the principal mines of the world, the mining companies are turning over their copper as made, and are themselves carrying no stocks. We know that some American companies, which always carried several million pounds, are actually bare, their shipments being delivered on arrival to their only customer. Once in his hands the same copper enters circulation and swells the vis

ible supply, which, under other circumstances, would have had no statistical existence. The copper in the hands of the syndicate can be readily counted, which, while still in the hands of the producer, was an invisible quantity. On the other hand, manufacturers are carrying small stocks,—those favorable to the syndicate receiving their supply as needed, those unfavorable being more or less confident of a decline. We do not, however, attribute the increased visible supply in a very marked degree to this cause, as the stocks of raw material in the smelter's and manufacturer's hands before the revival were scanty. A still lower price was then as confidently looked for by the trade as a collapse is now predicted. But it is unquestionable that the immediate transfer of their production by a number of the largest mines of the world to the store-house of the syndicate makes visible an enormous quantity of copper which formerly existed but could not be taken into account.

The greatly augmented exports from this country can only be thus explained, for however the price may have influenced consumption in Europe, all our copper mills and brass foundries are in full activity, and there has been no increase in production commensurate to the increased shipments. The falling off in deliveries on the other side would, however, bear out the pretension that the price is so abnormal as to check consumption, were it not that the deficit in consumption of new copper has probably been more than replaced by old copper and old brass.

The hunt for old metal has unearthed larger quantities than the syndicate perhaps made allowance for, sufficient at any rate to enable the hostile manufacturers for a time to assume an independent attitude. But it is admitted by even Messrs. J. LEWIS & SONS, who hold very extreme views on the subject of the future price of copper and the fate of the syndicate, that these old stocks are nearly exhausted. Mr. LAWSON'S own arguments explain the decrease of 10,000 tons in deliveries. If the quantity of old copper recovered has been as great as he would assign to it, the decline in deliveries can thus be accounted for without attributing it to paralysis of manufacturing, and, if the reserves are inexhaustible, Mr. LAWSON'S gloomy prognostications of ruin to all concerned, by reason of the indestructible character of copper, and the enormous stocks of old metal here and there and everywhere will be realized. But we think there must be a miscalculation. We can quite understand how an accumulation of old copper in small lots may gather while prices are very low, which accumulation a rise in price throws into the market; and it is very likely that the great publicity given to the recent flurry in copper has led every old wife on both continents to ransack her rubbish heaps for old copper bottoms and wire, and to cut the old rivets out of her husband's old overalls, and thus raise above its normal line the production by regeneration. This is one of the reasons for the sudden increase in stocks, and the decrease in deliveries, but we are convinced that junk-shops during a given number of years, supply a given average of the total consumption. That average at all times is very large, for the world's supply of say 230,000 long tons of raw copper must be but a fraction of the world's demand. The statistics of consumption, based on returns, take account of the operation only of the large copper, brass and yellow metal mills, but cannot reach the output of the innumerable petty brass foundries which exist in every land, and do the great bulk of the repair business, any more than they record the consumption of old brass and copper by the shops, large and small, which make their own brass and bronze castings. Were it not that copper is so indestructible, the world's present supply would certainly not meet the world's present demand.

While therefore it is very likely that the high price has brought from its hiding-place certain stocks of old metal, which have temporarily replaced new copper, there is no good reason to suppose that this supply is perennial. It is not the first time in the history of the copper trade that prices have been seriously affected by a sudden influx of old copper. After the great Napoleonic wars the dismantling of the British fleet threw on the market such large quantities of sheathing as to produce a deluge of copper and a terrible shrinkage in value. The price fell at the close of the war over 20 per cent.

A similar sudden accession to stocks, followed by a decline in price, succeeded the Indian mutiny, because of the large treasures of copper held by the natives of Hindoostan which found their way into general circulation. Copper which stood at £124 in 1857 fell to £108 in 1858. But this surfeit of old copper was in time digested by the market, which has always absorbed, year by year, a certain normal proportion of old metal. What that factor is has never been determined, but it is certainly very large. There is, however, of necessity, more or less old metal which remains out of the usual channel of trade, till carried into it by some such extraordinary impulse as the present excitement. If, however, purchasers on either side of the Atlantic reckon on this extra supply as coming from a perpetual source, they will undoubtedly be disappointed.

We think it too soon yet to predict the actual effects of the current price of copper. Before it occurred we foretold as inevitable a rise. It must have come as a result of unremunerative prices, even had M SECRETAN not interfered. Stocks were already dangerously low, and consumption was rapidly overleaping production. Whether 16 cents or the mean between 16 cents and 10 cents is a price at which a just balance between supply and demand will be maintained, time will soon show. The disturbing element which old surplus stocks introduced into the calculations will speedily be removed. These statistics will be a more reliable guide toward forming a judgment than they are now.

We cannot believe that the return to 16½ cents, which, till recently, was a low price, and one under which the consumption of copper rapidly increased, is now fatal to its use.

While a cheaper metal may replace it for some purposes, the demand for entirely new applications is growing. For instance, no substitute for copper for electrical transmission of power has been, or is likely to be proposed. Here we have an entirely new field for copper, which promises to be to the copper trade what steel rails are to the iron trade. Where a hundredweight of copper may be used for telegraphic purposes, a ton would be required for the transmission of power; and the day is near at hand when, through improvements in the construction of dynames and the electric welding of conductors, the loss in transmission will be so reduced as to give this method of transferring power precedence over all others. Power will by this means be supplied for household purposes as universally as gas and water now are. Copper, in fact, is no more likely to fall into disuse than iron and steel, until society returns to its primeval state. The arts, old and new, will make ever-increasing drafts on available supply. The necessity for it is too urgent to permit of a slight rise in price excluding it from use.

The cost of mining, smelting, and manufacturing copper is really the element which will determine its price, and the experience of the past few years proves that the price to which the metal dropped was too low to secure the supply for the world's wants.

CORRESPONDENCE.

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

Nickel Ore from Russell Springs, Kansas.

EDITOR ENGINEERING AND MINING JOURNAL:

DEAR SIR: Several samples of the nickel ore from Russell's Springs, Logan County, Kansas, noticed in the last number of the JOURNAL, have been submitted to the Smithsonian Institution for examination.

The material consists of very smooth quartzose pebbles, from bean size down, cemented by a more or less manganiferous limonite. It contains nickel and cobalt and a small amount of copper, but whether these metals are present in sufficient amount to constitute an ore, has not been determined. There are also small amounts of some carbonate and sulphate present.

I hope to lay the matter before the next meeting of the A. I. M. E. more fully. Yours very truly,

FRED. P. DEWEY,
Curator Metallurgy.

WASHINGTON, Sept. 13, 1888.

NEW PUBLICATIONS.

NELL'S MAP OF COLORADO. Engraved by I. L. SMITH, Philadelphia. In pocket form or wall map. Sold by the Scientific Publishing Company, 27 ParkPlace, New York. Price, $6.

This topographical map of the State of Colorado has been issued, and a very useful one it will be found by any one requiring an accurate map for reference or information. The scale is 1 inch to 8 miles, which is sufficiently large to supply all details with names and leave the map clear and distinct. There are given on it all post-offices, reservations and private land grants, altitudes, United States Land Offices, Land Office Districts and contour lines, showing vertical intervals of 1000 feet.

We have no hesitation in saying that it is the best and most complete map of Colorado yet issued, and one that will prove indispensable to all interested in Colorado and its mines.

POOR'S MANUAL OF RAILROADS, 1888. By H. V. and H. W. Poor. New York. Price, $2.

This is the twenty-first annual number of this excellent work; a book of reference which is indispensable for all who seek information about the railroads of the United States, Canada and Mexico.

A separate section is devoted to tramway companies, with another to miscellaneous and auxiliary corporations. The form of the volume is so well known, and the general correctness of its contents so thoroughly recognized, that it is almost unnecessary to refer to its excellence and utility.

Of course, in a work of such magnitude, it is impossible to avoid some errors or inaccuracies, and in these days of rapid construction, when the history of a line is taken in the month of September, 1888, from the report of the company for the year 1887, it seems a little out of date. This defect, however, is perhaps practically unavoidable. The tables of statistics are admirably arranged, and contain most useful and interesting figures.

KRUPP & DE BANGE. Published by Thomas Prosser & Son, New York.

This is the title of a book by Capt. E. Monthaye, of the Belgian General Staff, the first edition of which appeared in January, 1887, and the second in February, 1888. The latter, together with an appendix, has been translated by Capt. O. E. Michaelis, of the U. S. Ordnance Corps, and published by Messrs. Thomas Prosser & Son, the New York agents of the Krupp works.

The book is an interesting comparison, by an expert of a neutral

State, of the two leading European systems of ordnance: that of Krupp, which has been adopted by Germany and partially by many other States, and proved in several important wars; and that of Colonel de Bange, adopted by France, but as yet more highly praised than thoroughly tested. In connection with this comparison, there is also some discussion of the question whether a government should manufacture for itself in its own works both the material and the guns required for its armies and fortresses, or should open a part of the work—say the production of the metal—to the free competition of private makers, or should (as in the case of Germany) contract for the whole work with a single private establishment.

Captain Monthaye is plainly a partisan of Krupp throughout. He argues for Krupp's material, Krupp's design and Krupp's monopoly of the government work; and he finishes his book with a portrait of Krupp and an enthusiastic account of the Essen establishment, as glowing in color and as vague in detail as such descriptions usually are. It is probably well for the reader to bear in mind this strong bias of the author. We will not call it a prejudice; for there is no proof that it existed before the subject had been studied. On the contrary, we think that Captain Monthaye, having been led by his study to a conviction favorable at all points to one side, has been simply unable to affect an impartial tone in rehearsing the steps of his inquiry. He knows all the time where he is going to come out, and he betrays this knowledge at every step.

On several points, he expresses himself with premature confidence. Thus, the first distinction between the two systems he compares is, that the Krupp guns are made of crucible cast-steel, while the De Bange guns are usually of open-hearth steel, in hammered tubes, with double-taper hooping. Our author, after citing a number of authorities of variable weight, concludes that nothing but crucible cast-steel will do for gun-metal; that the defects of the Bessemer and open-hearth processes have never been overcome; and that these processes are out of the question. A footnote by Captain Michaelis chronicles the casting at Pittsburg of a six-inch solid unhammered steel gun; and if this should stand the tests which it will receive after finishing, a very important part of Captain Monthaye's argument will be knocked out from under him.

On the technical questions of construction, fermature, etc., he makes a strong showing; and, backed as he is by the practical performance of the Krupp guns in warfare, he may be said to have established his case, for the present state of the art. But it is appropriate to remark that, as American steel-makers have now taken hold of this business in earnest, the state of the art is not going to stand still.

Moreover, the last word has not been spoken yet on the subject of alloys for gun-metal. The Uchatius bronze is not the best that can be done in that line; and later editions of Captain Monthaye's book may have to deal with more dangerous rivals to Krupp than De Bange's hammered tubes and hoops.

Nevertheless, the mass of information and the critical discussion of the results of practice presented by this book render it a valuable one to students of this subject and to practitioners, both in the manufacture and in the use of ordnance. A careful perusal of it would enlighten many of our volunteer essayists as to the field-requirements which modern warfare imposes upon both light and heavy guns.

Captain Michaelis, whose recent paper before the Institute of Mining Engineers on the Bofors cast-steel guns shows how closely he is following the course of foreign progress in his field, adds little in the way of comment to the work of Captain Monthaye. The Bofors guns, by the way, are not crucible, but open-hearth steel, and are believed by the Swedish authorities to be as good as Krupp's, though the comparison can not yet be extended to the large calibers. For ourselves, we must confess that, *à priori*, it seems to us more difficult to make large castings of crucible steel of perfectly uniform quality than to do the same with the open-hearth. The superiority of the crucible in practice hitherto may be admitted, without believing it to lie in the nature of things, and thus to be unassailable. This, we may add, is by no means tantamount to saying that *soft* steel is to become the gun-metal of the future.

PHONOGRAPHS AND GRAPHOPHONES.

The following description of the new phonographs which are causing so much comment and are in some respects the most marvelous machines that the world has ever seen, will be read with much interest. We have condensed this description from an article in the *Iron Age* of this city:

The original Edison phonograph consisted of a cylinder coated with tinfoil, and so mounted in a frame that by means of a crank and screw a rotary and at the same time a longitudinal motion could be imparted to it. The sound to be recorded was directed into a mouthpiece closed by a thin elastic metal disk. By means of a spring a small steel point, rounded at the end, was fixed to the back of the disk and pressed gently against the surface of tinfoil, to which it transferred the sound vibrations of the disk. A series of indentations were thus produced on the tinfoil, which, being a non-elastic substance, retained them. If now the part which the mouthpiece played was reversed, the indented tinfoil could be used to reproduce the sound. This was best effected by a special mouthpiece of larger size, with a diaphragm of similar construction. This was so adjusted that the point was made to work along the indentations setting the diaphragm in vibrations, which, being communicated to the air, reproduced the sound more or less accurately. Experiments with this early instrument showed that sound could be reproduced with it so as to be heard by a large audience. The sheet of tinfoil could be kept for an indefinite period, and could be made to give reproductions when desired. The tinfoil cylinder was turned by hand, the attempt being made to give it as uniform and regular a motion as possible. For physical laboratory researches the apparatus was employed to a slight extent, but was not adapted to any special practical use.

The engravings which we give herewith show the latest and most improved form of the phonograph.

In its present shape it gives every promise of meeting the requirements of a practical substitute for a stenographer, taking dictations as readily and, in fact, more accurately and reproducing them for transcription by typewriter or other means when required. For this purpose it will shortly be offered to the public. The main principle of Mr. Tainter's phonograph-graphophone is the same as that underlying Mr. Edison's improved apparatus, though in detail the two differ.

The general view in the Edison instrument will show at once that important modifications have been made. In the later instruments, as in this one, the recording cylinder coated with tinfoil has been superseded by one of hardened wax. This is slipped over a mandrel mounted on a spindle, which at the opposite end is threaded and rests in two bearings. Behind the spindle and the wax cylinder is a rod, upon which is arranged a slide, having at one end an arm, carrying a pivoted head with two diaphragms, one for recording and the other for reproducing sounds, and at the other end an arm adapted to engage a screw cut on the spindle, and also, by a hooked portion, another screw nearer the front, called a "kick-back" screw. The manner in which the arm is thrown into and out of gear with the screws will be better understood from Fig. 4. In Fig. 1 it will be noticed that at the extreme front right-hand end of the machine is a milled head controlling, as shown in Figs. 4 and 5, a small cam which can be made to tilt the pivoted bar *A* through a certain angle, which will be shown by an index and marks on the head *B*. Upon the angles through which the bar is tilted depends the hight of its front edge. On this rests the hooked portion of the arm shown at the left in Fig. 1. The hook itself engages with the "kick-back" screw underneath, while the main spindle screw is engaged on the top by a threaded section on the underside of the arm. The recording and reproducing diaphragm frame also is supported on the edge of the bar *A* (Figs. 4 and 5). When this bar is so turned that its edge is at its lowest position, the arm at the left in Fig. 1 also is at its lowest position, and consequently its threaded position is in gear with the main spindle screw, imparting to the diaphragms a lateral movement. By slightly turning the head *B* the edge of the bar *A* is raised, raising with it the diaphragm frame, so as to have the stylus of whichever one may be in working position clear the wax cylinder and raising also the hooked arm, throwing it out of gear with the main spindle screw. The spindle and cylinder then revolve idly. By turning the head *B* further and raising the edge of the bar *A* still higher, the hook of the arm is brought into gear with the "kick-back" screw. This screw is of much coarser pitch than the other and revolves in the reverse direction, its office being, in reproducing, to bring the stylus on the reproducing diaphragm back to any desired point, as may be determined by the scale and index on the front of the machine, so as to repeat any particular part of the record. The arm may be thrown into or out of gear with the main screw by a treadle arrangement not shown, so that in transcribing the record on the wax cylinder by means of a typewriter, for example, the operator may stop the reproduction with his foot at any point, after having heard as much as he can conveniently remember, and proceed again when ready for the next sentence.

The position of the diaphragms can be readily adjusted by swinging the head in which they are mounted, so as to bring either the recorder or the reproducer, as required, in its proper place in front of the wax cylinder. Suitable adjusting screws are, moreover, provided for securing a proper degree of pressure between the stylus of each diaphragm and the cylinder. The recording diaphragm, shown in its working position in our engraving, is furnished with a funnel-shaped mouthpiece, attached to a short, flexible tube, and in Fig. 2 is represented, with its accessories, on an enlarged scale. The diaphragm proper consists of a very thin plate of malleable glass and the stylus is attached to its center, being, in addition, pivotally connected to a spring arm fixed to the side of the diaphragm holder. Fitted slightly in advance of the stylus is a small knife, clearly shown in the illustration, which prepares a new, clean surface for the impression, cutting away all traces of previous records should there have been any on the wax. Of the reproducing diaphragm we give a detail view also, in Fig. 3. It consists of bolting silk thinly coated with shellac, and the needle or stylus is attached to its center through the intervention of a small piece of cork, being, besides, connected with the side of the diaphragm-holder, as in the case of the recorder, by an arm, as shown. In reproducing musical notes the cork support just mentioned is replaced by rubber, this material having been found more satisfactory for the purpose because of its greater elasticity. The sound waves produced by the diaphragm are transmitted through a rubber tube, which is branched and provided at its extremities with ear pieces similar to those of a stethoscope. These are lightly placed in the ears of the operator. To make the necessity of this clear, we will explain that in the early form of phonograph distinctness and accuracy were sacrificed to volume of sound, while in the present instrument the reverse is the case: so that while the reproduced sound is audible only to the operator equipped with the branched tube and ear pieces referred to, it is heard exactly as it was delivered into the mouth-piece against the recording diaphragm, all the variations of tone being faithfully given. So delicate is the reproduction that there is no difficulty in recognizing all the peculiarities of a familiar voice which may have been brought to act on the recorder. Motion for the instrument is supplied by a small electric motor in the box forming the base of the apparatus, connection being made with a battery. The governor only of the motor can be seen in Fig. 1, at the extreme left. The motion is transmitted to the main spindle and to the "kick-back" screw by a number of small belts and pulleys. From what we have thus far said it will perhaps have already been understood that in using the phonograph the recording diaphragm is first placed in its proper position for action on the wax cylinder, or phonogram, as it is called. As this revolves the small knife previously mentioned, operating similarly to a lathe tool, prepares a smooth surface on the wax, and is immediately followed by the recording stylus, which, under the influence of the vibrations of the glass diaphragm produced by the sound entering the mouthpiece, cuts into the wax and produces corresponding indentations.

The diaphragm, with its stylus and knife, is fed along by the screw cut on the main spindle, the "kick-back" screw being out of gear, and slowly traverses the wax cylinder After the record is made, the carriage is again returned to the point of starting, the recording diaphragm is replaced by the reproducing diaphragm, and the carriage is again moved forward by the spindle screw as the cylinder revolves, causing the stylus of the reproducing diaphragm to traverse the path made by the recording needle. As the point of the curved wire attached to the diaphragm follows the indentations of the wax cylinder, the reproducing

diaphragm is made to vibrate in a manner similar to that of the recording diaphragm, thereby faithfully reproducing the sounds uttered into the receiving mouthpiece.

A little thought will suggest a variety of uses for the phonograph. It may be employed for dictations and testimony in court, for reporting speeches, for the reproduction of vocal music, for teaching languages, for correspondence, etc. In dictating, one may talk as rapidly as one chooses, every word and syllable will be caught upon the delicate wax cylinder, and afterward the latter may be transferred to the phonograph of a copyist, who may listen to the words of a phonogram, and write out the manuscript. If any portion of the speech is not understood by the machine consists of end pieces connected by longtitudinal rods. In the top of the frame is journaled a fine screw inclosed in a slotted tube, the screw being driven through a train of spur-wheels from the main shaft journaled in the lower part of the left-hand end piece. The main shaft, besides carrying the gearing which moves the feed screw, is provided with a conical chuck. In the opposite end of the frame is journaled a spring-pressed spindle, which also carries a conical chuck of the same form and size as that on the main shaft. The cylinder upon which the sound is to be recorded is received between these chucks in much the same manner as the bobbin is placed in the bobbin winder of a sewing machine, the cylinder being revolved by frictional contact

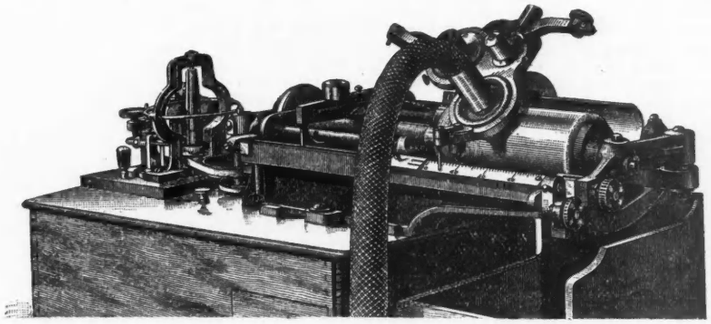


Fig. 1.—The Edison Phonograph.

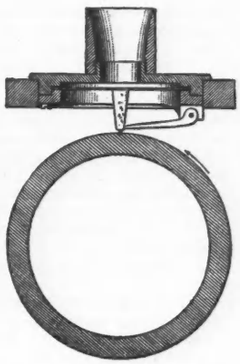


Fig. 2.—Recording Diaphragm.

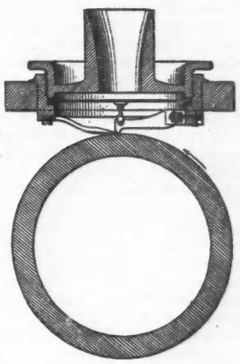


Fig. 3.—Edison's Reproducing Diaphragm.

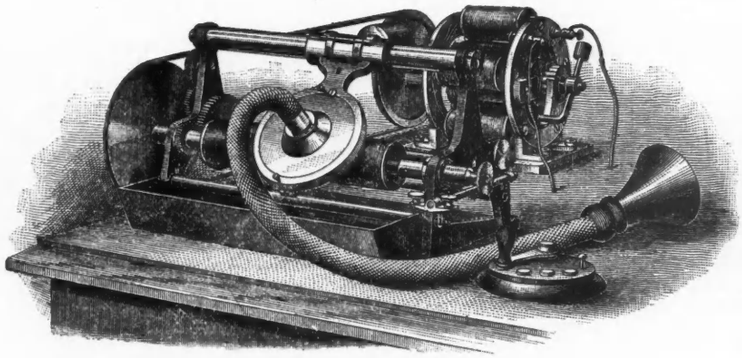


Fig. 6.—The Tainter Phonograph-Graphophone.

Fig. 4.—End View of Disengaging Gear.

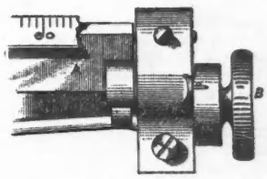


Fig. 5.—Elevation of Disengaging Gear.

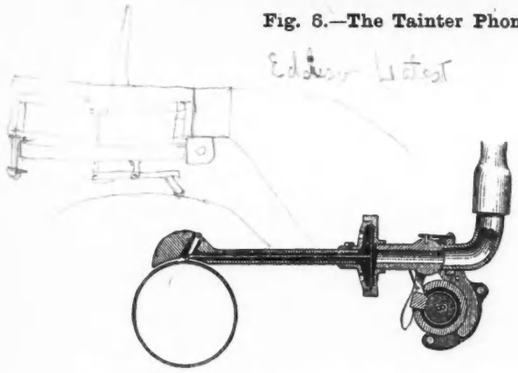


Fig. 8.—Reproducing Diaphragm.

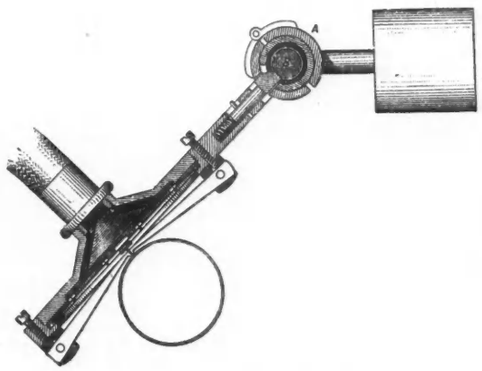


Fig. 7.—Recording Diaphragm.

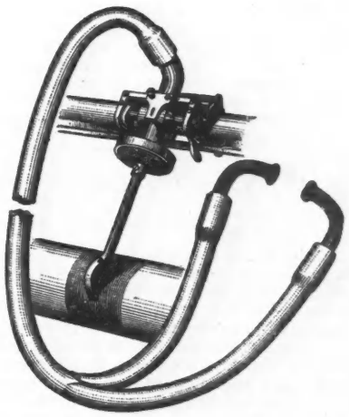


Fig. 9.—Reproducing Diaphragm and Attachments in Position.

transcriber, it may be repeated as often as necessary. In a similar manner a compositor may set his type directly from the dictation of the machine, without the necessity of "copy," as it is now known. The wax cylinders are very light, and may readily be mailed in specially devised mailing cases. A number of records may be made on each cylinder, owing to the thickness of the wax walls, the surface of which is cleared before every new series of impressions by the knife which travels in advance of the recording stylus.

Similar in principle to the phonograph is the phonograph-graphophone, invented a number of years later by Mr. Charles Sumner Tainter and rapidly developed by him into a practical and commercially valuable machine. Our engravings of it will show that, as compared with Mr. Edison's device, it is an exceedingly simple apparatus. Fig. 6, prepared from a photograph, represents a general view. The frame of the with the chuck on the main shaft. The cylinder consists of a spirally wound strip of paper coated with a specially prepared hardened wax and is very light. Not more than one tracing over its surface can be made, but its cheapness obviates the objection which might otherwise be raised to throwing it away and substituting a new one with a fresh surface. Below the cylinder is arranged a pan for receiving the fine shreds of wax which the recording stylus cuts from it, the number of grooves to the inch being about 160. At the right hand of the instrument is arranged a small rocking shaft, provided with a cross arm and two keys working a clutch, by which the driving wheel is thrown into and out of connection with the gearing of the machine.

Upon the tube which incloses the feed-screw is placed a counterweighted saddle *A*, provided with a follower, which enters the slot of the tube and engages the feed-screw. The saddle carries a frame, in

which is arranged a diaphragm of mica provided with a stylus, which engraves the record in the surface of the cylinder. The arrangement will be more readily understood by referring to Fig. 7, which represents a section through the recording diaphragm and clearly explains its construction. A metal bridge extends across the face of the diaphragm, attached to opposite sides of the diaphragm holder, and rests, at its middle, upon the record cylinder a little in advance of the stylus, thus supporting the weight of the diaphragm and its direct attachments. The depth to which the stylus penetrates the wax coating is in this way also regulated. Fig. 7 shows, further, that the saddle *A* is made up of two parts, hinged on top, so that, together with the diaphragm holder, it can readily be removed. The recording action is much the same as in the phonograph, the diaphragm with its stylus being fed along the axis of the wax-coated cylinder by the screw *B*, while tracing its record on the wax. A separate and smaller reproducing diaphragm also is used, its construction being illustrated in Fig. 8. The reproducing stylus is pivoted, as shown, and transmits its vibrations to the diaphragm through a delicate rod. From the diaphragm holder is led a flexible tube, branched as in the case of the phonograph, and provided with ear pieces, the whole being shown in Fig. 9. It is mounted on the tube inclosing the feed screw *B*, like the recorder, a light spring, however, being used to press the stylus against the record cylinder. This spring is not necessary in the case of the recorder, since the weight of this with its attachments is much greater and amply sufficient to give a satisfactory impression on the wax.

In reproducing what has been recorded on the cylinder the recorder is replaced by the arrangement just described, and ear pieces of the branched tube are adjusted in the ears of the operator. The apparatus being put in motion and one of the small clutch keys shown on the right of the machine being pressed, the reproduction of what is recorded on the wax cylinder commences, and when as many words as is desired are produced a slight pressure on the second key stops the cylinder, while the motion of the driving-wheel at the left continues, and the words reproduced are printed by the type-writer. The first key is then pressed again, and a few more words of the record produced, which are in turn printed by the type-writer, and so on throughout the record. The capacity of a wax cylinder 6 inches long and 1½ inches in diameter, when dictated to at the rate of 150 words per minute, is about 700 words, this, however, depending upon the surface velocity.

The groove cut in the wax by the recording stylus is only $\frac{3}{1000}$-inch wide and less than this depth, and 161 grooves to the inch are cut on the cylinder. The total length of the record on a 6-inch cylinder will therefore be about 250 feet. Cylinders 2, 4 and 6 inches long are used. The operation of changing them does not occupy more than a few seconds. Motion is derived from a small electric motor of special design, the invention of Dr. Orazio Lugo, of New York, worked by a battery. In Figure 6 it is seen at the left toward the rear. Changes of speed may be effected by a switchboard alarm in front, at the right.

It is of no little interest to note that within the past half year phonograph-graphophones have been to some extent in practical every-day use, and have demonstrated their entire practicability and value as labor-saving devices. They were used in Washington in both houses of Congress for work in connection with reporting the proceedings and also by members for the dictation of their correspondence, etc. We understand that many of the leading stenographers and lawyers at Washington are also using them, and find them of great help in their work. Thousands of record cylinders have been issued to supply these machines. Like the wax cylinders of the phonograph, they can be made to reproduce the records on them over and over again, and can be sent through the mails in specially devised boxes.

Both Mr. Edison's and Mr. Tainter's machines are controlled by the North American Phonograph Company, 160–164 Broadway, New York, and will be offered to the public at the same fixed rates per year, or part of a year, this plan being adopted in preference to disposing of them by outside sale. Prospective users can thus have their choice of either of the machines, uninfluenced by difference in cost, and the demand for either the one or the other will be, to some extent, a measure of its popularity and special adaptation to every-day requirements.

THE LOSSES IN ROASTING GOLD ORES AND THE VOLATILITY OF GOLD.*

(*Continued from Page* 197.)

Table IV. shows the combined effects of these three causes. In all these experiments an assay ton of ore was taken, and after the roasting was finished the whole roast was assayed to avoid possible errors due to sampling the roast, loss of weight, etc.† An examination of the table will show that within the limit of the salt used (4 per cent) the loss both of gold and silver increases with the amount of salt used, other things being the same. Second, it is apparent that the effect of time is to increase the loss, but the effect of an increase of temperature on the gold loss is greater than the effect of an increase of time. This is shown by Nos. 2 and 3. Here No. 2 was treated at a dull red for 5½ hours, but was finished at a light yellow for half an hour; the loss of gold was 6·46 per cent. Now No. 3 was heated for 9½ hours at a dull red, and finished for half an hour at a cherry red, making a total time of 10 hours as against a total of 6 hours in the preceding case, yet the loss of gold is exactly the same. Third, the loss of both gold and silver is greater in all cases where the salt is added after a long oxidizing roast than where the salt is added at the start. This is the general result of all the muffle roasts that have been made. It is invariable in the case of gold, and nearly always the case with silver. The reverse is the case on the large scale where a continuous roasting takes place in the reverberatory furnace, as has been shown by Mr. Aaron. I was at first led to doubt the accuracy of the roasting and assaying, but the fact is undoubted. I shall later give the explanation of this remarkable difference between batch roasts and the continuous methods.

TABLE IV.—CHLORIDIZING MUFFLE-ROASTS WITH MURCHIE PYRITE.

Showing Losses Due to Different Amounts of Salt, Temperatures, and Times of Roasting. 1 Assay Ton (29·166 grms.) Roasts.

No.	Salt.	Conditions of Roasting. Temperature.	Time.	Ounces, ton. Gold.	Ounces, ton. Silver.	Percentage loss. Gold.	Percentage loss. Silver.
1	2	At start, 7½ hrs. dull red, ½ hr. cherry red	hrs.	4·43	27·17	1·34	4·30
2	2	After 2 hrs. dull red, then 3½ hrs. dull red, ½ hr. light yellow	6 "	4·20	24·21	6·46	14·72
3	2	At start, 9½ hrs. dull red, then ½ hr. cherry red	10 "	4·20	25·95	6·46	8·59
4	2	After 9½ hrs. dull red, then ½ hr. cherry red	10 "	4·16	25·57	9·80	9·93
5	4	At start, 7 hrs. dull red, then ½ hr. light yellow	7½ "	4·17	22·70	7·13	20·04
6	4	After 7 hrs. dull red, then ½ hr. light yellow	7½ "	2·82	17·68	34·97	37·72

Original assay-value of raw sulphurets, gold, 4·49 oz. per ton; silver, 28·39 oz.

In order to study better the effect of time alone on the roasting the experiments recorded in Table V. were projected. The amount of ore taken was as before, 1 assay ton. Six such roasts were weighed out, and the set on the left was mixed with 5 per cent of salt. This salt had been previously fused, then pulverized, and was kept in a stoppered bottle to avoid losses from the decrepitation of the salt. Six other similar roasts were also weighed out without salt. The two sets were then charged in a pair of muffle-furnaces situated side by side, so that their temperatures could be instantly compared. For the first hour, to avoid decrepitation, covers were used. The room was darkened, and the ore in the muffles was kept as constantly as possible at a dull-red heat, every precaution being taken to keep the temperature and the draft in each furnace exactly the same, a large number of experiments being necessary before all these conditions were reached. At intervals of one hour a roast was taken from each muffle. At the end of four hours the two remaining roasts were removed from each muffle, the left-hand set were removed from the dishes when cold, pulverized, and returned to their dishes. The right-hand set received the same treatment, but at the same time 5 per cent of salt was intimately mixed with the ore. Both pairs were then returned to their respective muffles, and after another hour Nos. 5 from each muffle were removed; and after another hour the last one of each set (No. 6) was removed. The whole of each roast, together with its roasting dish, was then assayed by the crucible method. This last precaution was found necessary, because it was found that when salt was used with the ores a certain amount both of gold and silver was absorbed by the roasting-dish. In order then to have them all subjected to the same treatment the roasting-dishes were all assayed with their respective ores. The buttons, with a little adherent matte in the case of the first numbers of each set, were scorified before cupellation.

Table V. shows the original content of the raw sulphurets by scorification assay and the value of the roasts after each succeeding hour of treatment. It also shows the percentage loss at the end of each hour both for gold and silver, and the percentage loss during each hour.

TABLE V.—CHLORIDIZING MUFFLE-ROASTS TO SHOW EFFECT OF TIME. TEMPERATURE CONSTANT. A DULL-RED HEAT.

Content of Raw Ore: Gold, 4·49 oz.; Silver, 28·39 oz. per ton. 5 per cent Salt from the start. 5 per cent Salt after four hours Oxidizing Roast.

No. Hrs.	Oz. per ton. Gold.	Oz. per ton. Silver.	Percentages lost. Gold. Total.	Percentages lost. Gold. Per hr.	Percentages lost. Silver. Total.	Percentages lost. Silver. Per hr.	Oz. per ton. Gold.	Oz. per ton. Silver.	Percentages lost. Gold. Total.	Percentages lost. Gold. Per hr.	Percentages lost. Silver. Total.	Percentages lost. Silver. Per hr.
1	4·42	27·27	1·11	1·11	3·95	3·95	4·49	27·69	0·00	0·00	2·47	2·47
2	4·39	26·95	2·23	1·12	5·07	1·12	4·48	27·44	0·23	0·23	3·35	0·88
3	4·29	26·65	4·46	2·23	6·13	1·06	4·46	27·13	0·67	0·44	4·44	1·09
4	4·25	26·33	5·35	0·89	7·26	1·13	4·43	26·87	2·45	1·78	5·35	0·91
5	4·17	25·86	7·13	1·78	8·91	1·65	4·08	26·40	9·13	6·68	7·01	1·66
6	4·15	25·37	8·02	0·89	10·64	1·73	3·95	26·25	12·03	2·90	7·54	0·53

TABLE VI.—EFFECT OF A CHERRY-RED HEAT AFTER 4 HOURS DULL-RED.

5	4·10	24·92	8·69	3·54	12·22	4·96	3·64	23·61	18·93	16·48	16·84	11·49
6	4·08	24·76	9·13	0·44	12·79	0·57	3·55	23·53	20·94	2·01	17·12	0·28

I. *The Gold Loss.*—(1.) *Five Per Cent Salt from the Start.*—The loss of gold in this case is evidently pretty constant for the first two hours, being a little over 1 per cent per hour. During the second hour it has doubled, the cause being evidently the fact, apparent in the roasting, that the chlorine was beginning to be set free in the ore. For the next three hours there is some irregularity in the loss per hour, but it is on an average 1·18 per cent. The average loss per hour for the whole time is 1·33 per cent. The final loss is 8·02 per cent. Evidently here also time is not the most important factor at work; the amount of chlorine set free is the more important cause of irregularity here.

(2.) *Five Per Cent Salt after Four Hours' Oxidizing Roast.*—The losses of gold for the first four hours' roasting should here have been zero, according to the roasting tests previously cited. As a matter of fact, in all tests here cited, a small loss of gold actually took place before the salt was added. It was not due, probably, so much to dusting here, as to the fact that the draft of the furnaces had to be so shut off to keep the temperature down, that the chlorine fumes from the salted roasts were drawn into the room, and may have afterwards been drawn into the muffle with the unsalted roasts. In order to avoid dust loss the roasts were not stirred at all.

The effect of the salt addition is, however, manifested by an immedi-

* Abstract of a paper read before the American Institute of Mining Engineers, May, 1888.

† Among the students who have aided in this investigation at various times I wish particularly to mention Messrs. Lindley, Russell, Carrol, Hayes, Sutton and Booth.

iate jump from a percentage loss of gold from 1·78 per cent to 9·13 per cent, or an increase during the fifth hour of roasting with salt of 6·68 per cent. This enormous increase again shows the effect of a large chlorine generation, for the evolution of the chlorine was here quite rapid, much more so than during any hour of the roasting of the previous set. It again shows how great an effect the rapid evolution of chlorine has on the gold loss. During the last hour the loss of gold, while still greater than during any hour of the previous set, is still less than half what it was during the fifth hour. The explanation again suggests itself that the evolution of chlorine, during this hour, was less rapid than when the salt was first added.

Again, it will be noticed that the final loss of gold with the set where salt was added at the start, is only 8·02 per cent, as against the loss of 12·03 per cent where the same amount of salt is added at the end of a four hours' oxidizing roast, and is in contact with the ore only two hours in all. The fact is, as already stated, the uniform general result of all the muffle tests that I have made. The explanation is, undoubtedly, that the loss of gold is due to the amount of chlorine which comes in contact with the gold.

Now, when the salt is added at the start, the chlorine is at first used up as fast as it forms by the sulphur, which escapes as chloride of sulphur. This fact was shown by the covers of the salted roasts, a certain amount of this substance being condensed on them. Of course, as long as the sulphur is present, it protects the gold from attack, and naturally the loss should be less. But when no salt is added till a long oxidizing roast has converted the sulphur into sulphuric acid and acid sulphates, and the salt is then added, the chlorine is then rapidly generated, and, what is more, it all has a chance to act on the gold, which is now no longer protected from its action by the presence of sulphur, etc.

II. *The Silver Loss.*—(1.) *Five Per Cent Salt from the Start.*—It is evident that here the greatest loss is at the first hour, being nearly 4 per cent; after that it is nearly constant, averaging 1·33 per cent, but increasing a little towards the end.

(2.) *Five Per Cent Salt after Four Hours' Oxidizing Roast.*—Here, too, the maximum loss is during the first hour, being 2·47 per cent; after that it is also nearly constant, averaging 1·00 per cent.

The great apparent loss, during the first hour of roasting, is probably partly due to an error in assaying, as the crucible results are generally low on ores containing so much sulphur as these which were roasted only one hour, owing to the unavoidable formation of matte, which dissolves to some extent in the slag. It is, however, plain that the silver follows a somewhat different law from what the gold does. Silver is, probably, volatile, both in the shape of oxide and to some extent also as chloride. It is plain that, in both these roasts, after the first hour, the silver loss is nearly proportional to the time of roasting. The fact that the silver loss in the second set (salt after four hours) was less than that with salt at the start, seems to have been accidentally the case in this set; it was more often the other way.

In order to study the effect of increased temperature on the losses, the set of experiments shown in Table VI. was undertaken. This set was roasted under exactly the same conditions as in Table V., except that, for the fifth and six hours, the temperature was raised to a cherry-red heat.

The losses of gold and silver are, in all cases, increased to a remarkable degree.

I. *The Gold Loss.*—(1.) *Five Per Cent Salt from the Start.*—During the fifth hour the loss has been 3·34 per cent as against 1·65 per cent, what it was during the same hour at a low red heat. This doubling of the loss is partly due to increase of volatility owing to the rise of temperature, and partly to the setting free of a greater amount of chlorine; for, during the last hour, we find an increase of the loss amounting only to 0·44 per cent, probably due to the fact that the salt was nearly all decomposed.

(2.) *Five Per Cent Salt after Four Hours' Oxidizing Roast.*—Here the increase of the gold loss is something enormous, being 16 48 per cent in the fifth hour as against 6·68 per cent, what it had been for the fifth hour at a dull red heat; the loss is here nearly trebled. The explanation lies evidently not only in the increase of the volatility of the gold due to the increase of temperature, but to the sudden generation of larger amounts of chlorine. The sixth hour shows the gold loss to have been only 2·01 per cent, as against 2·90 per cent, what it was for the sixth hour at a dull red heat. The reason lies evidently in the fact that the salt was now more thoroughly decomposed, and that the chlorine supply had begun to fail.

If we compare the final losses for Table VI., we find a loss of 9·13 per cent of gold where the 5 per cent of salt is added at the start, as against 20·94 per cent where the same amount of salt is added after four hours' oxidizing roasting; in other words, the loss is increased two and one third times.

II. *The Silver Loss.*—Evidently in both cases it is enormously increased during the fifth hour, and diminished in the sixth, the evident cause of the latter fact being a failure of the chlorine supply.

The final silver losses are largely increased, particularly where the salt is added after a long oxidizing roast.

(TO BE CONTINUED.)

REPORT OF THE TAMARACK MINING COMPANY.

We have been favored with advance proofs of the annual report of this company, from which we make very full extracts, regretting that our space will not permit us to publish it verbatim.

The company has had a very prosperous year, owing partly to the high price obtained for its copper and partly to the economy and energy with which it has been produced.

The following is the summary of receipts and expenditures:

"The production of "mineral" was 13,607,224 pounds, which at 76·36 per cent, gave 10,389,867 pounds of refined copper, for which has been realized the gross sum of $1,448,943.88.

"The costs have been: Running expenses at mine, $412,723.53; smelting, transportation, and all other expenses, $184,515.54; total, $597,239.07; showing a mining profit of $851,704.81; add balance of assets July 1st, 1887, $25,445.26; total, $877,150.07. Deduct dividend No. 1, paid April 1st, 1888, $120,000; deduct amount expended in mine plant during the year, $150.985.95; total, $270.985.95; making the balance of assets, $606,164.12.

As Messrs. Clark and Bigelow, President and Treasurer of the company, say:

"We feel that the results of last year must be very pleasing to every stockholder. The promise of producing copper at a cost of six cents a pound has been more than realized. In fact, we can safely say that the figures of cost shown above have never before been equaled by any copper mine in the world. * * * When the mine is sufficiently opened to warrant the running of four heads of stamps, say in two years' time or less, even these figures will be materially lessened." * * *

On the subject of the sales to the French syndicate the report says:

"It is evident that it is of almost vital importance to the entire copper-producing interest of this country, that the utmost harmony should exist in handling the rapidly increasing product of our mines. Our recent sale of fifty millions of pounds to the Societé Industrielle & Commerciale des Métaux, was the first of the great sales made by our mines to the French company, and, followed by the larger transaction of one hundred millions of pounds by the Montana company, with which we are intimately connected, enabled us in a good degree to promote, if not direct, these enormous operations. Transactions of such magnitude had up to that time never been recorded on the metal exchanges of this country or Europe. As we anticipated, they led directly to the consolidation and control of the product of all the great mines of the world. The inauguration of this most comprehensive system of mutual oversight, control of the product, and manipulation of these products, seems to us almost vital to their well being. The stimulus of present prices will necessarily lead all parties to crowd to their utmost all their energies in the line of production, and if this out-put is thrown upon the market without control, it will surely result in disaster, while under the present ownership and management, it will not be difficult to compel an equitable distribution. With this ultimate object in view, the policy of the recent organization of the Western Sulphuret Mines has been largely shaped."

The report says: "We made our first dividend of $3 per share in April, our second of the same amount in July, and the third, of $5, will be paid in October. We hope and expect to continue quarterly with $5 per share, making for the future $20 a share annually, leaving, we trust, a respectable surplus." And then the directors go on to refer to the duties of directors, in a paragraph to which we call attention editorially.

"The new saw mill, just completed at Dollar Bay, is at our very door, connected perfectly by rail and water, and is of great advantage, giving us at all times an ample supply of lumber at reasonable prices. The rolling mill was finished last April, and is doing good work. The wire mills are under contract to commence work this fall, and it is proposed to build smelting works adequate to our needs by the time our contract with the old concern expires, which we were forced to make three years ago. We expect to derive essential relief and advantage by having these concerns on Dollar Bay in direct communication with all our works, as, without absolute ownership, we shall have practical control of all of them, and this is important. The works already constructed are of the best, with every economical modern improvement, and must of necessity prove of essential advantage.

"Our intimate connection with the new Boston & Montana Sulphuret concern, we deem of importance. It is now, and is to be in the future, one of the greatest producing mines of this country, if not of the world. It is an essential part of the great Anaconda lode, and not less important in respect to the sulphurets of the West (Montana), than conglomerate Calumet & Hecla is on the Lake. This is a feature we are quite sure is not understood, and we consider it as of almost world-wide significance in this connection."

The following are the financial statements:

ASSETS.

Cash in bank at Boston	$190.472.31
Hancock & Calumet R. R. Co. 6 per cent bonds	55,000.00
Supplies on hand at mine	53,438 33
Cash on hand at mine	624.32
Accounts receivable at mine	10,018.70
Wood and timber land	18,620.93
250 shares H. & C. R. R. stock	25.000.00
Accounts receivable at Boston	22,815 82
Copper on hand	234 404.60
Bills receivable	79,911.29
Total cash assets	$690,306.30

LIABILITIES.

Drafts outstanding, $22,206.25; accounts payable at mine, $46,844.42; unpaid dividends, $1,251.00; accounts payable at Boston, $13,840.51; total liabilities, $84,142.18; balance of assets July 1, 1888, $606,164.12.

DETAILS OF MINING EXPENSE.

Underground Expense.

Shaft sinking,	110·80 feet, at	$20.00	$2.216.00
Winze sinking,	366·40 " "	11.60	4 249.15
Drifts,	3.339·24 " "	9.56	31 938.47
Stoping,	5,920·00 fathoms at	11.86	70,215.21
Tramming			28,846.12
Timbering, labor, materials and supplies			37,222.36
Extra work			5,566.87
Supplies, labor, fuel, etc., for air drills			29 306.88
Supplies, fuel and labor for engines			33,823.21
Mining superintendence and Co. acct. labor			36,736.85
Blacksmith, machinist and carpenter labor			4,284.64
			$284,405.76
Less profit on supplies, etc			19,247.00
			$265,158.76

Other Expenses.

"Rock-house, $18,621.12; surface labor, supplies, etc., $5,526.37; office labor, supplies etc., $7,669.43; transportation, $24,049.03; stamping, $79,641.88; Incidental expenses, $1,457.46; taxes, $10,599.48; total surface expense, $147,564.77; total running expense, $412,723.53.

Construction Costs.

No. 2 engine and shaft equipment, $5,380.35; rock-house, $2,981.26; dwellings at mine, $22,014.27; machine shop, $1,012; schoolhouse, $2,154.97; carpenter shop, $1,-541.49; captain's office, $2,501.67; No. 1 engine and shaft equipment, $11,221.28; stamp mill, dwellings, etc., $45,331.27; new boiler, $2,420.41; No. 2 auxiliary engine, $19,

598.44; No. 2 shaft, $34,828.56; total construction costs, $150,985.95; total expended at mine, $563,709 48.

SUMMARY.

Rock stamped	144,412 tons.
Product of mineral	13,607,224 lbs.
Product of refined copper	10,389,867 lbs.
Yield of refined copper per cubic fathom of ground broken	1,228 lbs.
Yield of refined copper per ton of stamped rock	71·95 lbs.
Yield of mineral per cubic fathom of ground broken	1,608 lbs.
Percentage of mineral in stamp rock	4·71%
Percentage of refined copper in stamp rock	3·60%
Refined copper, cost per pound at mine	3·97 cents.
Cost of smelting, freight, commission and Boston expense	1·78 cents.
Total cost per pound of refined copper laid down in New York and sold	5·75 cents.

The report of Captain Daniel gives the present condition and outlook of the mine in such detail as is necessary to give the stockholders an understanding of the value of their property ; it also shows very modestly the excellent work done by Captain Daniel.

We quote as follows :

"Results must be considered satisfactory. Compared with the previous year, the out-put of rock from the mine was largely increased and the copper product more than doubled. Much less rock proportionately was discarded as poor from the rock-house, and we obtained from what was sent to the mill over 1 per cent. of ingot more. Each fathom of conglomerate rock broken and treated afforded 1228 pounds ingot against 831 pounds in the previous year, a difference of 397 pounds in our favor.

"With an increased output the cost of handling rock has been lessened, the cost of stamp-rock for the year being $2.86 per ton. This from a mine so deep as ours, continually increasing its force, and necessarily employing much labor untrained to our requirements, is at least doing fairly well.

"During the year No. 1 shaft has been sunk 110·8 feet, making the depth 2570 feet from surface, and 22·5 feet below 9th level. The 10th level has nearly been reached since, and cross-cutting from the shaft will soon be under way. Two headings are now being run from a winze at 10th level, one toward the shaft, the other toward the conglomerate. It will require three months to get in good running order at 10th level, so as to break and send rock to surface from the conglomerate from that depth.

"Opening work for the year foots up as follows : No. 1 shaft sunk, 110·8 feet; No. 2 shaft sunk, 771·4 feet; winzes, conglomerate, 366·4 feet; winzes, country-rock, 132·6 feet; levels, conglomerate, 1988·4 feet; cross-cuts, 1350·8 feet; total, 4720·4 feet.

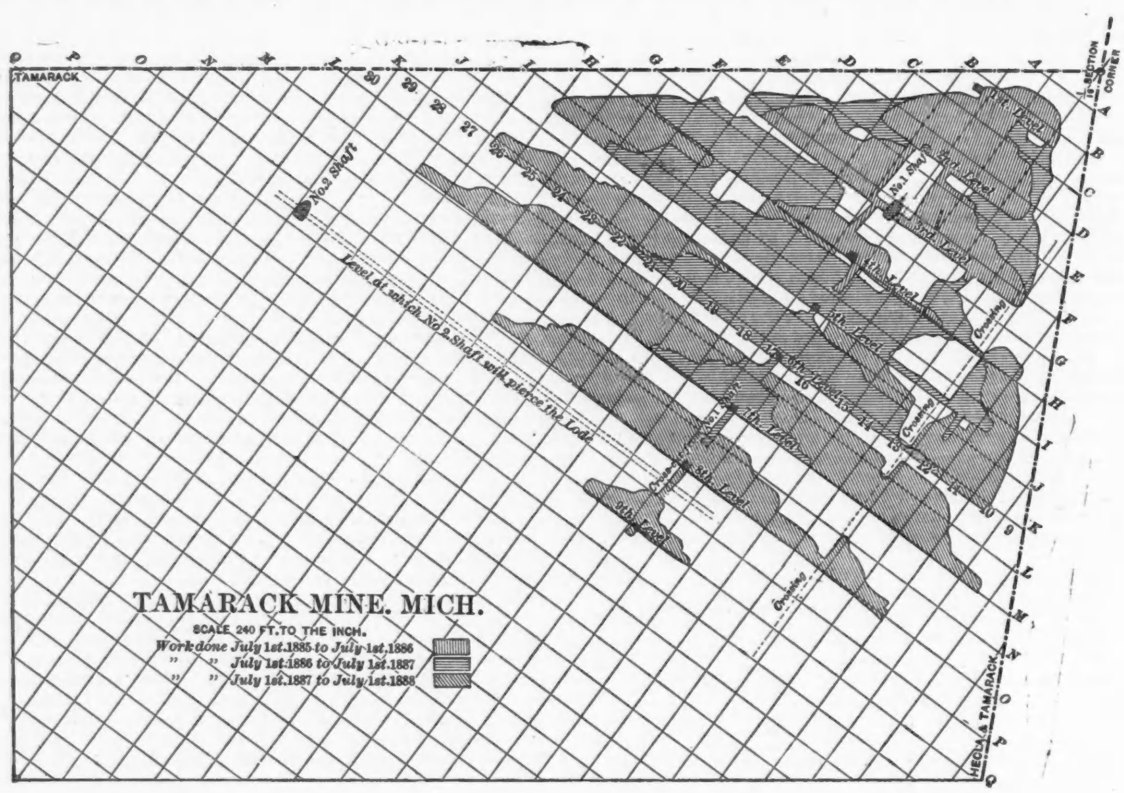
"No work was done at 4th level, or above on the conglomerate. At 5th level some stoping was done northward in a fairly wide lode of less than average quality. South of the crossing at 5th level we took out some good ground, the lode varying from 11 feet to 15 feet wide. The 5th level is now wholly worked out, where profitable, the blocks of ground left standing being most valuable as pillars.

"The 6th level has in all been opened for a length exceeding 800 feet, and, excepting 50 feet in length of lean ground in vicinity of the crossing, has been of excellent quality. Conglomerate averaged for the whole length over 15 feet wide. Northward we found it 18 feet wide.

"The seventh level has been extended north of cross-cut 550 feet, about, all in rich ground except the last few feet. We are here within 100 feet of the line of No. 2 shaft; and as a large pillar is required for protection of the shaft, we consider it best not to drive further. Southward we have advanced beyond the crossing 200 feet at this level. The first 75 feet of this was very rich ground ; after this we opened a wide lode, 17 feet wide, of quality much below average. The ground remaining in seventh level backs is all of good paying quality; but that nearer the extreme points reached is not of first quality.

"The 8th level is drifted north of cross-cut 360 feet, and south 330 feet. In the stopes north we find the conglomerate opening cut from 14 to 18 feet wide, and richest where widest. At no time has the opening shown a richer lode than at present. The lode in 8th level south narrows from cross-cut, and near the crossing is not much in excess of 9 feet wide. We drifted through lean ground here ; 100 feet in length we scarcely regard as good enough to stope. Beyond or south of the crossing, the conglomerate affords fairly good stoping ground ; but the lode does not run much in excess of ten feet wide. Late work in eighth level south drift shows an improvement for copper, but width of the conglomerate is regularly about ten feet.

"The winze from 8th to 9th level on the conglomerate was not regular in productiveness, but the stopes in its immediate vicinity opened very well. The length of 9th level to end of the year was about 200 feet. Going north we find good ground with an increased width of lode as we advance. This run of stopes has shown patches of sandstone, which at some points narrow the copper-bearing course. Lode varies from 14 to 15 feet in width. Occasionally 2 feet of this is worthless, the remainder being very good. The ninth level south soon runs into lean ground, say worth about 2 per cent, and better than we met with in level over. Late developments show that the narrow lode is met with at this level further north than at 8th. In less than a month we shall pass through the crossing and into more settled ground; we then look for more copper.



"The winze under 9th level, now down 81 feet, has not been regular in productiveness, but this, as I have pointed out before, is not unusual. The real test is in cutting the lode through from wall to wall and stoping it. It is satisfactory to note, however, that the ground lately sunk through is the best we have seen below 9th level, and in the bottom is of full average quality.

"The results of the year's work I have outlined in the foregoing. Prospects for the future, it will be seen, are very favorable. The north part of the mine is as rich as we can reasonably expect to find it, and the lode is as wide. The 8th and 9th levels south, for a length of about 200 feet, outside or north of the crossing, have not met our expectations, but except that this for a time limits the supply of rock from that part of the mine, no importance can be attached to this. In same line of ground we found the 4th level and much of the 5th level poor. Immediately under these the 6th and 7th levels were very good, and now we note 8th and 9th levels not carrying an average amount of copper. Had not 6th and 7th levels proved good there would have been no disappointment, for we consider that the crossing affects this ground unfavorably. Looking carefully over our work I cannot say that the copper-courses in the mine have any particular direction. Ordinarily, when the conglomerate is less than average width it is off in productiveness, but the narrrow parts seem to occur in spots rather than in a regular course. It must be borne in mind, however, that, comparatively, we are opened only to a limited extent, and that as the mine grows we necessarily have better opportunities to observe the characteristics of the bed we are mining. There is nothing to indicate any decline in the size or richness of the lode, and we then can only infer that we are but entering on a very prosperous career.

"The quantity of rock handled for the year was 162,945 tons; 10,590 tons, from openings in country-rock, were stowed underground, much on it in back of 4th and 5th levels; 152,355 tons were sent to the rock-house, and 144,412 tons to the mill, the quantity discarded as poor being 7943 tons. The quantity of rock hoisted from the conglomerate workings equal 8461 fathoms of ground. Mineral produced, 13,607,224 pounds,

at 76·36 per cent equal to 10,389,867 pounds ingot. Boulders smelted without stamping, 302,223 pounds. Ingot in stamped rock equals 3·597 per cent.

"No. 2 shaft was sunk for the year 771·4 feet, making the depth June 30th last, 1402·8 feet. In the last two months 164 feet have been sunk, making the depth to date from collar of shaft 1566·8 feet.

"We have done good work in sinking recently; last month 85 feet. A cross-cut at 2d level has been drifted from vicinity of No. 1 shaft towards No. 2, and is now within 100 feet of being under it. If we maintain late rate of sinking, early in April next we shall effect communication between the cross-cut and shaft, and this is a matter of great importance to us. Communication made, we shall use all diligence to carry the shaft to the bottom of the mine. Next year, then, we expect to be in position to materially increase our rock output, and this from what we consider is the best part of the mine.

"Hoisting plant for No. 2 shaft has been ordered, and will be ready for erection early next spring.

"The quantity of rock mined last year was larger than we anticipated a year ago, and in excess of the capacity of our stamp mill until we got No. 3 head ready to work; 11,203 tons were treated for us in Osceola Mill, 133,209 tons at our own. Cost of stamping was 55·15 cents per ton. In Tamarack Mill, 53 06 cents. We can do better than this, without doubt. The cost of stamping, after No. 3 head was started, was less than 50 cents per ton.

"In matter of duty our mill has done good work. There was no delay from imperfect machinery. Early in May No. 3 head was started up. In construction of this the use of oak spring-timbers to support the mortar and mortar-block have been discarded. Solid bed of iron, about 45 tons, has been substituted, apparently with perfect success and good results. The year's average duty shows 216 tons rock stamped for 24 hours running-time. In the last two months we got over 230 tons from each head in 24 hours.

"Our construction work continues to be important. At stamp mill we put in an additional head of stamp, with jigging machinery, slime tables, etc., and added an additional boiler. We spent about $5000 in bringing in the water of the Hungarian River. Probably this will give us water for three heads of stamps, without pumping, for four months in the year, and sufficient for one head much of remaining time. The water comes into the mill through a pipe which gives 200 feet of pressure, and this we regard as an important protection in case of fire.

"The No. 2 auxiliary engine and plant was also erected during the year. New boilers were added also, with stack, etc. In rock-house we put in an additional large breaker. Machine shop has required more tools, and we put in an outfit of wood working tools at carpenter shop. A new mining captain's office has also been provided. Expenditure for houses has been large; particulars of these you get from the clerk.

"The equipment of No. 2 shaft, with hoisting plant, rock-house, etc., the addition of another head of stamps at mill, etc., next year, with house accommodations for an increasing force, will keep us busy for another season.

"Plans of the mine by Mr. Klepetko, our engineer, and details of expenditures by the clerk, are in your hands. Our official force have all done their best, and have worked faithfully. To them my best thanks are due."

ELECTRIC TRANSMISSION OF POWER FOR A SWISS WIRE-ROPE RAILWAY.

A correspondent of the London *Daily News*, writing from Lucerne, gives an interesting account of a wire-rope railway or tramway line on the side of the Burgenstock, for which electric plant is employed to transmit energy from a waterfall three miles away to the hauling station at the upper end of the line. This undertaking is important to electricians and engineers because of the novelty and skill which have entered into its accomplishment, and because of the extraordinary difficulties which have been surmounted. Hitherto it has been considered impossible to construct a funicular mountain railway with a curve, but the new line up the Burgenstock has achieved that feat under the superintendence of Mr. Abt, the Swiss electrical engineer. The rails, in fact, describe one grand curve formed upon an angle of 112 degrees, and, by an arrangement of wheels for the cars known as the "System Abt" the journey is made as steadily and smoothly as upon any of the straight funiculars previously constructed. The Burgenstock being almost perpendicular, it would have been impossible to construct a railway upon the old plan. A bed has been cut for the most part out of the solid rock in the mountain side from the shore of the Lake of Lucerne to the height of the Burgenstock—1330 feet above its level, and 2860 feet above the level of the sea. The total length of the line is 938 meters, and it commences with a gradient of 32 per cent, which is increased to 58 per cent after the first 400 meters, and this is maintained for the rest of the journey. A single pair of rails is used throughout, with the exception of a few yards at half distance to permit the two cars to pass. Through the opposition of the Swiss Government each car is at the present time only allowed to run the half-distance, and they insist upon the passengers changing, in order, as they say, to avoid collision or accident.

The current is generated by two dynamos, each of 25 horse-power, which are worked by a water-wheel of 125 horse-power, erected upon the river Aar at its mouth at Buochs, three miles away. The current is conducted by means of insulated copper wires to a pair of electric motors, of the same power, which are placed at the head of the railway. The loss of energy in transmission is estimated at 25 per cent. The motors are connected by leather belting with two large pulleys on a countershaft, which is connected with a set of movable conical cogs, from which the big wheel over which the wire rope passes is driven. To give the rope adhesion it is wrapped under and over two smaller pulleys, and then for a second time over the larger wheel. The arrangements for applying the power are of the simplest character. Only one man is required to manage the train, and the movement of the cars is completely under his control. One dynamo is sufficient to perform the work of hauling up and letting down the cars containing fifty or sixty persons. With a switch the conductor regulates the amount of current according to his requirements. He communicates by electric signals with the man at the water-wheel when the cars are about to commence their journey, and the latter in turn regulates the water-power applied. A finger moving along a figured disc before him by means of a millimeter screw at the rate of a millimeter to every meter of the railway, enables him to see the exact position of the cars on the line at any given moment of the journey, and he can increase or slacken speed accordingly. In addition to this the cars themselves give him a signal at stated points. For instance, at a distance of 1 meter and 15 meters respectively after the car leaves either the upper or the lower station, the flanges of the wheel pass over an electric plate, and a bell is rung in the machine room The same signs are given when they arrive within 15 meters and 1 meter of the half distance, so that the cars are themselves their own signalmen, and the driver knows exactly when to shut off power. At the end of the journey, completed in about fifteen minutes, at an ordinary walking speed, the car moves gently against a spring buffer, and is locked by a lever without noise and without jolting the passengers.

This interesting undertaking has been carried out at a cost of £25,000. The water-wheel is also employed to light the whole of the hotel buildings and its grounds by electricity, and when the railway is not working, another dynamo pumps up spring water a thousand feet for use in the establishment.

The *Electrician* says: We gather that the motors derive their current from a set of accumulators at the station and not directly from the dynamos. This arrangement would probably be adopted not only for the sake of economy in the mains but also to avoid possibility of accident arising from an interruption of the charging circuit.

Joint Stock Enterprise in England.—According to the *Investors' Guardian* of London, the capital of the limited liability companies registered between January 1st and June 30th of the present year was £270,101,837, as compared with £83,665,056 in the first half year of 1887. The capital of the companies connected with mining was £38,388,000, as compared with £15 850,990 in the corresponding period of last year.

Remission of Taxes and Duties on Copper Produced in Hainan, China.—The Belgian *Bulletin du Musée Commercial* gives a translation from the *Pekin Gazette*, of an official decree regarding the exemption from export duties and "lekin" in favor of the mineral products of the island of Hainan. This decree stated: "Some time ago the Viceroy of Canton made public the establishment of a company to work the copper mines of Hainan by the help of foreign mechanical inventions. Copper and malachite are found in great quantities in the mountains of the district of Ch'ang Hua, forming the southwest corner of the island. It is proposed that during a period of three years, computing from the commencement of the present year, all the copper and malachite obtained at Ch'ang-Hua, and exported through the city of Haihow, shall be exempt from taxes, customs duties, 'lekin,' and every other species of charge. This exemption is at the same time extended to all the mineral products of the island."

A Portable Steam Heater.—A Bridgeport man has invented a neat thing in the way of a steam heater to carry about on the person. It is a small affair, consisting of a copper boiler, under which is a diminutive lamp, all encased in a nickel box, and balanced something like a compass, so that, no matter what position the outside box is in, the boiler and lamp will always remain in the required vertical position. The entire apparatus is so small that it can be carried in the pocket. After the lamp is lighted, the water in the boiler is heated and circulated through rubber tubes, which run down the legs, around the ankles, up around the back and back to the boiler. The circulation of the water keeps the body warm on the coldest day. A safety valve and escape for a higher pressure of steam than the affair is allowed to carry flows off at the back of the wearer's neck. Elaborate heaters are being constructed for ladies' wear. They can be worn inside the bustle, and entirely obscured. Before going out of the house the lady's maid can light the lamp, which, by the way, is gauged to run six, eight or ten hours.

BOOKS RECEIVED.

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

Poor's Manual of Railroads for 1888.—*Twenty-first annual number.* Published by H. V & H. W. Poor, New York, 1888. Pages 1325 and Index. Illustrated. Price $2.

Manual of Anthracite Coal Statistics. Compiled by the Bureau of Anthracite Coal Statistics. Philadelphia, Pa., 1888.

Ohio Bureau of the Statistics of Labor.—Eleventh annual report. By A. D. Fassett, Commissioner, Columbus, Ohio. Published by the State, 1888. Pages 283 and Index.

PATENTS GRANTED BY THE UNITED STATES PATENT-OFFICE.

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

PATENTS GRANTED SEPT. 11TH, 1888.

389,197. Electric Motor. Henry A. Chase, Stoneham, Mass.
389 207. Electric Motor. Arthur E. Eastwick, Detroit, Mich., Assignor by direct and mesne assignments of two thirds to J. T. Liggitt and A. T Hill, same place.
389,210. Method of Preparing Asbestus. Camille A. Faure, New York, N. Y.
389,242. Conveying Apparatus. Henry U Palmer, Brooklyn, N. Y.
389,249. Drive-Point for Driven Wells. William A. Royce, Newburg, N. Y.
389,288. Metallic Packing for Piston and Valve Rods. J. Cockfield and C. D. Higgins, Boone, Ia.
389 300. Wire-Nail Machine. Joseph F. Hamel, Pittsburg, Pa.
389,320. Elastic Pump-Rod. George D Pierce, Shelby, Iowa.
389,321. Die for Making Lead Wire, etc John Robertson, Brooklyn, N. Y.
389,323. Ore-Separator. C. Charles Schill, East New York, N. Y.
389,382. Valve Gear for Engines. John Grime, Minneapolis, Minn., Assignor by mesne assignments of one half to James F. Williamson, same place.
389 402. Machine for Drilling and Cutting Coal. Edmund Moser, Pittsburg, Kan.
389 449. Drill and Dredge. Etienne Derbec, San Francisco, Cal.
389,456. Ore-Feeder. James C. Gibson, San Francisco, Cal.
389,460. 389,461 and 389,462. Sectional Boiler. Edward Gurney, Toronto, Ontario.
389,465. Joint for Railway-Rails. Joseph J. Harrell, Pittsburg, Pa., Assignor to David Shields and L. H. Williams, same place.
389,484. Valve Governor. F C. Prindle and Roscoe S. Prindle, East Orange, N. J.
389 495. Machine for Bending Rails, Beams or Bars. Z. P. Boyer, Philadelphia, Pa.
389,524. Coal-Drilling Apparatus. Moses A. Michales, Allegheny, Assignor to John T. Moore, Pittsburg, Pa.

THE METALLURGY OF STEEL.*

By Henry M. Howe.

(*Continued from page* 177.)

If continuous surfaces of slag stretch across an iron bar, no matter how zigzag, involved and complex those surfaces may be, so long as they are continuous they must receive and transmit the entire tensile stress to which the bar is subjected: and, as the strength of a chain is that of its weakest link, so the strength of such a bar would be the strength of slag, not iron: of slag protected if you will from transverse stress by iron: of slag so hooked into fibres of iron that the stress is evenly distributed, but still of slag. And, moreover, these involved surfaces of slag which have to finally support the total stress are so attenuated that they often represent only some 1·5% of the weight of the bar. This seems so preposterous that I believe that Dr. Wedding must mean something very different from what he seems to: and certain phrases of his support this belief.

G. *Other substances.* Carbide of titanium, found in cast-iron, has already been described.[a]

H. *The Residual Compound*[b] which occurs in cast-iron is probably of wholly indefinite composition, being the residue left from the crystallization of definite minerals. Thus in a gray cast-iron it appeared to be cementite modified by impurities: in an annealed number 3 cast-iron it appeared to be a mixture of metallic iron with some other metallic substance, and resembled complex ripples.

§ 239. OTHER EVIDENCE OF THE COMPOSITE STRUCTURE OF IRON.—Osmond and Werth, on attacking with cold dilute nitric acid plates of annealed cast-steel, $\frac{8}{10,000}$ to $\frac{12}{10,000}$ of an inch thick, fastened to glass with Canada balsam, obtained a residual net-work of iron-carbide (cementite?), what they took for iron but what was probably pearlyte having existed as kernels within the meshes of the net-work and having dissolved.[c]

They find the minute cells of this net-work grouped in composite cells of a larger net-work, whose meshes are of a comparatively soluble substance which is free from carbide, but whose composition seems most uncertain. Their description suggests that these two sets of meshes are the fruit of a primary and a secondary crystallization respectively. Indeed the composite cells appear to them to result from dendritic growths, which, developing independently, have limited each other. As the residual net-work of iron-carbide obtained on dissolving steel by Weyl's method, *i. e.* on immersing it as the positive pole in a Bunsen cell, in dilute hydrochloric acid, retains the form and dimensions of the steel, they infer that this net-work is continuous within the metal.

Hardened steel, in which as we have seen Sorby could detect little evidence of structure, they too find much less complex, the rapid cooling having apparently opposed the formation and segregation of definite minerals, as it does in case of obsidian, and as it opposes the devitrification of glass. The simple cells alone are found, and the carbide which surrounds them is now in much smaller proportion than in annealed steel, so that most of the carbon present seems to be uniformly dissolved within the metallic kernels.

On these and other important observations they base their "cellular theory of steel,"[d] which, based on certain known and supposed properties of the metal's constituents, may be regarded as a special case of the more general proposition that the properties of the composite mass depend on those of its components and on their mutual adhesion, a proposition which is self-evident if the composite nature of steel, earlier pointed out by Sorby, be admitted.

Treating copper and zinc ingots separately by Weyl's method with a Bunsen cell (zinc in 5 of concentrated hydrochloric acid to 95 of water, copper in 5 of sulphuric acid to 95% water), they found the same general organization as in steel ingots,—metallic kernels dendritically arranged, their mutually limiting surfaces grouping them in composite cells. The residue from zinc consisted of spangles of an alloy containing about 30% of tin, 56% of lead and 15% of zinc, though the ingot as a whole contained only 0·28% of tin and 1·05% of lead. They justly say that this concentration of the impurities as a skeleton of very thin leaves throughout the mass, goes far towards explaining the wonderful influence of minute quantities of impurities on the properties of the metals in general.[e] For the properties of these leaves, minute as they are, may affect the properties of the whole as markedly as the minute flakes of mica in gneiss, or as certain weak links in a powerful chain.

Wedding observed that ingot metal, unless very quickly cooled, consisted of kernels enclosed in a mesh-work, which he names "crystalline" and "homogeneous" iron respectively: and he further noticed that the mesh-work was sometimes harder and sometimes softer than the kernels. But later investigation shows that these provisional names must be discarded, because with changing proportions a given mineral now forms the mesh-work, now the kernels.[f]

Sorby, Osmond and Werth, and Wedding all noticed that the composite structure was most strongly marked in unforged castings, and became less and less pronounced as the sectional area was reduced by forging.

PART 2D, FRACTURE.

§ 240. IN GENERAL.—If iron were perfectly homogeneous and without cleavage or crystallization of any kind, then the path of least resistance would be a short one, and the fracture would be smooth: but it never is. On some cases, *e. g.* in that of the columnar structure at the outside of steel ingots, the fracture follows certain large and well defined planes: it is coarse-crystalline. In others, as in properly hardened tool steel, it follows very minute or even microscopic planes, and so has a porcelanic look. In general it follows planes, be they large or small. The large columnar fracture-planes at the outside of ingots pretty clearly bound individual crystals, but in many cases it is as yet uncertain whether the planes shown on fracture are the boundaries of true crystals—distorted and imperfect, but crystals still—or merely cleavage planes within those crystals.

Now whether we admit that iron is composed of crystals of dissimilar minerals or hold that its different grains are of similar nature, it is clear that these grains may be so shaped and constituted that the cohesion between the particles of the individual crystal may be greater or may be

[a] § 13, p. 7.

[b] Sorby, op. cit., pp. 261, 277, 280.

[c] Comptes Rendus, C., p. 450, 1885. Ann. Mines, 8th Ser., VIII., p. 9. Journ. Iron and Steel Inst., 1885, I., p. 273.

[d] This, together with its supporting evidence, is set forth at great length in the Annales des Mines, loc. cit. Additional discussion and facts appear in Stahl und Eisen, VI., p. 539, 1886: while Ledebur reviews it on p. 374 of the same volume. For our purposes it is more convenient to consider certain features of it in appropriate places, than to discuss it as a whole.

[e] Stahl und Eisen, VI., p. 541, 1886. Cf. pp. 2, 3, 4 of the present work.

[f] Journ. Iron and Steel Inst., 1885, I., p. 194.

less than the adhesion between adjoining crystals. In the former case (1) rupture passes between the faces of adjoining crystals, in the latter (2), it strikes across their bodies, or, if the difference is slight, follows the general direction of the crystal faces, yet deviating slightly to the right and left, so that some particles of each crystal adhere to the face of its neighbor. Again, large strongly-adhering crystals may be separated by a thin weak mesh-work, through which rupture passes. Or some crystals may be readily detached from their neighbors while others adhere tenaciously, when (3) rupture passes in part between the crystals and in part through their bodies. Strong adhesion may be in large part due to dowelling or branching spines shooting from one crystal into its neighbor. It is natural to refer fractures whose facets are smooth and bright to the first of these cases, those whose facets are dull-faced to the second, and those in part bright in part dull to the third. But till the relations between the fracture and the ultimate structure, as revealed by polished sections, is far more clearly made out, these references must be provisional.

It is not to be expected that, in our present ignorance of these relations and our consequent inability to fully interpret the phenomena of fracture, these phenomena can be reduced to simple laws. Indeed, we have to be thankful that, probably owing to the predominant influence of three of the constituent minerals, Brinnell's researches permit us to reduce an important part of them to even cumbrous laws. We must here recall the changes which heat-treatment induces in the condition of carbon, sketched in Figure 60.[a]

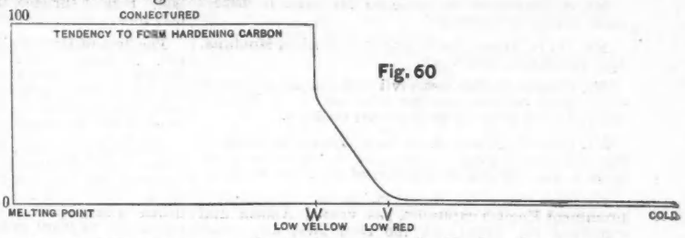


Fig. 60

Above W carbon tends to become wholly hardening, below V to become wholly cement, between W and V to distribute itself between both states according to unknown laws. The change from hardening to cement, always slow, is the slower and the more incomplete the lower the temperature, and cannot occur in the cold. Hence steels (A) slowly cooled and (B) quenched from W or above are (A) soft and (B) hard respectively, because the former's carbon has while the latter's has not had time to change from hardening to cement: tempered steel has intermediate hardness because gentle reheating has permitted partial change.

These views deduced from wholly independent data are supported by Brinnell's very important experiments, the results of which are graphically represented in Figure 61.

(TO BE CONTINUED.)

[a] Figure 2, which sketched these tendencies, was complicated by the graphite-forming tendency, which may be neglected here. Whether the curve reaches its maximum at W, or whether it continues to rise from W to the melting point, is uncertain. The hardness seems to increase as the quenching-temperature continues to rise beyond W, but this may be because the higher quenching-temperature leads to greater stress from uneven cooling, or to changes in crystallization.

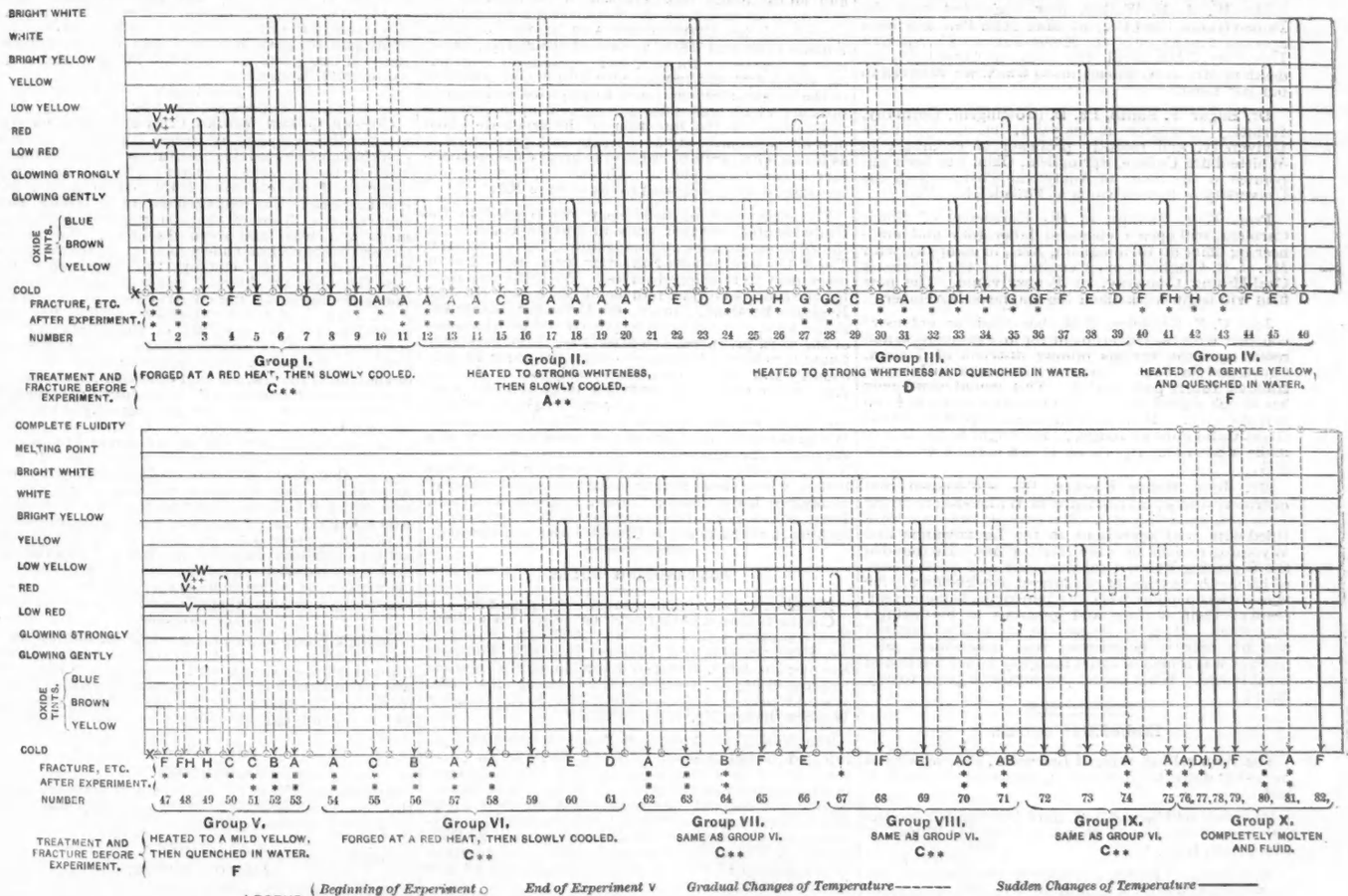


Fig. 61.—Effect of Heat-Treatment on Fracture. Graphical Representation of Brinnell's Results. Steel of 0·52 of Carbon.

This figure represents the conditions and results of 82 experiments on steel, all (except group X ?) from one and the same ingot, containing carbon, 0·52; silicon, ·23; manganese, ·48; phosphorus, ·026; sulphur, tr. Each line beginning with O and ending with V represents one experiment. The condition of the metal before the experiment is indicated on the lowest lines below the diagram. In each case except the last six the metal is gradually heated to a certain temperature, indicated by the point at which the line doubles and begins to descend. In most cases the temperature now descends without interruption: but in many cases, beginning with 54, the cooling is interrupted, as indicated by a second doubling and the re-ascent of the line. In group X steel was removed from the very liquid bath in the open-hearth furnace in a clay-washed ladle. In most cases it solidified and cooled more or less completely in this ladle: in 79 it was poured in a very thin stream into cold water.

PERSONAL.

Mr. S. Raunheim has gone to Montana to inspect some mining properties.

Mr. W. L. Austin, metallurgist, of Toston, Montana, is at present in New York.

Mr. Charles E. Herbert, civil and mining engineer, of Nogales, Arizona, has just returned from Mexico, where he had gone on professional business.

Mr. Isaac T. Stoddard, of New York, President of the Oro Bella Mining Company, of Arizona, has gone there to superintend the erection of reduction works.

We learn that a Mr. Brearton, in the interest of a prominent English capitalist, has visited Alaska and examined the Treadwell, the Bear Nest and other mines.

Mr. John N. Pott, civil and mining engineer, of Allentown, Pa., has been appointed to the position of mining engineer for the Lehigh & Wilkes-Barre Coal Company at Wilkes-Barre.

Mr. Palmer C. Ricketts, Professor of Mechanics in the Rensselaer Polytechnic Institute, at Troy, N. Y., has been appointed engineer of the Hawk Street Viaduct, at Albany, N. Y.

Mr. Frederick Beardslee, a well-known electrician, was found dead on the 8th inst., in the rooms of the Denison Auto-Telegraph Laboratory, New York, where he was employed.

Mr. Wm. Hoag has secured the position of resident mining engineer of the Atchison, Topeka & Santa Fe road at Cañon City, Colorado, where the company is opening new coal mines.

Capt. John W. Plummer, for three and a half years superintendent of the Granite Mountain Mining Company, of Montana, has retired, and a Colorado man, Mr. Burke, succeeds him.

Mr. Chas. M. Rolker, Mining Engineer, of New York, has gone to Montana to report on some gold gravel claims on a branch of the Yellowstone River a little north of the National Park.

Mr. Thos. Couch, Manager of the Boston & Montana Consolidated Silver and Copper Mining Company, at Butte, Montana, sailed for Europe on Wednesday. He will return by November 1st.

Mr. W. J. B. Walker, now connected with the Pennsylvania Lead Co., at Mansfield, Pa., has been appointed manager of the Mingo Furnace Co., at Salt Lake City, Utah, to fill the vacancy caused by the death of Mr. J. N. Tilemann, to which we referred in our last issue.

Dr. Edgar F. Smith, Ph. D. (Göttingen), Germany, formerly instructor in analytical chemistry in the University, and recently professor of chemistry in Whittenburg College, Springfield, Ohio, has been appointed to the chair of Analytical Chemistry at the University of Pennsylvania at Philadelphia, Pa.

Prof. Wm. Phillips, of the University of North Carolina, will open a chemical laboratory and engineering office at Birmingham, Ala., in company with Mr. C. R. Claghorn, chief engineer of the Loyalsock Coal Mining Company, of Pennsylvania. The new firm will begin work about the middle of November.

John C. F. Randolph, E.M., has made an extensive contract with the Government for an examination and report upon the various mining districts of Tolima, Cauca and Santander are also mentioned in his contract as future possibilities. This genial gentlemen has struck a good thing, as he reserves the right to do private work. He is now making a report upon the Great Gallo mine at Ibagué. He ought to be able to make a handsome report, for it is a magnificent property.

Mr. John Henry Swoyer, the well-known coal operator, died at his residence in Wilkes-Barre on the 10th inst, aged 56 years. Mr. Swoyer had been identified with coal operations in the Lackawanna and Wyoming regions for over thirty years. He founded the Wyoming Valley Coal Company and at the time of his death was one of its largest stockholders. He was always popular with his employés, being considerate of their welfare and generous in his dealings with them. He gave largely to all public charities, and his private beneficence was unbounded. Mr. Swoyer was a man of strict integrity and a warm and loyal friend. What higher praise can be given to any man?

INDUSTRIAL NOTES.

The Penn rolling mill, of Lancaster, Pa., which has been shut down for four weeks, started up on the 11th inst.

Proposals will be received until October 8th for the purchase of the Lomas Forge and Bridge Works, of Cincinnati, Ohio.

The Princeton Iron and Manufacturing Company has been organized with a capital of $15,000, with headquarters at Henderson, Ky.

The Magnesia Sectional Covering Company has removed its Philadelphia office to its extensive works at Ambler, Penn., and all communications are to be sent there hereafter. The company has telephone connection with Philadelphia.

The Phœnix Iron Company, Phœnixville, Pa., has blown out No. 3 furnace for repairs. The first blast was made in July, 1881. In 1882, the furnace was banked five months and was blown out September 5th last. Size of furnace, 59 by 15 feet; iron made, 120,000 tons.

The firm of Hussey, Howe & Co., steel manufacturers, Pittsburg, Pa., has been changed to Howe, Brown & Co., limited. No change in the manufacturing departments will be made, and the general business will be conducted by the new firm in all its branches as heretofore.

The Eagle furnace, which was erected at Youngstown, O., it is said, in 1840 by pioneers in the iron business, and has been idle for five years, has been sold to the Brier Hill Iron and Coal Company, who will utilize a large portion of it in building an additional furnace at its plant in Brier Hill.

The Hainsworth Steel Company has been organized at Pittsburg, Pa., with a capital of $500,000. The parties connected with this company are: William G. Johnston, John Irwin, Jr., Charles Bailey, Thomas C Lazear, Stewart Johnston and William Lyon, all of which are at present connected with the Pittsburg Steel Casting Company.

Messrs. Chas. A. Schieren & Co., of New York, have just taken out a patent for an improved leather belting which is perforated with numerous small holes so placed as not to injure the tensile strength of the leather, and yet permit the escape of the "air cushion," which diminishes adhesion in belts running at a high rate of speed. They are for this reason specially adapted for high-speed dynamos, and are said to run smoother and to make less noise than ordinary belts.

A meeting of barb wire manufacturers was held at Chicago, Ill., on the 12th inst., which is likely to result in the formation of a strong pool. Prices are at present so low that the manufacturers declare there is no profit to be made. As far as could be learned those present decided that the only way to improve matters was to continue in a war of prices, until so many were driven out of business that a combine could be forced. It is possible that as soon as all manufacturers are made acquainted with the doings of the conference, another meeting will be held of a more decisive character.

The furnace of Graff, Bennett & Co.'s Clinton mill at Pittsburg, Pa., was to be put in blast on the 10th inst. The plants of Graff, Bennett & Co. at Millvale and on the South Side, are still in the hands of the syndicate of creditors, which purchased them at assignee's sale (see ENGINEERING AND MINING JOURNAL, August 11th and 18th) to protect themselves. Both mill properties are for sale, and negotiations are pending which may end in their purchase if the condition of the iron market continues to improve and figures satisfactory to both sides are agreed upon. In the meanntime it is the intention of the syndicate which now owns the property to operate such portions of it as it can with profit to reduce the great expense necessary to carry such plants. Operations, however, will be confined for the present to the Clinton Mill.

The superiority of machinery constructed in the United States over that built in foreign countries is shown in an instance at Youngstown, Ohio. William Tod & Co. have received an order for a special line of machinery to be shipped abroad. The gentlemen placing the order have just returned from a tour through England, Scotland, France and Germany, inspecting shops, tools, the workmen employed and the character of the work produced, and after their trip said they found it to their advantage to place the order in this country and have the machinery shipped to Europe. American machinery is finding a large market in all parts of the world, and our advertisers all report to us that their export business is constantly increasing. We have before us a list of the sales for July and August of the Babcock & Wilcox Company, of New York, manufacturers of the patent water tube steam boilers, which shows that the company exported boilers to Mexico, Cuba, Spain, France, England, Scotland, Italy, not to speak of the large sales the company is making in all parts of the United States and Canada.

CONTRACTING NOTES.

Machinery and supplies wanted. See page xiv.

Contracts open will be found on pages xiv and xv. New contracts this week: No. 1057, Iron Viaduct; No. 1058, Grading and Masonry; No. 1059, Pumping Engine; No. 1060, Water-Works; No. 1061, Harbor Improvement; No. 1062, Electric Lighting; No 1063, Water-Works or Artesian Well; No. 1064, Iron or Wooden Bridge; No. 1065, Bridge.

The New York Aqueduct Board on the 12th inst. rejected the bid of Messrs. Rogers, Shanley & Co.—the only one received—for the construction of the iron-lined masonry aqueduct at Shaft 30 because it was excessive, and ordered the engineer to advertise for new bids. The bid was for $63,950, and exceeded the estimates of the engineering department by $8,390. Caldwell, Willcox & Co. were awarded the contract for furnishing 15 48 inch stop-cock valves at $1,290 each, theirs being the lowest bid.

GENERAL MINING NEWS.

COPPER IN SILVER ORE DUTIABLE.—A recent decision (July 5th) of the Treasury re-affirms the ruling that copper contained in a silver ore, no matter in how small a percentage it may be, is not allowed to enter the United States free, as is the case with lead in a silver-lead ore when the value of the silver exceeds that of the lead. It was also ruled that the volumetric assay for the copper in the ore, being more accurate than the fire assay, is the correct method of ascertaining the amount of copper.

Shipments of iron ore from the mines of the districts mentioned below for the season up to and including September 5th, as reported by the Marquette *Mining Journal*, were as follows:

		Tons. 1888.	Tons. 1887.
Marquette,	Marquette District	508 437	557,309
St. Ignace,	" "	74,526	63,467
Escanaba,	" "	530,140	598,362
"	Menominee District	661,662	785,057
"	Gogebic District	120,907	... ...
Ashland.	" "	689 148	759,850
Two Harbors,	Vermillion District	221.353	256,911
Total tons		2,806,173	3,020,956

ALASKA.

Messrs. Hamilton Smith, Jr., and Henry Janin, recently examined the Treadwell group, it is reported, for the Rothschilds, of London.

Mr. Thos. S. Nowell, whose Alaskan mining bubble we pricked some time ago, has returned East, and his Boston dupes, who were much excited over our exposure of the utter worthlessness of the Alaska Union mines, are again listening to his booming reports. He assures them that he has now got the richest thing on the continent, something "that will far surpass the old Comstock mines." Of course Mr. Nowell told them exactly the same things about each of his other schemes, all of which were subsequently shown to be worthless, but he always expects his dupes to put up a little more money with the hope of saving what they already have in. It is to be hoped, however, that before investing another dollar in Nowell's schemes they will have them carefully examined by competent experts. No reliance whatever can be placed on Nowell's statements—they have up to this time always proved misleading.

We understand that before Mr. Nowell left Alaska he stated that as soon as he arrived East he would bring a libel suit against the ENGINEERING AND MINING JOURNAL. We have heard nothing of this suit thus far, and have no expectation that we will bear anything of it. The ENGINEERING AND MINING JOURNAL is quite ready.

BEAR NEST.—From a correspondent we learn that it is thought that no sale of this group of mines has yet been made, but that the mines have been simply stocked at $2,500,000, and that the parties interested are now raising money to develop the property. Nevertheless the ENGINEERING AND MINING JOURNAL of August 4th gave the prices paid for the different mines of this group as recorded in the office of the recorder at Juneau.

ARIZONA.

COCHISE COUNTY.

COPPER QUEEN MINING COMPANY.—The management of this company, of Bisbee, is probably the most creditable of any mining institution in the territories. The Tucson *Star* says there are nearly 600 men on the pay-rolls of the company employed in mining and smelting ores. The management of so large a force far removed from civilization requires good judgment and wise and stern discipline. In this the Queen Company has made a success. In the first place, they endeavor to employ the best labor and pay, therefore, the highest wages in the market, and the entire business is run on a system which acts like clock-work. A large two-story building has been erected for the use not only of the employés of the company but of the citizens of Bisbee. The first floor is utilized as a library and reading-room, where hundreds of volumes of the best works are shelved. All the leading journals and magazines of the country are furnished. The second story is used for holding religious services on Sunday and for a lodge-room, which is also free.

On Sunday the mines all close down and the miners have the full benefit of the day to themselves. It is on this day that the library and reading-room is crowded to its limit. The company has also established the rule, which it enforces most rigidly, that any employé who is found drunk or gambling is instantly discharged. It does not pretend to say that its employées shall not take a drink if they feel so disposed, but they do hold that drunkenness incapacitates a man to perform his whole duty which he owes his employer, as well as exercising a demoralizing effect on other employées.

PINAL COUNTY.

SILVER KING MINING CO.—Official advices to us show that the product for August was entirely in the form of concentrations, and the output in fine silver was 107,657·91 ounces, being nearly 16,000 ounces more than the July product. The outlook for September is for an output still greater than that of last month.

ARKANSAS.

SALINE COUNTY.

AMERICAN MINING COMPANY.—It is reported that this company intends to erect a 5-stamp mill at its gold mine, the Sand Carbonate.

CALIFORNIA.

AMADOR COUNTY.

PLYMOUTH CONSOLIDATED GOLD MINING COMPANY.—A report is in circulation that an effort will be made to open the mine in September. It is the universal belief that whatever fire may have existed in the mine it has long since died out. The Amador *Ledger* of recent date says that one reason for the delay—and no doubt there is some truth in it—is that it would be impossible to work the mine now, if it were opened, owing to the lack of water. This is the season when water for mining purposes begins to wax

short. The canal company only began to draw upon the Blue Lakes reservoir recently. There has not, however, been such a great demand for water this season, owing to the stoppage of the Plymouth mines, and the supply in consequence seems to be larger than at this time last year. Still it is probable that it would soon be exhausted if the Plymouth Consolidated were to draw upon the canal. The most likely view of the situation is that an effort will be made to open the mine and place it in running order, so that when the fall rains insure an abundant supply of water, the mill will be prepared to recommence work. We areinformed that the mine has probably been opened by this time.

NEVADA COUNTY.

RED CHIEF.—This mine on Kanaka Creek, four miles from Forest City, is in length more than a full claim, and has three quartz veins, which are said to be respectively about 80, 25 and 50 feet in width. A New York company owns the property and has machinery for a 40-stamp mill on the ground. There is plenty of timber near by, and the waters of Kanaka Creek are claimed. Across this stream a dam has been constructed and a flume built. The company has a sawmill in operation and is now cutting lumber for the mill. Several tunnels have been run on the veins and the ore is free milling, the sulphur and iron being decomposed. Most of the gold is "shot gold," and it is expected to reduce four tons of ore a day to the stamp. The mill will be run by water power and a 23-inch Leffel turbine wheel.

COLORADO.

The Golden Smelting Works, of Boulder, have shut down, and it is said that the works owned by the same company at Golden will close October 1st. The reason for this is that the Union Pacific has made such a discrimination in the transportation of ore that the company can no longer compete with smelters located at Denver.

BOULDER COUNTY.

CARIBOU.—It is stated that this mine has not shut down, as reported in our last issue, but that only the lower levels have been abandoned for the present and will be allowed to fill with water. A force of men will continue to operate the upper levels.

CLEAR CREEK COUNTY.

BEN HUR MINING COMPANY.—This company, recently organized in St. Louis, has commenced work on the Ben Hur lode in Cascade District, and the Victoria lode on the east side of Griffith Mountain.

FLORENCE MINING COMPANY.—This company now comprises all the mining properties formerly owned by the Silver Plume Mining Company, by the Consolidated Pay Rock Company, and in addition to these, the Englewood lode and mill site, one of the best waterpowers in the county, a fully equipped concentrating mill of 40 tons daily capacity, a Huson automatic tramway, 2800 feet from mines to mill, the Ashby tunnel, with splendid dumping ground of over six acres. It is reported that a strike has been made in this tunnel of 18 inches of solid ore worth 1841 ounces of silver per ton. It is supposed to be a continuation of the famous Pelican Dives bonanzas.

The Ashby tunnel is designed to cut the properties 1000 feet below the present levels, and is expected to drive through 2000 feet of country rock before encountering mineral. Fortunes have been spent in searching for the Pelican Dives continuation, and this strike has created great excitement.

KOHINOOR & DONALDSON MINING COMPANY.—Mr. S. J. Vivian, manager of the Kohinoor and Donaldson mines, has returned from England, where he has made arrangements for more extensive work on the company's properties, and work has commenced sinking the Kohinoor shaft.

EAGLE COUNTY.

Our correspondent sends us the following from Red Cliff:

The Iron Mask, the heaviest producing carbonate mine of the camp, is outputting on an average 85 tons a day. The lower ore-body has increased in size and contains more iron than heretofore. A part of the upper body has been leased to Mr. Asher Helm, the former superintendent. The Belle shaft, on the Iron Mask property, leased to H. L. Gilman, J. Burns and Wm. McLoughlin, is now in the proper shape to extract ore. They have erected a new Deane pump, with a capacity of 300 gallons per minute, so that the question of water will be of small consequence hereafter.

CHAMPION.—All the lessees on the Champion are uncovering large bodies of fine talc ore. The company is working at one point. Since the rich strike in the Horn-Silver mine above Red Cliff, property has been rapidly located. The chute has increased in size from 6 inches to over 2 feet. It is in the gray lime, but fast tending downward into the dolomite lime. The peculiar occurence of this chute points to the fact that there exists a serious fault in the formation on Horn-Silver Mountain. The Potoin Bros. struck ore in the Potoin lode last week, after having driven 300 to 400 feet. The chutes come from above, which makes evident the fact that they have run under the body for some distance. The Black Tiger, a fissure in the granite has rapidly come to the front under the management of Mr. Wm. McCabe, of Red Cliff. One year ago it was considered by many to be worthless, but now the heading shows a fine streak of ore. A car shipped to Denver returned $70 per ton. This camp has been principally under lease for two years. The leasers have exhibited considerable endurance and pluck in developing the various properties, and it is mainly due to them that the camp owes it bright outlook at present. They are all doing well, and in all probability will show up the largest bodies that have ever been uncovered here. Considering the outlook both pro and con, it is safe to state that next year will prove the best this point has ever witnessed.

GARBUTT—The lessees on this property have encountered a fine ore chute and are shipping regularly.

GROUND HOG.—Mr. J. M. Baumeister, a lessee on this property, has certainly one of the richest ore chutes on Battle Mountain. It is in the Pool tunnel. His ore averages $300 per ton. Some of it will mill $700, and but a short time ago pieces of white quartzite, literally crusted in virgin gold and silver, were taken out. An assay showed this to be worth $700 per ton. The long Apex tunnel driven in on the other side of this property has nearly reached the point where it will intersect the ore chute passing from the Raymond territory into the Ground Hog.

POLAR-ACCIDENTAL.—The breast of this mine has reached a depth of 800 feet, all in ore. Recently some beautiful specimens of tellurides of gold and silver were taken out, which (with the Ben Butler and others) go to prove that about this distance in the mountain the richest minerals are discovered.

ROCKY POINT.—This mine is under lease to Mr. N. Edwards, who is working about fifteen men. Large quantities of ore are being taken out.

GILPIN COUNTY.

The great mill of the Gregory-Bobtail, at Black Hawk, which has done so much custom work, now has all it can do crushing the company's own ore. The situation of several of the other Gilpin County mills is as follows, says the Denver *Mining Industry*. The New York mill is full of ore and running its 75 stamps. The Polar Star mill has its full capacity of 40 stamps running on custom ore. Seventy-three stamps of the Kimber & Fullerton mills are supplied with ore by the tramway, and 40 stamps by team. The Mead mill, Kimber & Fullerton's, has 30 stamps running on custom ore and 10 stamps on company ore. The Public Sampling Works at Black Hawk are handling about 900 tons of ore per month. The Randolph mill is full of ore and running full capacity, 50 stamps, all on custom ore. The Kimber & Fullerton upper mill is running full capacity, 33 stamps, on company ore. Fifty stamps of the Hidden Treasure mill are running, part on custom ore and part on company ore.

LAKE COUNTY.

DUNKIN MINING COMPANY.—The company is shipping about seventy-five tons of argentiferous iron per day from its north end, but is producing only a small amount of ore. The iron goes to the Pueblo and Arkansas Valley smelters. Its grade continues to be excellent. All lots now being shipped average over 40 per cent excess in iron and manganese and 14 ounces silver.

PITKIN COUNTY.

The ore shipments for the week ending the 7th inst. were 1706 tons, of which 1195 went to Denver, 105 to Pueblo, 372 to Leadville, 54 to Durango, and 166 to Kansas City.

SUMMIT COUNTY.

ROBINSON CONSOLIDATED MINING COMPANY.—The new ore chute discovered in this mine, and to which we referred in our issue of August 25th, proves larger and better as it is opened up. One of the lessees was the discoverer of this new chute, and during September he expects to ship 1000 tons from his lease, worth, it is said, from $250 to $300 per ton.

VICTORIA MINING COMPANY.—Further information relating to this company, to which we referred in ou last issue, shows that the company has a capital stock of $5,000,000, shares $10 each, non-assessable. The company has purchased patents 83, 84, and 85 on the western slope of Farncomb Hill. The territory comprises several hundred acres of what is known as the Ware-Carpenter placer patents in Swan district. It is stated that a large amount was paid for the property, and that Messrs. Ware and Carpenter retain an interest until the entire balance is paid.

Superintendent Havens says that the new owners will expend $80,000 upon the property between now and January 1st. Mr. M. B. Carpenter, of Denver, is the president of the company.

DAKOTA.

LAWRENCE COUNTY.

IRON HILL MINING COMPANY.—It is semi-officially stated, says the Deadwood *Pioneer*, that the directors were to meet last week and levy an assessment, probably four cents, in order to meet obligations of the August pay-roll.

IDAHO.

A correspondent sends us the following, which he has received in part from a reliable correspondent:

ALTURAS GOLD.—Not paying expenses; no payday for July yet; men getting anxious; the man that floated the mine, and is reported to have "stood in" with the expert from London, is at Rocky Bar, with a gentleman from London; affairs very much mixed; likely to shut down before winter; unless they sink and find quartz, they will be compelled to close this month, in fact, July ore only netted $4 per ton. This is a statement of conditions as brief as it is disheartening, but what is the use of trying to keep people from making asses of themselves. I sounded an early note of alarm in your journal. The day of reckoning is at hand.

Our correspondent goes on to say:

"ROCKY BAR—WIDE WEST.—Another of * * * * * * schemes. Redwarrior mine over the mountain, opposite the hotel. Nothing in sight, yet a 20-stamp gold mill is being erected. Was there a few days ago. Not enough water to run 5 stamps. They are sinking for water in the gulch. Bah!"

"ORO FINO—SILVER CITY.—And yet another of * * * schemes. They are getting foundations ready for 50 stamps, and expect to increase it to 100. I know nothing of this section of country; but if what I hear can be depended upon, the Oro Fino will be worse than the Emma swindle."

Such an array of one man's "operations" is simply astounding. How is it possible to so entrap and inveigle English capital? Scheme after scheme follow each other. Just as one scheme is dying, another is brought to a high pitch of expectancy, and is used in the birth of some other nefarious project conceived in the brain of this fertile schemer.

I learn that Mat. Graham has a 20-stamp dry crushing mill nearly completed in North Boise, about 40 miles north of Atlanta, conceded by everybody who has seen it to be the finest in Idaho. A tramway about a mile in length connects the mill with the mine; has spent nearly $300,000; about 200 men working, and reports from the mine are: the ore worth about $7 per ton. Am inclined to think it is one of the most barefaced swindles ever perpetrated, and that before long the whole business will be closed down.

What injustice to Idaho, Alturas Gold, Limited (or limited gold), Rocky Bar, Wide West and Ore Fino! A territory that holds wonderful mines, but has been handicapped for want of transportation facilities. This will be overcome in time, but it is far harder to remove the odium of fraud, and when a property with merit is offered for sale, the history that is now being written will be an obstacle that will be hard to remove.

This property of Graham's I saw in the summer of 1886. There was no road leading to it, and I went by trail from Atlanta. Silver City is probably as near it as any town, and a large sum of money must have been spent in making roads. As for winter work, all supplies must be laid in before snow flies, as it would be impossible to keep the road open. The ore was a free milling silver ore on the surface—a silver sulphide in porphyry—which was very much decomposed. The vein was 8 to 10 feet in width at outcrop, and was traceable for 400 or 500 feet on the surface. Some of the ore (about 300 pounds) was sent to the Buffalo & Idaho Company's mill for trial. I believe the result was about $30 per ton. Should the ore become base as the mine achieved depth there would be no hope of ever making the mine a paying venture. If it is $7 a ton ore, then its future is a foregone conclusion.

The mine was situated at the summit of the mountain, about 9000 feet above sea-level, and 2500 or 3000 feet above the valley of the North Boise River, where there was a magnificent mill-site. Timber and water were abundant; whether the precious metals were so or not is a question.

ALTURAS COUNTY.

The following rates have been made on all ores from Wood River, in car-load lots, regardless of metal value: To Denver, $10.60 per ton; to Omaha, $12.40 per ton; to Kansas City, $13.40 per ton.

The rates are really lower than were expected, as they are the same as those given Utah common points, which are fully 200 miles nearer the smelting centers east of the Rocky Mountains.

MAINE.

HANCOCK COUNTY.

UNITED COPPER MINING AND SMELTING COMPANY.—The old Douglass copper mine at Bluehill is nearly pumped out, and the new company will put on a force of about 75 men. It is stated that it is expected to produce copper at a cost of about 12 or 13 cents.

MASSACHUSETTS.

While prospecting for iron at North Hoosick a few years ago, a large deposit of mineral paint was discovered. Arrangements are now making to prepare the paint for market at Williamstown. A company has been formed which is made up largely of North Adams capitalists.

MICHIGAN.

The Cleveland Oil Refining Company has begun making arrangements for the erection of the buildings and tanks of the supply station to be established at Marquette. A site has been secured on the property of the Cleveland Mining Company. The establishment at Marquette will be on a larger scale than was at first intended, and that city will be made the supply headquarters of the company's business in Northern Michigan, Wisconsin and Minnesota.

A correspondent sends the following from Marquette:

The news on the range here is the continued finding of rich gold quartz west of the Ropes mine, a number of rich pockets having been found last week and early this week. I intend taking a "day off" and go through several of the new finds, and, if I can find time, send you some notes of the country and the condition of the gold mines. From the items appearing in some of the Eastern papers, it would seem as if some description of them from a disinterested observer might be of interest, and I shall go there shortly.

A new (?) application of electricity to the mining field is on the *tapis*. It consists in the crushing of magnetic iron-ore by crusher and rolls, and effecting a separation of the ore from the gangue by means of dynamos. An experimental plant is to be erected at one of the mines, and the machinery best adapted for work on a large scale tested. The projector is an expert in electricity, and upon a small scale the separation has been a marked success, the concentrates showing a decided lowering of the phosphoric acid and sulphur, the elimination of the former being due to the separation of the chlorite, an assay of which I had made once with a result of 87 per cent of phosphorous. With the large waste rock-piles of magnetite on this range, a due regard to economies and fair prices for ore, there should be developed a paying business of handsome proportions. The

nee monument of folly has been carefully looked over, and from what now remains of its former greatness serves to show where palpable errors existed, and not only that, but the road to success is not looked for in one gigantic attempt by this conservative man. He proposes to test and know what can and cannot be done before embarking in a $300,000 enterprise. May success await him and his efforts.

COPPER MINES.

CALUMET & HECLA MINING COMPANY.—The new Calumet & Hecla vertical shaft is to be known as the Whiting shaft—after the company's new manager. The company has heretofore been opposed to vertical shafts, but it is now satisfied that this new departure will bring it big gains in production. This is the course advocated by the ENGINEERING AND MINING JOURNAL for some years.

A correspondent sends us the following:

ALLOUEZ MINING COMPANY.—I recently visited the Allouez, which is situated just over the line in Keweenaw County. The work of renovating the plant for active mining is being pushed rapidly forward, and it is hoped, by the management, that they will be able to begin stamping rock next month. The shafts have required considerable attention in the matter of new timbering, repairing skip rods, etc., while the rock houses, stamp mill, and railroad track leading from the mine to the mill have needed considerable attention.

CALUMET & HECLA MINING COMPANY.—The company has commenced to hoist rock from their No. 3 Calumet shaft. It is now hoisting at the old portion of the mine from No. 3 Calumet and No. 3 Hecla. Work of sinking a vertical shaft to be known as the Calumet & Hecla West Shaft has just been started. The shaft lies back of No. 4 Calumet.

The output for the month of August was 3037 tons 1330 pounds, and the coming month I look to see their product increased from two to five hundred tons. The water in the mine has been lowered to the 29th level.

KEARSARGE MINING COMPANY.—During August the Kearsarge was added to the list of producing mines as you have already stated in a previous issue, and if I am not mistaken will soon take a front rank among the smaller mines. The rock is being stamped at the Osceola mill, and for only a part of last month, only using one head of stamps, the product was about seventy-two tons of mineral. The No. 2 shaft has been sunk to the seventh level and from that point a cross-cut is being driven. I should say the future for the Kearsarge is a bright one. Belonging as it does to the Clark Bigelow party it will reap many advantages which it would not otherwise obtain.

A letter from the mine says the results for the last 15 days of August were as follows:

Tons.		Pounds.
Rock sent to mills . 2,462½	Mineral from mill...	125,300
Poor goods discarded 680	Barrelano masswork	18,620
Total.... 3,142	Total mineral product	143,920

This is equal to 71 tons 1920 pounds, or practically 72 tons. The rock yielded 2·92 per cent of mineral, and the mineral yielded about 90 per cent copper. Construction work is nearly closed up, except that the mine may have to put up four or five inexpensive dwelling houses. The cutting into the lode into the seventh level, No. 2 shaft, is watched with much interest.

OSCEOLA MINING COMPANY.—What is known as the Opechee shaft at this mine has just been unwatered. As soon as the hoisting plant and machinery is in order the work of sinking the shaft will be started. The southerly portion of the mine will be developed through this shaft. No. 2 and No. 3 shafts have been sunk to the 22d level, and the work of drifting is being pushed from those points.

TAMARACK JUNIOR MINING COMPANY.—During August No. 1 shaft was sunk 60 feet, and has now reached a depth of 230 feet. No. 2 shaft was sunk 50 feet, and is now down 115 feet.

TAMARACK-OSCEOLA COPPER MANUFACTURING COMPANY.—The new wire mill which this company is erecting is already under way. The underpinning, which is of brick, is completed and work on the frame portion of the building commenced. The rolling mill is doing a large and successful business. I hear, on what I believe to be the best of authority, that the company will at once begin the erection of smelting-works on its property at Dollar Bay.

IRON MINES.

NEW YORK HEMATITE COMPANY.—The lease of this company, covering the mine of that name in Negaunee, has been forfeited for non-payment of royalty. The lease was from the Manganese Iron Mining Company, which is itself a lessee of the property.

MISSOURI.

There is a general strike in the Bevier coal mines. The miners demanded for winter wages 78 cents per ton for unriddled coal and 93 cents for riddled. This scale was to have taken effect September 1st. It is stated that the mine owners have steadily refused the advance, and the strike is the result.

MONTANA.

CASCADE COUNTY.

MONTANA SMELTING COMPANY.—The company's works near Great Falls will be put in operation on or before the first day of October. The residence of Manager Child, the company's offices, quarters, etc., now completed, are models of elegance, commodious and imposing.

JEFFERSON COUNTY.

FOURTH OF JULY.—It is understood that a syndicate is now preparing to operate this mine, which lies immediately east of the Major Budd. The Fourth of July has been lying idle for some time. It is stated that W. A. Clark is at the head of the company which proposes to resume operations on the property.

MAJOR BUDD.—It is stated that this property is looking excellent, and negotiations are now pending for a mill to treat the ore. At present about 14 men are engaged in working the mine. The tunnel is in about 1260 feet, from which point the ore is being stoped out. Work has commenced at a point 575 feet in the tunnel to sink a new shaft, with the intention of testing the extent of the ore-body. The ore is silver bearing, and will average, it is said, $55 per ton.

SILVER BOW COUNTY.

BOSTON AND MONTANA CONSOLIDATED COPPER AND SILVER MINING COMPANY.—The company has issued the following circular dated September 1st:

At a meeting of the board of trustees of this company, held August 30th, 1888, it was thought to be for the best interests of the company to provide itself with an efficient smelting plant, at some point to be hereafter determined upon by the officers of the company, for the reason that the present methods of treating the output of the company are crude and expensive; also it was thought best that the company should buy certain properties contiguous to their present land, which, in their developments, show themselves to be of great promise, and of vital importance to the future interest of the company. These plans call for a total outlay of $1,000,000. To provide means for these needs, it is thought best that the capital stock of this company be increased 50,000 shares, or making a total capitalization of 150,000 shares, of $25 a share, or $3,750,000. That the stockholders of this company be offered the right, until December 1st, 1888, to subscribe to 40,000 shares of said increase, "pro rata," that is, two-fifths of a share for every share held in this company November 5th, 1888—payment to be made to the treasurer of this company as follows: December 15th, 1888, $5; February 15, 1889, $5; May 15th, 1889, $5; July 15th, 1889, $5; September 15th, 1889, $5. That no stock shall be issued until after September 15th, 1889, the date of the last installment. The other 10,000 shares to be held in the treasury for the future purposes of the company, and not to be disposed of until after they shall be offered to the stockholders "pro rata." These views having been communicated to most of the large stockholders, they have, without exception, approved the undertaking, and engaged to subscribe for all they will be entitled to of the stock. In order to carry out this programme, it is necessary to have it authorized by a two-thirds vote of the stock; therefore a special meeting of the stockholders of the company will be held on Thursday, November 1st, 1888, at 11 o'clock A.M., at the office of the company in Butte City, Montana Territory,—as per enclosed notice.—to consider the plan which we have outlined, and to pass the necessary votes. If you cannot be present in person, please sign and return the enclosed proxy to the treasurer. All who prefer not to go into the enterprise should be careful to sell their rights before the expiration of the time, as otherwise the same will be held and disposed of for the benefit of the company. A form for the transfer of rights accompanies this circular. The notice of the special meeting referred to is signed by the trustees, Messrs. Joseph W. Clark, Albert S. Bigelow, Charles Van Brunt, Leonard Lewisholm, and George F. Bemis.

BUTTE & BOSTON MINING COMPANY.—Articles of incorporation were filed at Butte, August 31st, by this company, which has a capital stock of $5,000,000, shares $25 each, and which will operate the group of mines known as the Silver Bow Company's mines. This is the same company which is now negotiating for the purchase of this group for $1,250,000, and for the closing of which contract Judge A. J. Davis went to Boston some time ago. But by the formation of this new company it will be seen that Judge Davis still retains an interest in the claims. The trustees who shall manage the affairs of the company for the next three months are the following: Joseph W. Clark, of Connecticut; Daniel M. Demmon, of Boston; Andrew J. Davis, of Butte City; Joseph H. Coram, of Lowell, Mass.; Albert S. Bigelow, of Boston; Charles Van-Brunt, of Boston; Charles H. Palmer, of Butte City; Stephen M. Crosby, of Boston; Hon. Hiram Knowles, of Butte City. The main office of the company will for the present be in Butte City.

This list of trustees includes several Tamarack directors and others interested in the Lake copper mines.

LEXINGTON MINING COMPANY.—Official advices to us show that the production for August amounted to $15,162.07 in gold and $96,600.84 in silver, a total for the month of $111,762.91, and for the year up to August 31st a grand total of $720,918.64.

NEVADA.

A start has been made at copper smelting in this State. Two or three furnaces are already at work in the eastern part of the State, and there as many in Western Nevada that might be started up. It is stated that in all parts of Nevada are rich mines of copper that should be opened up and worked.

An eastern mining company has just completed a new 10-stamp mill at Old Oreana, on the Humboldt River. The mill is run by steam power and the machinery and ore have been successfully tested. The company's mines are located in Trinity District, about eight miles from the river. The ore carries gold and silver, and is free from base metals. The first run was entirely satisfactory. There is plenty of ore at the mines to keep running steadily.

CHARLES DE LONG.—These mines, in San Juan cañon, it is reported have been bonded to John Webster, an English mining expert. The price stipulated is said to be $85,000.

ESMERALDA COUNTY.

MOUNT DIABLO MINING COMPANY.—The production for August amounted to $31,733 35. The yield was smaller than that of previous months, owing to breakage of machinery, which delayed the work at the mill. The August product contained a small percentage of gold, valued at $340.04, the balance being silver.

STOREY COUNTY—COMSTOCK LODE.

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

This month there will be but four bullion producing mines on the lode—Con. Cal. & Va., Ophir, Occidental and Alta, the combined yield of which will probably reach $300,000. When ore-crushing power is again available, the latter part of October, this number will be increased to ten, with an almost certain prospect that Segregated, Belcher, Challenge and Yellow Jacket will be added later to the list—making a total of thirteen.

CONFIDENCE MINING COMPANY.—The total production of bullion for August is valued at $108,767.96. No dividend will be declared this month, as the Confidence mine is now shut down pending the repairs to the hoisting plant at the Yellow Jacket shaft.

CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.—The total bullion product of the mine for August will not fall far short of $340,000, which will just cover operating expenses for August, and pay the September dividend without drawing on the treasury surplus. This is a better showing than even the management anticipated with the present limited ore crushing facilities available, and is an agreeable surprise to shareholders.

GOULD & CURRY MINING COMPANY.—The company has suspended ore shipments on account of the bullion yield falling below the cost of production.

OPHIR MINING COMPANY.—The assessment of 50 cents per share, levied on the 3d inst., is the first since August, 1887. The cost of operating the Ophir is said to be less than that of any mine on the Comstock lode. This is due to the revenue derived from the Mexican and Union Consolidated companies for waste hoisted through the Ophir shaft and from the Consolidated California & Virginia for hoisting ore and waste for that company. The company has also made shipments of ore at intervals in the past two years with a flattering prospect that it will become a steady bullion producer before many months.

OHIO.

The natural gas companies at Youngstown have notified consumers of an advance in rates for cooking and heating stoves, and many consumers threaten to discontinue its use and return to coal until such time as the companies are satisfied with earnings of less than 100 per cent, or some cheaper fuel than coal will be furnished.

PENNSYLVANIA.

COAL.

The New York, Ontario & Western Railroad has made arrangements for building a branch road, which will connect the coal mines of Carbondale with its line at Hancock. The coal from that district is now brought to New York by the Susquehanna road, which is considerably longer than the proposed new route. The road was surveyed and a charter obtained from the Pennsylvania Legislature a few years ago by a private company, but the project was abandoned. This removes all difficulty, as it is understood that a renewal of the charter will be granted on application. The amount of traffic will be large. It is stated that the Delaware & Hudson Canal Company alone will send 750,000 tons of coal annually over the road.

NATURAL GAS.

EQUITABLE GAS COMPANY.—This company, recently organized, owns considerable gas territory in the Murrysville District, and has some leases in the Butler field at Bakerstown and in the Washington field. It has two good gas wells in the Murrysville District which are now not being used at all. According to the reported plan the business of the proposed company is to be conducted in the city of Pittsburg, with lines and branches running from Franklin and from Washington County through the boroughs of Sharpsburg, Etna, Millvale, McKeesport, Braddock, Homestead, Knoxville and Beltzhoover, and the cities of Pittsburg and Allegheny. The parties interested in this company are: Geo. Trautman, R. B. Brown, Wm. D. Hartupe, J. T. Keil and Wm. A. Heyl.

PEOPLES' NATURAL GAS COMPANY.—This company is laying another 8-inch line to Grapeville from Murrysville, a distance of eight miles.

PHILADELPHIA NATURAL GAS COMPANY.—Suit was entered last week by the Pittsburg Carbon Company against the Philadelphia Natural Gas Company. The plaintiffs allege that they made a contract with the Pennsylvania Natural Gas Company for a supply of gas to be furnished to their factory on Spence alley, at a rate of 30 cents per 1000 carbon points manufactured for one year from June, 1887. On April 21st, 1887, the Philadelphia Company made an agreement with the Pennsylvania Company, received all property and franchises of the latter company, and agreed to fulfill all contracts made by them. The plaintiffs aver that they have always been ready to pay the contract price, but the Philadelphia Company refused to furnish them gas at that figure, compelling them to pay for gas, from June, 1887, to June, 1888, $2,076.15, whereas the contract price would only have been $919.18, leaving a balance of $1,156.97, for which the plaintiffs sue and ask that the court compel the defendants to pay.

OIL.

The chief of the Bureau of Statistics reports the total values of the exports of mineral oils from the United States for the month of August, 1888, and dur-

ing eight months ended August 31st, 1888, as compared with similar exports during the corresponding periods of the preceding year, as follows: August, 1888, $4,676,333; August, 1887, $4,384,364; eight months ended August 31st, 1888, $29,671,652; August 31st, 1887, $29,336,358. The exports from the above-named ports comprise about 99 per cent of the total exports of mineral oils. It is stated on good authority that the distillation of 100 gallons of crude petroleum will yield 76 gallons of illuminating oil, 12 gallons of gasoline, benzine, or naphtha, 3 gallons of lubricating oil, and 9 gallons of residuum.

Exports of refined, crude, and naphtha from the following ports, from January 1st to September 8th:

	1888. Gallons.	1887. Gallons.
From Boston	2,749,560	3,037,445
Philadelphia	89,065,641	110,876,793
Baltimore	5,632,239	5,959,652
Perth Amboy	16 126,941	10,779,302
New York	240,611,214	253,355,901
Total exports	354,785 595	384,009,093

UTAH.

The bullion receipts at Salt Lake City, as reported by the *Tribune* for the eight months of 1888, amounted to $2,329,409.07, exclusive of all ores. Some operations make no current reports, but with all allowances these figures will undoubtedly show a material shrinkage this year as compared with 1887.

BEAVER COUNTY.

HORN-SILVER MINING COMPANY—Local papers state that the company has been making some ore shipments recently, but to no great amount.

SUMMIT COUNTY.

DALY MINING COMPANY.—The production for August was 76,580·51 ounces of silver bullion and $14,306.82 from ore sales, an approximate total of $90,287.33.

ONTARIO MINING COMPANY.—The production for August amounted to 97,558·73 ounces of silver bullion and ore that sold for $47,620.87; a total, approximately, of $145,179.60.

FOREIGN MINING NEWS.

MEXICO.

The following table gives the amount and value of the imports passing through the El Paso Custom House during the week ended September 1st:

ORE.

	Tons.	Value.
C. K. C. S. & R. Co	823	$48,586
R. G. S. & R. Co	368	16.120
Don Enrique M. Co	135	17,346
J. H. Watts	23	2,015
	1,349	$84,067
Mexican silver coin		136,559
Silver bullion		11,085
Mexican gold coin		2.975
Total		$234,686

HIDALGO MINING COMPANY.—The secretary of this company says that on an average 25 tons of ore per day is being treated by the lixiviation process, at a net profit of $10 per ton. The proposition to put the treasury stock on the market has been indefinitely postponed, as there is every indication of the insiders taking the whole of it. The Hidalgo is in the State of Zacatecas.

SOUTH AMERICA.

UNITED STATES OF COLOMBIA.

A correspondent sends us the following:

The latest buzz in this section of the mining world has been the placing on the N. Y. market of the Boconá mine, under the name of the Tolima Mining Company. [Of this mine we hear unfavorable reports. —ED. E. & M. J.] This is gravel, and is a northerly extension of the Orita and Mal Paso mines, which have been and are doing so well under very poor English management. This belt of gravel deposits is about four leagues northwest of Honda, in Tolima.

The redoubtable Jose Domingo Restrepo, it is reported here "sold" his Colonias mines in New York, forming a company—Colonias Mining Company—capital $250,000.

The property is located near the Magdalena River, in Antioquia, and was recently reported upon by E. E. Olcott, E.M.

Mining development is being pushed in Santander. The Alta, Veta, and Baja mines are now quoted at a round million in Bogotá. The Suratá gravel mines have been reconstructed and work recommenced.

The management of the San Cudo mine in Antioquia are rejoicing over the excellent work of their new American machinery. Their expenses are reduced 30 per cent, and the bullion output increased 50 to 60 per cent. Profit last month reported at $103,000.

The Gibson brothers seem to be rushing around Tolima considerably, but very little is heard of what they are doing. Wonder if they have caught the whispering infection?

J. G. Green, Superintendent of Frias mine in United States of Colombia, and some half dozen other mines, is now struggling in London to push a smelting scheme for Tolima.

It is said at Cali, Cauca, that Dr. Magin will succeed in placing the Puñal Vitaca mines in New York. The Chantadura has been somewhat of a disappointment because of lack of water.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Sept. 14.

Statistics.

Production of Coke on line of Pennsylvania RR for week ending September 8th, and year from January 1st, in tons of 2000 pounds: Week, 80,636 tons; year, 2,655,516 tons; to corresponding date in 1887, 2,339,555 tons.

Production Anthracite Coal for week ended September 8th and year from January 1st:

TONS OF 2240 LBS.	1888. Week.	1888. Year.	1887. Year.
P. & Read. RR. Co..	211,485	4,340,808	4,863,555
Cent. R. R. of N. J.	139,209	3,700,502	3,433,909
L. V. RR. Co.	209,686	4,370,756	4,598,435
D., L. & W. RR. Co.	138,370	4,401,818	3,679,400
D. & H. Canal Co..	98,720	2,952,928	2,5?6 205
Penna. RR.	68,545	2,973,752	2,487,643
Penna. Coal Co.	38,161	1,141,726	995 458
N. Y., L. E. & W.	19,000	623,491	5.8.9 0
Total	923,176	24,505,781	22,903,213
Increase		1,602,568	

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

Production for corresponding period:

1883	21,818,510	1885	19,706,601
1884	20.600,853	1886	20,688,854

Production Bituminous Coal for week ended September 8th, and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

Tons of 2240 lbs.	1888. Week.	1888. Year.	1887. Year.
Phila. & Erie RR.	1,000	43,042	1?,545
Cumberland, Md.	82,764	2,424,103	2,136,693
Barclay, Pa.	702	116,865	128,586
Broad Top, Pa.	6,123	236.973	219.731
Clearfield, Pa.	57.808	2,295,283	2,177,022
Alleghany, Pa.	13,904	530,091	598,054
Pocahontas Flat Top	23,321	955,700	689,710
Kanawha, W. Va.	*44,607	1,090,787	912,257
Total	230,229	7,692,844	6,873 598

*Week ending August 31st.

WESTERN SHIPMENTS.

Pittsburg, Pa.	14,389	489,063	390,568
Westmoreland, Pa.	26,726	1,043,076	937,291
Monongahela, Pa	11,375	272,072	256,804
Total	52,490	1,804,211	1,584,663
Grand total	282,719	9,497.055	8,468,201

Anthracite.

A reaction has come in the anthracite market, and the demand for coal has considerably slackened, comparatively few sales being made at the new schedule prices. Stove coal is in ready demand at September prices, and chestnut is in fair to good demand. There is also a moderate inquiry for egg coal, but broken is a drug and getting weaker, and pea coal has no bottom. We hear of pea coal having been sold below $2, and $2.25 for free burning is a very fair, if not a high, price at the present moment.

The companies are doing an enormous business, well on to the rate of 4,000,000 tons a month. The week ending September 1st the output was 944,829 tons, or 221,297 tons more than in the corresponding week last year. The total production to the first of the month exceeded that of 1887 by nearly 1,200,000 tons. The only limit to output is the supply of cars and that is felt by all the interests.

Farmers along the various lines are taking in coal somewhat earlier this year than usual, and it is requiring a great many cars to supply it. The Western dealers are also ordering earlier than usual, so that there is great complaint about shortage of cars; but as a matter of fact the production is greater than it ever was before in the history of the trade.

The quantity of coal which was sold during August for future delivery was simply enormous. It appears that all or nearly all of the companies booked orders during August for the largest amount possible and these contracts will run them through pretty nearly the balance of the year.

There has been quite a little stir in the trade, caused by a telegram from Wilkes-Barre, stating that some of the individual operators in the Wyoming region had decided to appeal to the Inter-State Commerce Commission against the railroads, or rather against the Lackawanna & Western Railroad, for discriminating in tolls, or at least for charging "unreasonable" rates. Mr. John C. Haddock appears to be the complainant, and he certainly seems to have a pretty good cause for complaint. The report published is as follows:

"The most conspicuous violation of the law seems to be that one of the railroad companies is now charging $2.75 a ton from the mines to Buffalo, and $2 a ton on pea coal to tide-water. These are the published rates, and they are 50 cents a ton higher than the rates charged by other roads to the same points. This is virtually a prohibitory tariff. It shuts out the individual shipper, and compels him to sell his coal to the company for 25 to 50 cents a ton less than the open market price. This shows how it is worked. The other day, when a shipper would have been obliged to pay $2 a ton freight on pea coal had he sent the coal to tidewater, he sold the coal to the railroad company, delivered at the mines, for $1 a ton. Then he had his agents buy from the company at tidewater at a price which showed a discrimination against the individual operators of 75 cents a ton. In this way the price of coal is kept up. These facts will be laid before the commission."

We scarcely think that the Lackawanna & Western Company will allow such a case to go before the commission. It is charging $2 a ton for freights on all sizes of coal from the Lackawanna and Wyoming regions to tidewater, while the other roads charge $1.50 on pea coal, since that size commands a much lower price in the market. It is, as we have just stated, difficult to get $2 to $2.25 a ton for free burning pea coal, so that with $2 a ton freight to tidewater, and 10 cents a ton commission, the miner would get just 15 cents a ton to pay him for mining and royalties, which latter would alone generally exceed that amount. A difference of 50 cents a ton in freights bringing them down to the same freight as the other roads, would allow the mine to make something. If the complainants in this case should insist upon a "fair rate" being that at which some of the roads carry bituminous coal, it would reduce the entire freights of the anthracite roads enormously. It is certain that most of the bituminous coal that comes to tidewater is carried at no more than half the rates that are obtained on anthracite, and there should be no difference in the cost of carrying anthracite and bituminous coal. Roads in other parts of the country have a single rate for coal of all kinds, and it is quite possible that if the Inter-State Commission were appealed to, it might decide that anthracite should be carried at the same rates as bituminous coal, and that the present charges are "unreasonable." It is easy to see what a commotion such a decision as this would make among the coal roads, and it is certainly not to their interest to have the question brought up before the commissioners or the courts, where the chances are always against the companies that are working under "sympathetic" arrangements. We think, therefore, it is quite probable that Mr. Haddock will gain the point for which he is contending.

We repeat our quotations of last week, which have been explained as above. They are purely nominal as regards broken coal, but of little effect in regard to egg, but are firmly established in stove coal:

Broken	$3.95	Stove	$4.65
Egg	4.30	Chestnut	4.65

Bituminous.

There is, as usual, nothing worthy of note in the bituminous trade. Everything jogs along in the same old way without any change. Should the tolls on anthracite coal be regulated by those on bituminous, it would have a very serious effect upon the bituminous trade; but such a thing is not in the near future, nor do we think it will become a "burning question" at all.

We repeat our usual quotations, which are lived up to very firmly: $2.60 f.o.b. Baltimore and Georgetown, and $3.25 for New York.

Buffalo. Sept. 13.

[From our Special Correspondent.]

The anthracite and bituminous coal trade continues active, and all the conditions incident to the trade are satisfactory excepting the short supply of cars. The growth of the trade is not stunted in any way. Despite the advance in quotations the demand seems steady, as if price was not a factor in any way. This state of affairs seems to be duplicated in all sections of the country, judging from reports received.

There are rumors that in the central part of this State orders for anthracite for domestic use have been curtailed, but no one here credits the report.

Our ten days' International Fair has been an immense success. Last Tuesday over 100,000 persons were present. The projectors and stockholders intend to make this feature of Buffalo an annual event, with enlarged and additional features of interest, commercially and in every way.

The Lehigh Valley Coal and Transportation Company have contracted with Cleveland builders for the construction of another large propeller. Work will be commenced immediately and the vessel will be ready by the opening of navigation next spring. The same company will enlarge their facilities by building a new twenty-pocket transfer trestle at East Buffalo, with a shipping capacity of 1200 tons. Extra storage will also be supplied, aggregating at least 2000 tons.

At the end of last week there was a better supply of coal; since, the arrivals of vessels were quite liberal, and there was not enough to go round. Many craft left light. To-day the engagements were light at unchanged quotations. The going rates for past seven days were 75c. to Chicago; 70c. to Milwaukee, Marquette and Green Bay; 80c. to Racine, Marinette and Sheboygan; 60c. to Duluth, St. Clair, Superior, Gladstone and Ashland; 30c. to Sandusky; 25c. to Toledo and Detroit, and 50c. to Saginaw and Bay City. A decline of 10c. will be observable in the Detroit and Toledo rates, in consequence of excess of tonnage from these points.

The shipments by lake westward from September 6th to 12th, both days inclusive, were 78,630 net tons, namely, 30,950 to Chicago, 21,760 to Milwaukee, 1500 to Superior, 7750 to Duluth, 4060 to Toledo, 600 to Marinette, 1600 to Green Bay, 1180 to Detroit, 600 to Saginaw, 600 to Michighn City, 1250 to Racine, 350 to Bay City, 3880 to Marquette, 1500 to Gladstone, 750 to Sandusky, and 300 to Bay Mills. Total shipments thus far this season, 1,642,970 net tons, including cargoes on vessels from Tonawanda not reported at the Custom House at this port.

The shipments by canal eastward for first week in September none; receipts, 5713 net tons.

Boston. Sept. 13.

[From our Special Correspondent.]

Affairs are moving along pretty comfortably in the anthracite coal market at this port. No one is suffering for coal, and relatively few are at all in need. Some dealers who have been slow in getting their orders filled are hustling about to place orders which have been canceled on account of non-delivery. I do not hear of any large orders being canceled however. The Reading and the Lehigh companies are pretty strict on this matter, but a great deal of coal was sold delivered, and such contracts will be filled by the companies unquestionably.

Full circular rates now prevail, and the agents here claim that the companies can and will wait until the retailers need to buy. A few begin to take the position that the market has seen its best days for this season, and that there will soon be found difficulty in keeping

up to present full circular without making another advance of 15 cents. The pressure for "the usual discount" is very strong.

The shippers of bituminous coal are, as usual at this time, hurrying forward deliveries to the best of their ability, and are taking any thing and every thing afloat at full rates. Owing to prompt loading, freight rates on bituminous coal are rather lower than on anthracite.

There is a very fair amount of transient orders for soft coal in the market. Quotations range as before, $3.25 to $3.50 delivered.

Except at New York, freights have tendered upward. At that port there seems to have been an unusual supply of late, but this soon rights itself. The freight situation at all points favors vessel owners.

We quote vessel rates, exclusive of discharging: New York, 80@85c.; Philadelphia, 90c.@$1; Baltimore, $1@$1.05; Newport News and Norfolk, 90c.@$1; Richmond, $1.15@$1.25; Provincial, $1.60@$1.75.

There is less of a rush at retail, but the business is still very good, at unchanged prices.

Pittsburg. Sept 13.

[From our Special Correspondent.]

Coal.—Market firm with a fair local demand, the present being the time for parties that do not use natural gas to lay in their winter supply. Another rise in the Monongahela and Ohio enabled the coal men to send out 1,640,000 bushels, all that was loaded. There are plenty of empties in the pools. Owing to a slight misunderstanding, instead of the shipment being 12 to 14,000,000, only the amount noted above was loaded. It seems to us that the workingmen's advisers don't like work.

PRICE OF COAL PER 100 BUSHELS = 7600 LBS.

First pool	$4.75	Fourth pool	$3.25
Second pool	4.25	Railroad coal	5.00
Third pool	3.75		

Connellsville Coke.—The demand continues to increase. Idle ovens are being fired up. Again the old familiar cry of "cars wanted" is heard throughout the coke and coal regions. Several furnaces have started, increasing the demand for coke. Old contracts are being filled at contract prices; new contracts are refused unless at the advance.

The new rates are: Blast-Furnace, $1.25 per ton; to dealers, $1.35; foundries, $1.40.

Freight rates to Pittsburg, 70c. per ton to the Mahanoy and Shenango valleys, $1.35; East St. Louis, $3.20; to Cleveland, $2.80; to Chicago, $2.75; to all other points the same proportions.

FREIGHTS.

The latest actual charters to September 14th, per ton of 2240 lbs.

From New York to:—Beverly, .80@90*; Boston, .80*; Bridgeport, Conn., .65@.70; Cambridge, Mass., .80*3c; Cambridgeport, .80*3c.; Chelsea, .80*; Com. Pt., Mass., .80*; E. Boston, .80*; E. Cambridge, .80*3c.; E. Greenwich, R. I., .80; Fall River, .80; New Bedford, .85@.90; Newburyport, .95*; New Haven, .65@.70; Newport, .80; New London, .70@75; Norwalk, Conn., .55@.60; Norwich, .80; Portland, .80*; Portsmouth, N. H., .90*; Providence, .80; Quincy Point, .90*; Salem, .80*.

From Philadelphia to:—Annapolis, .70; Bangor, .95@1.05*; Baltimore, .60†; Bath, Me., .95*; Boston, .90@1.05*; Cambridgeport, 1.15*; Charleston, 1.00*; Chelsea, .95; Com. Point, Mass., .95*; East Cambridge, 1.17½*; Fall River, .80@.90*; Gardner, Me., 1.00*‡; Gloucester, 1.05@1.17*; Lynn, 1.10@1.30*; Marblehead, 1.05*; Medford, 1.10*; Milton, 1.20*; New Bedford, .80@.90*; Newburyport, 1.20*; Newberne, .80@.85; New York, .90†; Norfolk, .65; Portland, .95@1.05*; Portsmouth, N. H., 1.00*; Portsmouth, Va., .65; Providence, .80@.90*; Richmond, Va., .75; Rockport, 1.22½*; Saco, Me., 1.20*†; Salem, Mass., .90*; Savannah, 1.00@1.10; Washington, .85; Weymouth, 1.15*; Wilmington, N. C., .60.

From Baltimore to:—Bangor, Me., 1.10; Bath, 1.05; Boston, 1.05; Bridgeport, Conn., .90@.95; Brooklyn, .90; Charleston, 1.10@1.15; Fall River, .95; Galveston, 3.00; Gardner, Me., 1.00@1.10; New Bedford, .90; Newburyport, 1.30; New Haven, .90; New London, .90; New York, .90; Portland, 1.10; Portsmouth, N. H., 1.15; Providence, .90; Quincy Point, 1.10; Richmond, Va., 70; Salem, Mass., 1.10@1.15; Savannah, 1.35; Somerset, .90; Williamsburgh, N. Y., .90; Wilmington, 1.10@1.20.

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

METAL MARKETS.

NEW YORK, Friday Evening, Sept 14.

Prices of Silver per ounce troy.

Sept	Sterling exchange	Lond'n Pence.	N. Y. Cents	Sep.	Sterling exchange	Lond'n Pence.	N. Y Cts.
8	4.87¾	42 5 16	92⅜	12	4.88	*	‡
10	4.87¾	42⅛	92¾	13	4 88	+	‡
11	4.87¾	42¾	93¼	14	4.88	44	96⅛

* 43@43¼. † 43⅛@44. ‡ 93⅞@94⅛. § 95@96⅛.

There have been very sharp advances in silver this week. We are not advised as to direct causes, beyond the fact that council bills advanced ½. Scarcity of silver and demand for Indian exchange have probably caused the rapid rise.

Latest.—Private cable advices report the continent as buying at 44d., the market excited, but the tendency uncertain.

Foreign Bank Statements.—The governors of the Bank of England, at their weekly meeting, advanced its rate for discount from 3 to 4 per cent. During the week the bank lost £136,000 bullion, and the proportion of its reserve to its liabilities was reduced from 44·55 to 44·01 per cent, against an advance from 43·21 to 44·40 per cent in the same week of last year, when its rate for discount was 4 per cent. Thursday the bank gained £48,000 bullion on balance. The weekly statement of the Bank of France shows a loss of 9,925,000 francs gold and of 125,000 francs silver.

Copper.—Business has been very dull and transactions exceedingly limited in the copper market during the week, but in spite of this the quotations for Lake Copper for spot and September delivery have again marked an advance. This has been caused by some bear operators altogether unconnected with the metal trade having been obliged to buy in to cover sales for this month's delivery at 17¼c., which must now be regarded as the established spot price for Lake Copper. Futures have also advanced somewhat, and we have now to quote as follows: October, 17·10; November, 17·10; December, 17.

In outside brands a slight rise has also taken place and the quotation for good casting copper is now about 15⅞c., which is still low in comparison with the lake prices. This condition of affairs is explained by the fact that the business doing with consumers is merely of a retail character.

In contrast with our market there have been some important fluctuations during the week in London in the prices of spot Chili Bars, which at the close of last week stood at £100 and afterward advanced to £105, which price was touched last Tuesday, but the following day the price fell back again to £97, and subsequently rallied again and recovered part of the previous day's decline, and according to last cable advices, the closing quotation to-day is £102 @102 2s. 6d. This movement has, however, been confined to Spot Chili Bars, as during the whole time, 3 months, prompt Chili Bars have remained steady at £79 and G. M. B. Copper at from £76 5s. to £76 10s.

Messrs. James Lewis & Sons, who are known as "bear" brokers, report, under date September 1st, as follows:

"Delay in the arrivals of the steamers from Chili, owing to difficulty in obtaining coal there, combined with the covering of some 'bear' sales, has caused a great scarcity of Chili bar warrants the past ten days, and prices have consequently been run up from £80 10s. on the 1st ult. to £92 on the 29th for cash, while for three months prompt not more than £78 to £79 5s. has been obtainable. The market closes easier at £89 for cash sellers and £79 for three months' buyers. The quantity sold at these prices has, however, been but small. To consumers the syndicate are willing to sell cash bars at £78 10s.

"In good merchantable copper a good business has been done at £73 10s. for cash and three months prompt up to £76 5s. for cash, and £77 5s. for four months prompt, the Syndicate agents being the chief buyers.

"The syndicate have continued to buy furnace material in competition with the smelters, but have lately sold several parcels, including 3250 tons of Anaconda matte, the stock of which now amounts to 16,973 tons. By this means the price has advanced about 9d. per unit.

"For English copper there has been more demand, and up to £79 has been paid in Birmingham for best selected.

"The quantity of English and foreign copper now held by the syndicate in England and France is estimated at over 100,000 tons. This includes 80,000 tons returned in the public stocks and in transit from here to France, 9100 tons of English copper lying at Rouen, and the copper smelted for the syndicate at the works of the Rio Tinto, Tharsis and Cape companies. In addition to this the syndicate hold a considerable stock of copper in the United States.

"The 'Port Gordon' has arrived, from the Boleo mines, at Queenstown with 1200 tons of 75 per cent matte, 600 tons bars for Dunkirk. At these mines there are now four blast-furnaces in operation, with a capacity of 350 tons 7 to 10 per cent ore.

"The Baltimore Smelting Company are now making about 1000 tons per month of ingots from Anaconda matte.

"During the past month 3518 tons of Chili Bars have been transferred from here to France, making 19,900 tons to date, viz.: 15,901 tons to Havre, 2848 tons to Rouen, and 1151 tons to Dunkirk.

"Stocks show an increase of 8951 tons since the 1st ult., and are now 78,698 tons against 34,451 tons on January 1st.

"The arrivals in England from Chili during the month have been 1980, and the deliveries 395 tons fine, and from other countries 5277 and 3031 tons fine respectively.

"The arrivals here from the United States have been 50 tons bars, 185 ingots, 2121 matte (including 1879 tons Anaconda) and 12 tons ore, equal to about 1484 tons fine copper, and in France 51 tons.

"The Chilicharters for the month are 2200 tons, and the closing rate of exchange is 26⅛d., bars being $29.70 per quintal."

The syndicate brokers in London have offered copper to *consumers* at £78 10s. per ton for cash, Chili bars, while the sales on the exchange were about £90, and have since gone much higher. The "bears" are being badly squeezed, having to pay up to £100@£105, while the syndicate buys futures at £78@£79.

Tin has also experienced somewhat large fluctuations during the week. When we last reported, the price in London stood at about £100. From that point a gradual advance took place up to £103 10s. to £103 12s. 6d. for spot, and £104 to £104 2s. 6d. for 3 months. A reaction then set in, and according to cable advices the closing quotations to-day are: spot, £100; 3 months, £100 10s. There has been a considerable amount of speculation in the metal in Europe, and backed by a very good demand for consumption, prices have been driven up, but the shipments from the East are coming forward freely, and the statistical position, as far as stocks are concerned, is not such as to encourage consumers to buy heavily in advance of their actual requirements. On the New York market prices have also been rather unsettled, and have sometimes shown a considerable difference as compared with the London quotations. This remark especially applies to futures, which have been sold here by speculators at lower figures than spot, whilst in London the quotation for futures is higher than spot. Our closing prices to-day are: Spot, 22¾; September, 22¾; October, 22½.

Lead.—Although prices are practically unaltered the strong tendency which we reported last week has disappeared, the bull clique showing very little disposition to take up the further parcels which are being continually offered by smelters and dealers. Domestic lead closes at: Spot, 4·95, September. 4·95; October, 4·97½, while November lead is obtainable at 4·90. In London prices have also eased off somewhat, and while Spanish lead was quoted at the beginning of the week at £14 5s., it is now obtainable at £14.

The rumor, to which we referred last week, that 2000 tons of lead had been purchased abroad, did not materialize. An inquiry for this amount of lead was made but the prices were not considered satisfactory, so no purchase was made. The great lead "bull" has purchased everything offering and is supposed to hold some 15,000 tons of the metal, but no one has yet solved the conundrum "what will he do with it?"

St. Louis, Mo.—Messrs. John Wahl & Co. telegraph to day as follows: There is a fairly active demand for both hard and soft lead, and prices are held firmly at about 4·80c. for refined and 4·75c. for common. Sales are limited owing to scant offerings.

Chicago, Ill.—Messrs. Everett & Post telegraph today as follows: Our market has advanced slowly since our last report. Prices now stand 4·80c. bid, 4·85c. asked. Speculators are the only buyers. Offerings are very light. Sales will scarcely foot up 20c. tons for the week.

Spelter.—In consequence of the very light stocks in smelters' hands prices have advanced to 5¼@5¼c., which has naturally checked business somewhat, but it is understood that consumers are not well supplied, and will consequently have to come into the market again shortly. The position of this article in Europe is a sound one and prices in London are very firm at £18 10s. Best Silesian is quoted here at 4·90@5c.

Antimony has been rather more lively, and transactions have taken place in Cookson's at 13¼ to 13¾, and in Hallett's at 9½ to 10.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Sept. 14.

During the past week a better feeling has prevailed in all lines of the chemical trade. The demand for consumption has increased and prices are well sustained.

Heavy Chemicals.—The volume of business has been somewhat larger than last week, although the sales, in some instances, have been speculative. Advices from abroad show little change in the condition of the chemical trade, with the exception of caustic soda, which has developed considerable strength and has given rise to various rumors concerning a "trust" which, it is said, has been formed by English makers. In New York this report is discredited.

Carbonated soda ash, 48 per cent, is without particular animation. Ten contracts for future delivery are reported, and sales have been of unimportant proportions. We quote 1·22½@1·25c. to arrive, and 1·27½@1·30c. on the spot.

Caustic soda ash is quiet. Sales have been limited. Prices rule unchanged at 1·20@1·25c. to arrive, according to quantity, and 1·25@1·30c. for stock on the spot.

Caustic soda, in sympathy with the reports from Liverpool which have been undoubtedly strong, has shown an upward tendency. The demand on this side is firm and stock on the spot is scarce. Prices rule slightly higher. The market may be quoted for 60 per cent, 2·32½@2.37½c. ,and for 70 and 74 per cent, 2·20@2·25, according to quantity.

Sal soda is slightly depressed, although prices show little change. Recent importations have been rather in excess of the demand.

For stock on the spot, ·95@·1c. is the ruling figure; for consignments to arrive soon ·90@·95c. is generally asked.

Hyposulphite of soda is moving lightly at unchanged quotations.

Bleaching powder is sold in a small way to meet current requirements. Prices for stock on the spot are slightly firmer at 1·92½@1·95c. The importations at New York have not been large; to arrive is quoted at the old figures, 1·90@1·95c.

Acids.—The acid market has shared in the improvement of the volume of business generally reported. We are told of one contract of 3000 carboys for a year's delivery, made, it is said, at slightly above ruling prices. Aside from this, there have been smaller contracts for the same length of time made at the present market price.

The increased demand is attributable to the inquiries of dyeing establishments, many of which have resumed operations during the last few weeks.

Acetic acid is without features of particular interest. The ruling price is 2¼@2½c., according to quantity and quality.

Muriatic and nitric acids are sold lightly at the old figures. For muratic, dealers quote us the following

prices: 18°, 1·10@1·15c.; 20°, 1·25@1·30c.; 22°, 1·50c. Nitric is quoted: 36°, 3¾c.; 38°, 4c.; 40°, 4½c.

Oxalic acid continues very firm in price, owing to the combination or agreement of manufacturers. Consumers, in consequence of the advance in price, seem to hesitate before placing their orders, and sales are not of very large proportions.

The ruling quotations are 8½c. per pound for large lots, and an advance of perhaps ½c. per pound for a single cask.

Sulphuric acid is in better demand, and prices show a firmer tendency. We quote for 66°, 90@95c. per cwt. for large quantities, and $1@$1.15 for small lots.

Tartaric acid is in light demand. Ruling prices are: Crystals, in lots of 3000 lbs. or more, 43c. per lb.; smaller quantities in barrels, 44c. per lb.; 50-lb. lots in boxes, 45c. per lb., and one cent advance on these figures for powdered.

Fertilizers, Potash, etc.—The demand is reported steady and fair. Prices are firmly maintained at the old figures. We continue to quote: Azotine, $2.30@$2.35, as to quality; dried blood (city), low grade, 2·30@2·35 per unit. Western high grade, 2·35@2·40 per unit for ground material; tankage, high grade, $23@$24 per ton; low grade, $21@$22 per ton. Fish scrap, $24@$25 per ton f.o.b. factory. Sulphate of ammonia, $3.15@$3.20 per cwt. Steamed bones, $20 per ton.

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

Refuse bone-black is quoted at $17½@$18 per ton. Dissolved bone-black is 90c.@$1 per unit for available phosphoric acid, and acid phosphate 75@80 per unit for available phosphoric acid.

Double manure salt shows no new features of interest. The demand continues good and prices are firmly maintained at 1·05@1·07½c., on a basis of 48 per cent potash.

Muriate of potash is unchanged in price. The market quotation is nominally $1.80 for both spot and arrivals.

High grade of potash is scarce, but prices as yet are unchanged. Dealers quote 2·15@2·20c., on a basis of 90 per cent.

Kainit is very scarce, and the agent of the syndicate in this city informs us that prices are likely to go higher. The scarcity of vessels on the other side continues, and there seems to be little probability of a relief in this connection for some time to come. For stock on the spot, the nominal price per ton is $11; in store, $10, and for shipment, $9.75.

Brimstone is very firm in price. The market presents no new features. Trading has been limited at the unchanged figures. For best unmixed seconds on the spot, $21; to arrive, $20.50; thirds, to arrive, $19.50.

Nitrate of soda is firmly maintained at the advanced prices. The price ex store is 2·12½c., and to arrive 2·10c. The following interesting statistics are prepared by Messrs. T. F. Edmunds & Co., of Boston, under date of August 31st:

NITRATE OF SODA.

	1888. Tons.	1887. Tons
Exports from S. A. to Europe since January 1st	323,543	260,000
Exports from S. A. to U. S. since January 1st	46,941	52,000
Total exports	370,484	312,000
Loading in S. A. for Europe, August 31st	80,000	100,000
Loading in S. A. for U. S. August 31st.	8,500	7,000
Total loading	88,500	107,000
	Bags.	Bags.
Stocks at Atlantic ports August 31, 1888		85,044
Afloat and due in Atlantic ports, September	36 500	
Afloat and due in Atlantic po ts, October	30,000	
Afloat and due in Atlantic ports, November	37,500	97,500
Visible supply for U. S. September 1st to December 1st, 1888		182,544
Visible supply for U. S. September 1st to December 1st, 1887		187,113
Deliveries for consumption in U. S. for above time in 1887		131,206
Deliveries for consumption in U. S. for above time in 1886		171,000
Deliveries for consumption in U. S. since January 1st, 1888		359,054
Deliveries for consumption in U. S. since January 1st, 1887		325,000
Deliveries for consumption in U. S. since January 1st, 1886		224,500

The following table shows the imports of chemicals used in the manufacture of fertilizers for the past two years, ending August 31st, 1887 and 1888:

	1888. Tons.	1888. Value.	1887. Tons.	1887. Value.
Kainit	7,122	$43,948	12,787	$74,914
Brimstone	15,532	258,811	11,507	198 590
Nitrate soda	1,309	41,016	1.112	38 012
Mur. potash	851	28,935	1,911	56,638
Fertilizers	1,003	9,137	4,013	4,265
Total	25,817	$381,487	31,330	$408,389

Acetate of lime is in better demand at unchanged prices.

Cream of Tartar is moving fairly. We quote for powdered 32⅔@33½c.; for crystals, 32@32¾c.

Minerals.—Trade is reported fair and steady, at satisfactory prices.

Sulphate of barytes shows sales mainly of a jobbing character. Prices are firmly maintained at $17.50@$18.50 for best No. 1, off-colored grades at $15.

China clay is in very plentiful supply. The rates of freight are very low, as light vessels returning from Europe use the crude clay as ballast. The ruling prices are $13.50 for Southern and $16.50@$18.50 for foreign, according to quality.

Fieldspar and Silica, or Ground Quartz.—Business at this season of the year is rather dull. Prices show little fluctuation.

Talc is in fair demand.

Chalk.—Very few sales are reported. Prices are nominal.

For latest quotations of all chemicals and minerals, see our list of prices current.

BUILDING MATERIAL MARKET.

The following figures, prepared by the *Real Estate Record and Guide*, show the number of new buildings projected in New York City during the first eight months of 1886, 1887 and 1888: 1886, number, 3097; cost, $45,557,193; 1887, number, 3472; cost, $55,797,227; 1888, number, 2200; cost, $33,496,028.

These figures confirm our estimate of last week, showing that the number of new edifices projected, up to August 31st of this year, has decreased about thirty-five per cent from the record for the same time in 1887.

The month of August, however, records 292 new buildings against 230 in the same month last year. It seems very probable that the remainder of this year will show a marked improvement over the past six months.

Among contractors, however, there is a feeling that we have been over-building for the past two years, and hence the dullness prevalent this season is but a healthy reaction from too great activity.

Last year every kind of building material was in great demand, and contracts were recklessly made. This year business has settled down to a steady, substantial basis; the weaker firms have either been strengthened or weeded out of the trade, and while business is dull prices for the most part are well sustained.

Bricks.—The market for the past week has been quiet and prices have shown a slightly lower tendency. Very few brick-makers have stopped as yet, and, as the supply is far ahead of the demand, dealers find it difficult to maintain prices.

Cement.—The heavy importations this year have weakened prices of both foreign and domestic cement. The former, which is all of the "Portland cement" grade, is preferred, though some of our domestic Portlands are fully equal to the best foreign. Importations are largely in excess of the consumptive demand, which also shows a considerable increase.

During the past week, business has been of the usual proportions, without any features of special interest.

Roofing Slate has been in very good demand all through the year, owing to the general activity of building interests elsewhere throughout the country.

Lime.—As the production of this article is largely controlled by an association of prominent makers, prices are maintained at the usual figures, with little variation.

For prices of building materials and wages of laborers see our "Current Prices."

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Sept. 14.

American Pig Iron.—The market is quiet with no great increase in the demand. Prices continue to be well maintained, and the tendency is towards even more firmness on the part of sellers. As a rule, buyers are taking only what they require for actual needs.

There seems to be an entire absence of speculative feeling, and the demand is certainly less than at this time last year. The Thomas Iron Company report sales of considerable lots during the past week. Southern irons, although generally selling at comparatively higher prices in the West, are still in this market, one firm reporting recent sales for Northern and Eastern foundries of 2000 tons No. 1 iron at prices from $18 to $18.75, according to point of delivery, a considerable advance over sales reported some weeks ago. There are also some large-sized orders for forge irons on the market.

Scotch Pig is being "boomed" on the Glasgow Exchange; this week's cables showing prices there on some brands 2s. 6d. above last week's quotations. This is believed to be a purely speculative movement. Scotch irons are higher also in this market, not on account of increased demand, as the prices of importing most brands puts them out of the question for American consumers, but on account of the Glasgow advances and the high steamer freights, which are low 10s.@12s. 6d., against 5s. a month ago.

Bessemer Pig and *Spiegel* are very quiet, and prices are nominal.

Steel Rails have been very quiet, although some good orders are in negotiation. Prices are, if anything, weaker, and $28@$28.50 may be put down as a fair quotation for heavy sections at Eastern mills.

The only sale mentioned is of a lot of about 1500 tons, for which $28 at mill is said to have been shaded. The sales to September 1st amounted to 1,060,587 tons, shipments, 824,707 tons; yet to be sold on allotments, 198,820 tons.

The Ironmonger says that a new European steel rail combination has been made, and that it is stated to have the support and membership of every steel rail firm and company in Great Britain, Germany, Belgium and France. The former combination did not include one firm in England, nor had it the support of the French manufacturers.

In connection with this revival of the European International Rail Association, it is very interesting to note from the figures of the Annual Statistical Report of the American Iron and Steel Association for 1887, that the American product for last year, 2,139,640 tons, was double the British product, and exceeded the product of Great Britain, France, Germany, Belgium and Russia combined.

Structural Iron is in excellent demand, and prices are certainly firmer and less in buyer's favor. Orders for bridges are numerous, and the demand for beams and channels for building purposes is very good. The same is true of iron and steel plates.

Scrap Iron has been more active, and considerable business has been done. While several sales have been made at $18.50 and $19.00, yet there are several good yard lots held at $21, and choice at $22.

Old Rails continue to be firmly held, and there is an apparent increase in the demand. The only sale reported is of a lot of 1600 tons Double Heads at $24¼ *ex store;* $22.75@23 is freely bid for Tees, and refused. Strong holders say they are willing to sell at $25, but this is away above buyers' views. Stocks are getting light, and no rails are reported as coming from abroad.

Nails are in rather better demand, but prices are unchanged.

For quotations we refer to our weekly register of current prices.

Louisville. Sept. 11.

(Specially reported by Messrs. HALL BROTHERS & Co.)

The past week has proven a most satisfactory one in volume and price. Prices have advanced and buyers are anxious to lay in their supplies. The furnaces are holding firm for higher prices. There has been some 15,000 tons placed during the past week for deliveries through the present year. The furnaces are strongly of the opinion that they will get quite an advance over present prices by holding off for 60 to 90 days before entering any large orders for next year's delivery. The outlook is very promising for a flourishing business in the iron industries. Southern irons seem to be maintaining better prices than Northern metals, and are in more active demand.

Quotations for cash, f.o.b. Louisville, will be found in the weekly register of prices.

Philadelphia. Sept. 13.

(From our Special Correspondent.)

It is almost next to impossible to discern any actual difference in the trade market conditions this week against last. Several contradictory statements have been made by brokers and manufacturers concerning trade conditions. Some reports that have emanated from this city concerning the improvements in iron are not corroborated by buyers, particularly in reference to crude iron. The market is getting in shape for an advance and certain kinds have already sold for a little more money than in August. Iron is still selling at $16, $17 and $18 respectively, and it is true that sellers are asking, where they dare, about fifty cents more, but when it comes to figuring up the amount sold at this figure it is small. There is still a feeling that it is better to take business at old prices than let our neighbors run away with it. Buyers are not as a rule willing to pay a cent more for iron than they have been, giving as a reason that the selling prices do not justify their so doing, and that is about the fact. The improvement in the market is confined to the greater demand and not to better prices. There is entirely too much capacity seeking orders just now for any improvement, yet there is a better feeling and it would not be surprising to see a slight advance made on standard irons and upon refined bars, blooms and best plate iron. The most encouraging feature of the week is the inquiries for structural, plate and tank iron for quite a number of enterprises that will soon want material. The demands for the coastwise trade will be quite large by another season, but it is not likely that the iron trade will feel the benefit of any improvement from this source before midwinter. Inquiry from the shop yards justifies the prediction that a sharp improvement in business will take place. Ship builders have been looking into trade probabilities and feel quite certain that the ship building industry will extend, but they have no present assurances of the usual improvement. The average business in plate and tank has been at a little better price. But structural iron still remains at its former figures. Inquiries are still being made, but the orders are small. Muck bars are in quite active demand and prices are moving up for early delivery. The bar mills are still in good shape and country mills are steadily filling up. This fact leads to the prediction that there will be an advance of a tenth this fall. Skelp iron orders are coming in every few days and an advance of one tenth is quite probable, especially on small lots for early delivery. Steel blooms and billets are in good request but manufacturers are willing to take all the business they can take at the present prices. Sheet iron makers also report a further improvement. Merchant steel of all kinds is in good demand. Nails hold their own firmly. The makers intimate that they will be selling first class nails ten cents higher within thirty days. Wrought iron pipe material is without change. A great deal of cast pipe is being ordered. Buyers seem disposed to protect themselves against the threatened advance in pipe. Steel rails are quoted at $29@$29.50. A number of orders have been booked this week at our Pennsylvania mills, but it is impossible to give an estimate. All the orders are small. The urgency for old rails continues. Prices are moving up. Spot lots are not to be had. Buyers who have placed their orders are out of stock and anxiously await material. All kinds of scrap iron are in excellent demand. The opinion exists in a good many quarters that the present improvement is the usual September expansion of trade and that it will be bad policy to advance prices upon the supposition that we are now upon the threshold of a general improvement.

Pittsburg. Sept. 13.

[From our Special Correspondent.]

Raw Iron.—The market since our last has undergone no particular change; the demand for certain kinds was fairly maintained. Sales were numerous for limited amounts. Notwithstanding the large operations noted in our report last week, the inquiry continues. Stocks on the market have been reduced to a limited amount. The Charlotte furnace, started up last week with non-union men, is running to its full capacity. The owners say they are well satisfied with the situation. The increase in business has been such as to call for particular comment; confidence is stronger and many predict that activity in the iron market has come to stay. A careful investigation among consumers show that stocks are as low as they have been reported. On the other hand, there are some dealers who have little faith in present prices, and think they will lose nothing by going slow. We have heard similar remarks made when gray forge iron sold at $14.50 and Bessemer considerably below present prices. We then remarked that if we wanted iron then was a good time to purchase. The fact is beyond question certain parties think that when prices are on the decline they will still keep going down. The week's sales show that there is still a good demand for most kinds of iron. Prices steadily maintained, with fair offers in the market for present or future delivery. The prospect at this time seems good for a large trade for the balance of the year. The market has certainly a strong and healthy appearance, and with continued activity it is not unlikely that a higher range of prices may be announced in the near future, particularly for favorite brands. Mixed lots or off grades are still being sold at a variety of prices, having no fixed value.

Coal and Coke Smelted Lake Ore.

1500 Tons Bessemer	18.50 cash.
1500 Tons Gray Forge	16 25 cash.
1000 Tons Bessemer	18.25 cash.
1000 Tons Gray Forge	16.75 cash.
1000 Tons Gray Forge	16.50 cash
1000 Tons Gray Forge	16.10 cash.
500 Tons Bessemer	18.00 cash.
500 Tons Gray Forge	16.50 cash.
500 Tons Gray Forge	17 00 4mo.
300 Tons Bessemer	18.00 cash.
100 Tons Gray Forge	16.25 cash.
100 Tons White and Mottled Bessemer	16.00 cash
1000 Tons Gray Forge	16.50 cash.
500 Tons Gray Forge	16.50 cash.
200 Tons Mill Iron	16.00 cash
100 Tons Mill Iron	16.00 cash.
100 Tons Gray Forge	16.50 4mo.
500 Tons Gray Forge at Furnace	15.75 cash
250 Tons Gray Forge, Storage	16.00 cash.
100 Tons Silvery	16.50 4 mo.
50 Tons Mottled and White	15.50 cash.

Charcoal.

100 Tons Cold Blast	27.00 cash.
50 Tons Cold Blast	26.00 cash.
50 Tons Cold Blast	25.50 cash.
50 Tons Cold Blast	26.00 cash.
50 Tons No. 3 Foundry	22 00 cash.

Mack Bar.

1000 Tons Neutral	29 25 cash.
1000 Tons Neutral, October	29.50 cash
1000 Tons Neutral, September and October	29.50 cash.
1000 Tons Neutral, October and November	29.50 cash.
500 Tons Neutral, Spot	29.25 cash.

Steel Slabs and Billets.

1500 Tons Nail Slabs	29.00 cash.
1000 Tons Billets	29.50 cash
1000 Tons Billets, October	29.50 cash.
1000 Tons Nail Slabs	29.00 cash.
500 Tons Nail Slabs	29.00 cash.

Steel Crop and Bloom Ends.

1000 Tons Crop Ends	19.00 cash.
1000 Tons Bloom Ends	19.50 cash.
500 Tons Bloom Ends	19.25 cash
500 Tons Bloom Ends	19.50 cash.
500 Tons Bloom Ends, November	19.75 cash.

FINANCIAL.

NEW YORK, Friday Evening, Sept. 14.

The market shows continued strength, and there is a more hopeful feeling for large business later on. Prices show but little change. It is to be hoped that the managers of our exchanges will remove the standing disgrace of listing wild-cat mines and will put out those that are now in. Until this is done no healthy interest can be expected in mining stocks.

It is stated that an assessment is about to be levied by the Iron Hill Mining Company; 500 shares of the stock were sold in this market at 20c. per share. Caledonia shows some business at from $2 60 to $2.70. Little attention is paid to Homestake, which is being dealt in at from $10.50 to $11.

Ontario shows the usual business at from $32 to $33.25 Horn-Silver continues to be neglected, and shows one sale at 88c.

One sale of Rappahannock was made at 11c.

El Cristo is firm at $1. Very little is doing in this stock at present.

Silver King was firm at from $2.10@$2.15.

There was nothing doing in Santiago this week; it was dealt in only on Saturday at $3.95.

Kingston & Pembroke holds its own at from $2.50 to $2.63.

One thousand shares of Holyoke sold at 6c. per share. Proustite came out at $1, which price it held all week. Shoshone was steady at from 12c. to 14c.

It is stated that the mine of the Plymouth Consolidated Mining Company has been opened, but we have not been able to have this report confirmed. No sales of the stock are reported.

Brunswick was again active, but shows a downward tendency; the price went from 24@19c.

Quicksilver Preferred has just announced a dividend of $53,750. The stock is firm at from $37@$38.75. Common is quoted at from $9.88@$9.50.

Bodie Consolidated went from $1.75 to $1.55,

IMPORTS AND EXPORTS OF METALS AT NEW YORK SEPTEMBER 4 TO SEPTEMBER 11, AND FROM JAN. 1.

IMPORTS.

Spelter.	Week. Tons.	Year Tons.
American Metal Co., Lt.	28	303
Friedensville Zinc Co.		23
Hendricks & Bros		56
H. Lamarche's Sons		6
Lewisohn Bros		33
J. Macy's Sons		28
Naylor & Co		131
Osgood, F		83
Perkins, C. L		725
Pope's Sons & Co		28
Total	28	1,416
Corres. date 1887	50	2,547
Zinc Sheets.	Tons.	Tons.
G. A. & E. Meyer		1
H. Lemanche's Sons		594
Milne & Co		1
Naylor & Co		81
Total		677
Nickel.	Lbs.	Lbs.
McCoy & Sanders		164,436
Total		164,436
Antimony.	Casks.	Casks.
Total	130	2,321
Corres. date 1887		2,678
Pig Lead.	Tons.	Tons.
Caswell, E. A		46
N. Corwith & Co		111
Hendricks Bros		122
Total		279
Corres. date 1887		2,183
Tin.	Tons.	Tons.
Abbott & Co., Jere		3,448
American Metal Co	73	316
Birdwell & French		89
Crooke S. & R. Co	83	320
Davol & Sons		8
Dickerson, Van Dusen		10
Funch, Edye & Co		10
Hendricks Bros	11	123
Knauth, W. & K		21
Lehnaier Sons & Co	7	7
Lewisohn Bros		15
Muller, Schall & Co	112	4,183
Nathan, Trotter & Co	22	22
Naylor & Co	123	1,238
Phelps, Dodge & Co	78	727
Pope, Jas. E., Jr		30
Pope's Sons & Co		124
Schwarer Bros		7
Thomsen & Co., A. A		17
Thomson & Co., D		203
Total	509	10,927
Corres. date 1887	206	8,287
Tin Plates.	Boxes.	Boxes.
American Metal Co	208	509
Bridge & Beach Mfg. Co.		339
Bruce & Cook	1,917	78,148
Byrne, James		21,677
Central Stamping Co.	1,262	27,573
Coddington & Co., T. B.	4,362	121,561
Corbierre, Fellows & S.		1,749
Cort & Co., N. L	4,583	80,337
Cons. Fruit Jar Co		849
Crooks & Co., Robert	3,450	50,742
De Mill & Co., H. R	1,192	16,322
Dickerson, Van Dusen	8,841	192,270
Dolly, T. G. F		112
Hamilton & M	362	362
Henly & Earle		38
Iron Clad Mfg. Co		119
Lalance & Grosjean	194	3,996
Lombard, Ayres & Co.	1,440	14,562
Merchant & Co		12,443
Mersick & Co., C. S	514	4,856
Morewood & Co., G	2,000	35,089
Naylor & Co		8,978
Newall Bros		158
Phelps, Dodge & Co	30,491	489,654
Potts, W. A., Son & Co.		573
Pratt Mfg. Co	4,905	122,499
Saunders Bros		330
Shepard & Co., Sidney	1,339	75,264
Somers Bros		440
Stroud & Co		686
Taylor, N. & G		455
Thomsen & Co., A. A	6,341	109,387
Warren & Co		1,665
Wheeler & Co	624	5,825
Whittemore & Co., H		42,717
Wolff & Reesing		22,850
Wright & Sons, Peter		165
A. M. Underhill		21
Total	73,035	1,545,530
Corres. date 1887	55,327	1,365,069
Pig-Iron.	Tons.	Tons.
Abbott & Co., Jere		600
Austin, B. & Co		100
Baldwin Bros. & Co		100
Bartlett & Co., N. S	300	4,200
Crocker Bros		8,073
Crooks & Co., R		700
Dana & Co		600
Downing & Co		51
Drum'nd, McCall & Co.		20
Erie Despatch		250
Henderson Bros	300	1,575
Holt, H. N		50
Lee & Co., James		325
Milne & Co., A		2,467
Naylor		5,717
Perkins, C. L		5
Pierson & Co		15
Page, Newell & Co		13
Pope, Jas. E., Jr		150
Pratt Mfg. Co	10	10
Sanderson & Sons		2
Stetson & Co., G. W		11,107
Tonsila, M. R		120
Walbaum, W. H		200
Williamson & Co., Jas.	100	3,500
Wright & Son, P		20
Total	710	40,070
Corres. date 1887	2,990	108,889

Copper.	Week. Pounds.	Year. Pounds.
Lewisohn Bros. from Liverpool		161,824
Steel Sheets, Billets, Forgings, etc.	Tons.	Tons.
Abbott & Co., Jere	15	1,911
Arkell, Jas		17
Belcher, H. U		13
Bowker, C. F	6	262
Bruce & Cook		7
Carey & Moen		24
Carter, G. T		273
Cohn, M	12	159
Cooney, D. J		20
Crooks, R. & Co	23	755
Crousbey, H		236
Dana & Co		452
Downing & Co., R. F.	57	382
Henderson Bros		31
Holt, H. N		6
Hondolette & D		106
Hugill, Chas	8	157
Irwin & Son, Thos		1
Lalance & G. Mfg. Co.		245
Lazard Freres		50
Leng, J. S	21	43
Lebenberg, N		36
Littlejohn, Jas		40
Lundberg, G		105
Mersick & Co		128
Milne & Co., A	44	1,324
Montgomery & Co		52
Moore's Son & Co		25
Muller, Schall & Co		5
Manas, J. & Son		10
Naylor & Co	10	10,758
Newton & Shipman		59
Ogden & Wallace		241
Phelps, Dodge & Co		3
Phœnix Steel Co		20
Pierson & Co		758
Pilditch, F. S	84	310
Power, C. W		50
Pratt, Whitney & Co	33	33
Prosser, Thomas	54	2,659
Roebling's Sons, J. A		390
Sanderson & Son		42
Shotts Iron Co		15
Strouse & Co		37
Temple & S	2	10
Union Bridge Co		288
Wagner, W. F	18	869
Walbaum, W. H		2,479
Wallace, W. H & Co		41
Webb, J. B		1
Wetherill & Co		5
Wheeler & Co., E. S		12
Whiting, E. W		11
Whitney & Co	2	41
Williams & Whitney	29	29
Wilson, J. G		10
Whittemore & Co		6
Wolff, R. H		217
Wright's Sons & Co		10
Total	418	25,262
Corres. date 1887	4,118	66,241
Bar-Iron.	Tons.	Tons.
Abbott & Co., Jere		2,237
Abeel Bros		3
Bacon & Co	30	150
Hugh Cranshaw		1
Downing & Co		151
Jacobus, E. Y		15
Lilienberg, N		5
Lundberg, Gustaf		700
Milne & Co., A	38	133
Naylor & Co	100	176
Ogden & Wallace		4
Page, Newell & Co		122
Philip, C. M		20
Stroud & Co		8
Wallace & Co., W. H.		16
Wilson, J. G		7
Totals	168	3,748
Corres. date 1887	63	9,460
Steel & Iron Rods.	Week. Tons.	Year. Tons.
Abbott & Co., Jere		6,221
American Screw Co		848
Bacon & Co	114	223
Baldwin Bros. & Co		53
Carey & Moen	22	628
Cohn, M		60
Dana & Co	400	3,118
Downing & Co., R. F.		247
Galpin, S. A		2,420
Heyn, A		1,735
Hugill, Chas		33
Jacobus, E. Y		12
Lazard Freres		695
Leng, J. S		17
Lilienberg, N		100
Lundberg, Gustaf		120
Milne & Co., A		1,498
Montgomery & Co		65
Muller, Schall & Co		150
Naylor & Co	695	15,984
Newton, & Shipman		2
N. Y. Barb Wire Co		20
Page, Newell & Co		152
Perry & Ryer		100
Pierson & Co		31
Pilditch, F. S		11
Prosser, Thos		132
Roebling's Sons, J. A		1,614
Sanderson & Son		67
Sheldon & Co., G. W		11
Walschid C. A		15
Washburn Mfg. Co		35
Whittemore & Co		1,705
Wilson, J. G		26
Wolff & Co., R. H	4	1,940
Total	1,235	39,998
Corres. date 1887	1,335	85,787

Old Rail.	Week. Tons.	Year. Tons.
Baldwin Bros		100
Bowening & Archibald		100
Brown Bros. & Co		668
Crossman & Bro., W. H		1,005
D., L. & W. R. R		409
Frankfort, M		100
Geisenheimer & Co		100
Henderson Bros		537
Neumark & Gross		1,912
Stetson & Co., Geo. W		230
Waltam & Co		300
Winter & Smillie		80
Total		5,541
Corres. date 1887	1,619	119,311
Sheet Iron.	Tons	Tons.
Coddington & Co	18	1,463
Crooks, R. & Co		10
Newton & S		4
Wagner, W. F		40
Whitney & Co		5
Total	18	1,522
Corres. date 1887	35	1,466
Scrap-Iron.	Tons.	Tons.
Bowring & Archibald		200
Brown Bros. & Co		20
Burgess & Co		172
Crossman, W. H. & Co.		47
Geisenheimer & Co		565
Gerhardt, P. T		8
Johnson, L. & Co		85
Muller, Schall & Co		15
Neumark & Gross		321
Purdon & W		75
Salter & L		
Trowbridge & Co., D		75
Ward & Co., J. E		150
Total		1,823
Corres. date 1887	20	14,684
Charcoal Iron.	Tons.	Tons.
Abbott & Co., Jere		3
Bacon & Co		102
Downing & Co		25
Lilienberg, N		15
Lunberg, G		16
Mersick & Co		7
Milne & Co	3	18
Muller, Schall & Co		112
Naylor & Co		97
Page, Newell & Co		307
Sanderson & Son		1
Total	3	766
Spiegeleisen.	Tons.	Tons.
Abbott & Co., Jere		206
Arkell, Jas		78
Crocker Bros	209	3,474
Dana & Co		1,551
Geisenheimer & Co		248
Jansen, J. A		10,293
Naylor & Co		8,317
Perkins, C. L		2,443
Pierson & Co		1,050
Post, Martin & Co	320	320
Total	529	28,979
Corres. date 1887	3,047	83,062
Iron Ore.	Tons.	Tons.
Cormack & Co		1,022
De Flores, R		7,478
Earnshaw, A		6,013
Ennis & Co		1,721
Johnston & Co		300
Naylor & Co		3,706
Outerbridge & Co., A.E.		340
Wright, Chas. L. & Co.		1,630
Total		22,210
Corres. date 1887	1,100	41,969

EXPORTS.

Copper.	Week. Pounds.	Year. Pounds.
Abbott & Co		10,379,049
Amer. Metal Co	112,099	5,424,671
Becker, & Co., H		1,250
Bridgpt. Copper Co		112,000
Copper Queen		224,036
Crooks & Co, R	1,000	1,000
Crossman & Bro		4,000
Herold, Emil		250,000
Ismay, J. Bruce		115,000
Jones, R. W		189,984
Ladenburg, T. & Co.	229,371	229,371
Ledoux & Co		110,276
Lewisohn Bros		4,910,254
Lomal, F. A		2,691,293
Mendel, S		560,000
Muller, Schall		1,105,000
Naylor & Co	280,000	280,000
Neumark & Gross		120,143
Orford Co		574,881
Parsons & Co		206,250
Phelps, Dodge		230,664
Pope's Sons	175,000	1,513,780
Todd & Co		112,026
Total	797,470	29,354,926
Corres. date 1887		8,930,448
Copper Matte.		
Abbott & Co		601,145
Amer. Metal Co.,		3,427,532
Kunhardt & Co		41,652
Ledoux & Co		469,720
Lewisohn Bros		1,126,822
Nichols & Co		516,783
Wilm's, Terhune		35,665,569
Total		41,849,223
Corres. date 1887		26,776,415
Copper Ore.		
American Metal Co	119,000	524,698
Kunhardt & Co		37 682
Mallory & Co		167,065
Total	119,000	729,445
Corres. date 1887		681,068

CURRENT PRICES.

CHEMICALS.

Acid—Acetic ....2¼@2½
Muriatic, 18°, ℔ 100 lbs ... 1.15@1.20
Muriatic, 20°, ℔ 100 lbs ... 1.35@1 50
Nitric, 36°, ℔ 100 lbs ... 5.00
Nitric, 42°, ℔ 100 lbs ... 5.50@7.00
Oxalic ... 6½@8
Sulphuric, 60°, ℔ 100 lbs. ... 90@95
Sulphuric, 66°, ℔ 100 lbs ... 95@1.10
Alkali—36 p. c. ... 1.10@1.15
48 p. c ... 1.22½@1.25
Refined, 58° ... 1.15 @1.25
Alum—Lump, ℔ lb ... 1¾
Ground, ℔ lb ... 1½@2
Lump ℔ ton, Liverpool ... £5
Sulphate of Alumina, ℔ ton ... £3 15
Aqua Ammonia—18°, ℔ lb ... 4¾
20°, ℔ lb ... 6
22°, ℔ lb ... 6@7
26°, ℔ lb ... 10@11
Ammonia—Sul., ℔ 100 lbs ... 3.10@3 15
Carb., per lb ... 7¾
Muriate, per lb ... 6½@ 8
Arsenic—White, powdered, ℔ lb. 3¼@3½
Red, ℔ lb ... 5½@5¾
White, at Plymouth, ℔ ton ... £11 10
Asbestos—Am., p. ton ... $20@$100
Italian, p. ton, c. i. f. L'pool ... £18 0 0
Asphaltum—P. ton ... 13.00
Prime Cuban, ℔ lb ... 5@6c.
Hard, ℔ ton ... $28.00
Trinidad, refined, ℔ ton ... $30.00
Barytes—Sulph., Am. prime white 16.00
Sulph., foreign, floated, p. ton ... 19.00
Sulph., off color, p. ton ... 12.50
Carb., lump, f.o.b. L'pool, ton ... £6 0 0
No. 1, casks, Runcorn " " £4 10 10
No. 2, bags, Runcorn " " 3 15 0
Bleach—Over 35 p.c., ℔ lb. 1.85 @1.92½
Borax—℔ lb ... 7¾
Refined at Liverpool, ℔ ton ... £31
Brimstone—*See Sulphur.*
Bromine—℔ lb ... 36
Chalk—℔ ton ... 3.50
Precipitated, ℔ lb ... 4
China Clay—English, ℔ ton ... 18.50
Southern, ℔ ton ... 13.50
Chrome Yellow—℔ lb ... 10@25
Cobalt—Oxide, ℔ lb ... 2·50@2·90
Copper—Sulph. English Wks., ton £20 10s.
Precip., Eng. Wks, unit ... fluctuating
Copperas—Common, ℔ 100 lbs. 50@57½
Best, ℔ 100 lbs ... 1.00
Liverpool, ℔ ton, in casks ... £1 16 1.20
Cream of Tartar—Am. 99% ... 32@32¾
Powdered, 99 p. c ... 33½
Emery—Grain, ℔ lb ... 4
Flour, ℔ lb ... 2½
Feldspar—Ground, ℔ ton ... 15.00
Fuller's Earth—Lump, ℔ bbl. .90 @95
Powdered, ℔ lb ... 2
Gypsum—Calcined, ℔ bbl. ... 1.25
Iodine—Resublimed ... 3.60
Kainit—℔ ton ... 10.00
Kaolin—*See China Clay.*
Lead—Red, ℔ lb ... 6
White, American, in oil, ℔ lb ... 6½
White, English, ℔ lb ... 7½
Acetate, or sugar of ... 13@13½
Lime Acetate—Amer. Brown. 1.15@1.20
" Gray. .2.25@2.30
Litharge—Powdered, ℔ lb ... 6@6¼
English flake, ℔ lb ... 9
Magnesite—Greek, ℔ ton ... 10.00
Manganese—lump, c.i.f. L'pool. 55s.
Per unit, up or down ... 1s. 6d.
Ground ... £5 10
Mercuric-Chloride — (*Corrosive sublimate*) ℔ lb ... 55
Mineral Wool—℔ lb ... 2
Mica—In sheets according to size, 1st quality, ℔ lb ... 25@$6.00
Phosphate Rock—S. Carolina, per ton f. o. b. Charleston ... 5.00
Ground, ex vessel New York. 9.50@9.75
Canadian Apatite, lump, f. o. b. at shipping port, ℔ unit ... 24
Phosphorus—℔ lb ... 65
Plumbago—Ceylon, ℔ lb ... 4@5
American, ℔ lb ... 5@7
London, ℔ cwt ... £0 15 0
Potassium—Cyanide, ℔ lb ... .39@40
Bromide, ℔ lb ... 37
Chlorate, ℔ lb ... 14½@14¾
Carb. ℔ lb ... 4.70@5.50
Caustic, ℔ lb ... 7½
Iodide ... 2.70@2.75
Muriate, ℔ 100 lbs ... 1.80@1.85
Nitrate, refined, ℔ lb ... 6
Bichromate, ℔ lb ... 10½
Sulphate, ℔ 100 lbs ... 1.15@2 35
Yellow Prussiate, ℔ lb ... 19
Red Prussiate, ℔ lb ... 42
Pumice Stone—Select lumps, lb. 3¼
Original cks., ℔ lb ... 1¾
Powdered, pure, ℔ lb ... 2¼@2½
Pyrites—Non-cupreous, p. unit, d. 5
Quartz—Ground, ℔ ton ... 18.00
Rotten Stone—Powdered, ℔ lb. 3¼@3⅛
Lump, ℔ lb ... 6@10
Eng., powdered, ℔ ton ... £4
Lump, ℔ ton ... £5
Salt—Liverpool, ground ℔ bbl. ... 70
Turk's Island, ℔ bbl ... 25
Salt Cake—℔ 100 lbs ... 50
Saltpeter—Crude, ℔ lb ... 5@5½
Refined, ℔ lb ... 6@8
Soda Ash—Carb., 48% 100 lb ... 1.22½
Caustic, 48% ... 1.22½
High test ... 1.12½@1.15
Soda Caustic, 60% ... 2 30 @2.35
" " 70% ... 2.15 @2.20
" " 74-5% ... 2.20
Sal, English, ℔ 100 lbs ... 1.15
Sal, American, ℔ 100 lbs ... .95 @1 20
Nitrate, ℔ 100 lbs ... 2.12½@2.20
Strontium—Nitrate ℔ lb ... 10½
Sulphur—Roll, ℔ lb ... 1¾
Flour, ℔ lb ... 2
Crude Brimstone, 2s., ℔ ton. 20.00@23.00
Crude Brimstone, 3ds, ℔ ton. 19.50@21.00
Talc—Ground French, ℔ lb ... 1¼
Domestic, ℔ lb ... 6
Domestic, ℔ ton ... 15.00
c. i. f. Liverpool, ℔ ton ... £4 5 0
Tannin—Pure, ℔ lb ...
Vermillion—American, ℔ lb ... 58
English, ℔ lb ... 82@85
Vitriol—(Blue), Ordinary, ℔ lb ... 5½
Extra, ℔ lb ... 6@6¼
Zinc Oxide—Am., Dry, ℔ lb ... 4½
Antwerp, Red Seal, ℔ lb ... 6@6½
Paris, Red Seal, ℔ lb ... 6½@7
* Spot.

BUILDING MATERIAL.

Bricks—Pale, per 1,000 ... 2.25@2.75
Jerseys, per 1,000 ... 4.00@5.00
Hackensacks ... 4.75@5.25
Up Rivers, per 1000 ... 4.25@5.00
Haverstraw, per 1,000 ... 5.75@6 25
Haverstraw seconds, per 1000 4.25@5.50
Fronts, nominal.
Croton ... 14.00@16.00
Wilmington ... 23.00@24.00
Philadelphia ... 24 00@26.00
Trenton ... 24.00@25.00
Baltimore ... 37.00@40.00
Building Stone—Amherst freestone, per cu. ft ... 95@1.00
Brownstone, per cu. ft. ... 1.00@1.35
Belleville, N. J., red and gray rock, ℔ cu. ft ... 1.00
Corncockle red freestone, ℔ cu. ft ... 1.00
Granite, rough, ℔ cu.ft ... 45@1.25
Granite, Scotch ... 1.00@1.05
Cement—Rosendale, ℔ bbl ... .90@1.00
Portland, American, ℔ bbl ... 2 00
Portland, foreign, ℔ bbl ... 2.20@2.45
Keene's coarse ... 4.50@5.50
Keene's fine ... 7.00@8.25
Slate—Purple and green roofing, per 100 ft ... 5.00@6.00
Red roofing, per 100 sq. ft ... 15.00
Black, roofing, per 100 sq. ft. 4.00@5.00
Lime—Rockland, common ... .95@1.00
Rockland, finishing ... 1.25
St John, com. and finish ... .90
Labor—Ordinary, per day ... 1.50@2 00
Masons, per day ... 4.00
Plasterers, per day ... 4.00
Carpenters, per day ... 3.50
Plumbers, per day ... 3.50
Painters, per day ... 2.50@3.50
Stonesetters, per day ... 3.50@4 00
Tilelayers ... 3.50@4.50
Bricklayers ... 4 00

THE RARER METALS.

Aluminum—(Metallic), per lb ... $5.00
Arsenic—Metallic, per lb ... 32
Barium—(Metallic), per lb ... 975.00
Bismuth—(Metallic), per lb ... 2.40
Cadmium—(Metallic), per lb ... 150.00
Calcium—(Metallic), per oz ... 150.00
Cœsium—(Metallic) ...
Cerium—(Metallic) per oz ... 160.00
Chromium—(Metallic), per lb ... 200.00
Cobalt—(Metallic), per lb ... 6.00
Didymium—(Metallic), per oz ... 160.00
Erbium—(Metallic), per oz ... 140.00
Gallium—(Metallic), per oz ... 3250.00
Glucinum—(Metallic) ... 4.50
Indium—(Metallic), per oz ... 158.00
Iridium—(Metallic), per lb ... 700.00
Lanthanum—(Metallic), per oz. 175.00
Lithium—(Metallic), per oz ... 160.00
Magnesium—Per lb ... 4.00
Manganese—Metallic, per lb ... 1.10
Molybdenum—(Metallic), per oz. 6.00
Nickel—(Metallic), per lb ... .65
Niobium—(Metallic), per oz ... 128.00
Osmium—(Metallic), per lb ... 640.00
Palladium—(Metallic), per lb ... 512.00
Platinum—(Metallic), per lb ... 128.00
Potassium—Metallic, per oz ... 2.00
Rhodium—(Metallic), per lb ... 512.00
Ruthenium—(Metallic), per oz. 112.00
Rubidium—(Metallic), per oz ... 200.00
Selenium—(Metallic), per oz ... 3.00
Sodium—(Metallic) per lb ... 4.50
Strontium—(Metallic), per oz ... 128.00
Tantalum—(Metallic) per oz ... 144.00
Telurium—(Metallic) per oz ... 9.00
Thallium—(Metallic) per oz ... 3.00
Titanium—(Metallic) per oz ... 32.00
Thorium—(Metallic) per oz ... 272.00
Tungsten—(Metallic) per oz ... 1.25
Vanadium—(Metallic), per oz ... 320.00
Yttrium—(Metallic), per oz ... 144 00
Zirconium—(Metallic), per oz ... 240.00

METALS.

Aluminum—
Bronze (10%), ℔ lb ... 46c.
Copper—
Lake Ingot, Spot, ℔ lb ... 17·50c.
Electrolytic, ℔ lb ... 16·50c.
Casting Brands, ℔ lb ... 15·50c
Chili Bars, London, ℔ ton ... £102
Sheet Copper (according to size), ℔ lb ... 25 @38c.
Lead—
Domestic, Common, Spot ... 4.97½c.
Foreign ... 5·20c.
Sheet, ℔ lb, net ... 7·00@7¼c. net
Pipe, ℔ lb ... 6½c. "
Tin lined Pipe, ℔ lb ... 15c. "
Shot, ℔ lb ... 7¼c.
Tin—
Tin Plates ... 14s. 6d.
Tin Spot in London ... £100
Pig tin, spot in N. Y., ℔ lb ... 22½c.
Zinc—
Domestic spelter, ℔ lb ... 4·80c.
Foreign spelter, ℔ lb ... 5⅝c.
Silesian, ton ... £18
Sheet, American, ℔ lb ... 6¼c.
Antimony—Hallet's, per lb ... 9¾c.
Cookson's, per lb ... 12¼c.
Star Antimony ... £38 5s.
Quicksilver—Per lb ... 61@63c.
London, ℔ flask ... £7@£7¼

IRON AND STEEL.

New York Prices.

American Pig-Iron.—At tidewater.
No. 1 X ... $18 00@$18.50
No. 2 X ... 17.00@ 17.50
Forge ... 16.00@.. ....
Scotch Pig—Coltness ... 21.00@ 22.00
Clyde ... 20.00@ 20.50
Dalmellington ... 20.00@ 20 50
Summerlee ... . @ ......
Shotts ... 21.00@ ......
Langloan ... 21.00@ .. ...
By Cable to-day to the Metal Exchange:
Scotch Warrants ... 42s. 6d.
Coltness, at Glasgow ... 51s. 0d.
Langloan, at Glasgow ... 49s. 6d.
Summerlee, at Glasgow ... 53s. 0d.
Gartsherrie, at Glasgow ... 48s. 0d.
Glengarnock, at Ardrossan ... 47s. 0d.
Dalmellington, at Ardrossan ... 43s. 6d.
Eglinton, at Ardrossan ... 42s. 3d.
Bessemer Pig—
Foreign, nominally ... $19.50@$20.00
Domestic ... 16@18.00
Spiegeleisen—
German, 20 per cent ... $26.00@$26.50
English, 20 " " ... 27.00@ 27.50
" 30 " " ... 31.50@ 32.00
Ferro Manganese, 80% ... 50.50@ 51 00
Steel Blooms, nominally ... .
Steel Billets, " ... 28 00@ 28.50
Steel Nail Slabs, " ... 29 50@ ......
Steel Wire Rods, " ... 39.75@ 40.00
Steel Rails—
Heavy sections, at mill ... $28.50@ 29.00
Light " " ... 30.00@ 34 00
Structural Iron and Steel—
Bridge Plate, at mill ... 2·0 @2·1c.
Angles, at mill ... 2·00@2·10c.
Tees, at mill ... 2 40@2·50c.
Steel Angles, at mill ... 2¼ @2½c.
Beams and channels, on wharf, 3·3c. base
Steel Plates—
Tank and Ship, on wharf ... 2·25@2·4
Shell, on wharf ... 2·4 @2·6
Flange, " ... 2¾ @3
Fire-Box, on wharf ... 3¼ @3½
Iron Plates—
Common tank, on wharf ... 2·1@2·2c.
Refined, on wharf ... 2·3@2·4c.
Shell, " ... 2·4@2½c.
Flange, " ... 3·4@3·5
Extra flange, on flange ... 3¾@4
Bar Iron—
Refined ... 1·7 @1·9c.
Common ... 1·55@1·65c.
Merchant Steel—
American tool ... 8½@10c.
Special grades ... 13 @20c.
Crucible machinery ... 5 @6c
" spring ... 4½c.
Bessemer machinery ... 2·2@2·5c
" spring ... 2·7@2·9c.
Cast-Iron Pipe—
According to size ... $25.00@$32.00
Wrought Iron Pipe—nominally—
Butt-Welded, Plain and Tarred, 55% disc; Galv., 47½% disc.
Lap-Welded, Plain and Tarred, 65% disc.; Galv., 55% disc.
Boiler Tubes—Per cent disc ... 65%
Rail Fastenings—
Spikes ... 2·1 @2·15c. delv'd
Angle Fish-bars ... @1·9c.
Bolts and Sq Nuts ... 2·7 @2·8c.
" Hex. " ... 3 @
Wrought Scrap—
Foreign, *ex store* ... @
No. 1 Yard *to vessel* ... 20.00@ 21.00
Cast Scrap ... 15.50@ 16.50
Old Car Wheels ... 18.00@
Old Rails—Tees ... 23.00@ 24.00
—Doubles ... 24.00@ 25.00
Nails—In car-load lots ... 1·85@1·90c.
—From store ... 1·95@ 2.00

Louisville Prices.

Hot Blast Irons—
So. Coke, No. 1 ... $17.25@$17.75
" " No. 2 ... 16 25@ 16.75
" " No. 2½ ... 15.75@ 16.25
Mahoning Valley (Lake Ore Mixture) ... 18.25@ 18.75
So. Charcoal, No. 1 ... 17.75@ 18.25
" " No. 2 ... 16.75@ 17.25
Missouri Charcoal No. 1 ... 19.25@ 19.75
" " No. 2 ... 18.75@ 19.25
Forge Irons—
Neutral Coke ... $14.00@$14.75
Cold Short ... 13.75@ 14.25
Mottled ... 12.50@ 13.00
Car Wheel and Malleable Irons—
Southern (standard brands). $22.00@$24.00
" (other brands) ... 18 00@ 18 50
Lake Superior ... 21.50@ 22.50

Pittsburg Prices.

Coke or Bituminous Pig—
Foundry No. 1 ... $17.50@18.00
Foundry No. 2 ... 16.50@16.75
Gray Forge No. 3 ... 16.25@16.50
" " No. 4 ... 15.25@15.50
White ... 14.50@15.00
Mottled ... 15.00@15.25
Silvery ... 16.50@18.50
Bessemer ... 18.00@18.25
Low Phos ... 22.50@23.00 cash
Charcoal Pig—
Foundry No. 1 ... 23.50@24.50
Foundry No. 2 ... 22.00@24.00
Cold-Blast ... 25.00@27.00
Warm-Blast ... 24.00@25.00
20 p. c. Spiegel ... 27.50@27.75
Muck-Bar ... 29.00@29.50
Steel Blooms ... 29.00@29 5
Steel Slabs ... @29 00
Steel Crop Ends ... @20.00
Steel Bloom Ends ... @19.50
Ferro Manganese, 80% ... 54.00@ ....
Steel Billets ... 29.50 at works
Old Iron Rails ... 25.00@ ....
Old Steel Rails ... 20.00@ ....
No. 1 W. Scrap ... 20 00@21.50
No. 2 W. Scrap ... 18.00@18.50
Steel Rails ... *31.50@32.00
" light sections ... *32.00@33.00
Bar Iron., nominal ... 1 75@ 1.80
Nails ... $2.00 usual discount
Steel Nails ... $2.00
Two per cent off for cash. * At works.

Philadelphia Prices.

Foundry No. 1 ... $18.00@19.00
Foundry No. 2 ... 17.00@17.50
Gray Forge ... 15.50@16.50
Bessemer Pig ... 19.50@20.00
Steel Rail Blooms ... 29.50@nom
Foreign Bessemer ... 19.50@20.00
Spiegeleisen ... 26.50@27.00
Scrap, Selected ... 22.00@23.00
No. 1 ... 21.00@20.00
Cargo Scrap ... 21.00@20.50
Muck-Bars ... 28.00@29.00
Merchant Iron ... 1.75@ 1.90
Plate Iron ... 2.00@ 2.10
Tank Iron ... 2.00@ 2.15
Skelp Iron ... 1.80@ 1.85
Angles ... 2.00@ 2.10
Beams and Channels ... 3.30.@..
Nails ... 1.90@ 2.00
Steel Rails ... 28.50@29.50
Old Rails ... 22.00@23.00

STOCK MARKET QUOTATIONS.

Baltimore, Md.

COMPANY.	Bid.	Asked.
Atlantic Coal	1.40	1.60@1.75
Balt. & N. C.	...	.38@ .40
Conrad Hill	.07@ .10	.10@ .15
George's Crk. C.	101	103
Lake Chrome	.05@ .07	....
N. State, Balto	.10@ .15	.30
Ore Knob	.06@ .10	.10@ .15
Silver Valley	.90@ .95	1.00@1.05

Highest and lowest prices bid and asked during the week ending September 13th.

Birmingham, Ala.

COMPANY.	Bid.	Asked.
Ala. Conn. C.	....	25
Bir. Min. & Mfg.	120	175 @190
Bir. Fur. & Mg.	....	16
Broken Arrow C. & M.	....	12¾@ 13⅝
Decat. L. Imp. & Fur	11 @12½	11½@ 13⅝
Decatur Min. L.	23	...
Enterprise Mfg. Co	....	50@90
Jagger-Townley C. & C. Co.	....	11
Mag-Ellen C. & Mg	65	...
No. Bus. Crk., C. & Mg	4	7½
Sloss I. & S.	16	17
* Sloss I. & S.	77¾	....
Sheffield C. & I.	85	88½@ 90
Tenn. C. & I. Co.	29 @31¾	29½@ 32
* Williamson Iron Co	99¾	....
Woodstock S&I	20 @25	45 @ 50

* Bonds.
Highest and lowest prices bid and asked during the week ending September 10th.

Pittsburg, Pa.

COMPANY.	H.	L.	Closing
Allegegheny Gas	65.00	65.00	65.00
Charlotte Mg. Co.	4.00	3.00	3.00
Chartiers Val. Gas.	58.00	57.00	57.50
Columbia Oil Co.	4.50	4.25	4.50
La Noria Mining	2.00	1.75	2.00
M'f'turers' Gas	25.00	24.00	24.88
N. Y. & C. Gas Coal	30.00	30.00	30.00
Ohio Valley Gas	40.00	39.00	40.00
Philadelphia Co.	46.25	45.38	45.63
Pittsburg Gas	65.00	65.00	65.00
Silverton Mining	2.00	2.00	2.00
Tuna Oil Co	62.50	60.00	60.00
Washington Oil	70.00	63.00	65.00
W't'h'se Air-Brake	125.00	119.50	123.88
West'house Brake	63.00	62.00	63.00
Westmoreland & Cambria Gas	50.00	50.00	50.00
Wheeling Nat. Gas.	28.00	27.75	28.00
Yankee Girl Mg	7 00	7 00	7.00

Highest and lowest prices bid and asked during the week ending Sept. 13th.

Foreign Quotations.

London. September 1.

COMPANY.	Highest.	Lowest.
Alturas Gold, Idaho	7s.	6s.
Arizona Copper, Ariz.	18s. 6d.	18s.
Birdseye Creek, Cal.	6s.	5s.
Carlisle, N. Mex	18s.	16s.
Centennial, Cal.	7s. 6d.	5s.
Colorado United, Colo.	5s.	3s.
Columbian, S. A.	£1⅝	£1½
Cons. Esmeralda, Nev.	7s.	6s.
Denver Gold, Colo	1s. 3d.	9d.
Dickens Custer, Idaho.	6s. 6d.	5s. 6d.
Eberhardt, Nev	1s.	6d.
El Callao, Venezuela	£2½	£2
Empire, Mont	18s.	16s.
Flagstaff, Utah	4s.	3s.
Garfield, Nev	18s. 9s.	16s. 3d.
Gold Hill, N. C.	2s.	1s.
Ilex, Cal	10s.	7s. 6d.
Josephine, Cal	7s. 6d.	5s.
Kohinoor, Colo	3s.	2s.
Mason & Barry, Portugal	£10¼	£10
Montana Lt., Mont	£1¾	£1⅝
New California, Colo	6s.	5s.
New Emma, S., Utah	5s.	4s. 6d.
New Hoover Hill, N. C.	2s.	1s. 6d.
New La Plata, Colo	2s.	1s. 6d.
Pittsburg Cons., Nev	£1⅜	£1⅛
Quebrada, Venezuela	£5	£4¾
Richmond Con., Nev	£3	£2¾
Ruby & Dunderberg, Nev	3s.	2s.
Russell Gold, N. C.	4s.	3s.
Sierra Buttes, Cal.	£⅝	£½
Stanly, N. C.	7s.	5s.
Tolima, Colombia, S.A.	£2¼	£1¾
U. S. Placer, Colo	11s.	10s.
Viola Lt., Idaho	16s. 6d.	15s. 6d

*Paris.** August 30.

El Callao	66.50	66.50
Golden River	410	410
Lexington	95	95
" parts	4.50	4 50
Rio Tinto	533 75	533 75
" obligations	516.25	516.25
" " 2d.	507.50	507.50
Tharsis	146.25	146.25

* Francs.

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par	Assessments. Total levied.	Assessments. Date and amount of last.			Dividends. Total paid.	Dividends. Date and amount of last.		
1	Adams, S. L.	Colo.	$1,500,000	150,000	$10	*				$555,000	Jan.	1887	.15
2	Alice, S. C	Mont	10,000,000	400,000	25	*				750,000	Sept	1886	.06¼
3	Alturas, G	Idah.	1,500,000	300,000	5					95,000	Sept	1888	.50
4	Amy & Silversmith, S.	Mon.		341,419						247,530	Aug.	1887	.12½
5	Atlantic, C.	Mich	1,000,000	40,000	25	$280,000	Apl.	1875	$1.00	480,000	Aug.	1888	1.50
6	Argenta, S.	Nev..	10,000,000	100,000	100	325,000	July	1885	.10	40,000	Feb.	1880	20
7	Aurora, I.	Mich	2,000,000	100,000	20					165,000	Oct.	1887	1.87½
8	Bassick, G. S.	Colo.	10,000,000	100,000	100	*				400,000	Mar.	1884	1.00
9	Belle Isle, S.	Nev..	10,000,000	100,000	100	145,000	Feb	1887	.20	300,000	Dec.	1879	.25
10	Belcher, G. S.	Nev..	10,400,000	104,000	100	2,718,000	July	1888	.50	15,397,200	Apl	1876	1.00
11	Bellevue Idaho, S. L.	Idah.	1,250,000	125,000	10	57,500	Nov.	1887	.25	187,500	Jan	1887	10
12	Black Bear, G.	Cal..	3,000,000	30,000	100	22,500	Dec.	1884	.25	895,000	May	1883	.20
13	Bodie Con., G. S.	Cal..	10,000,000	100,000	100	450,000	Feb.	1888	.50	1,295,000	Apl.	1885	.50
14	Bonanza Developm't	C & M	3,000,000	300,000	10					135,000	Oct.	1882	.15
15	Bonanza K'g, Cons. S.	Cal..	1,000,000	100,000	10	*				185,000	Feb.	1885	.10
16	Boston & Mont, G.	Mont	2,500,000	250,000	10	*				520,000	Jun	1886	.15
17	Boston & Mont., C. S	Mont	2,500,000	100,000	25	*				200,000	July	1888	2.00
18	Breece, S.	Colo.	,000,000	200,000	25	*				2,000	Feb.	1880	.01
19	Brooklyn Lead, L. S.	Utah	500,000	50,000	10					127,000	July	1887	.05
20	Bulwer, G.	Cal.	10,000,000	100,000	10	80,000	May	1888	.20	175,006	Jan.	1884	.10
21	Caledonia, G.	Dak.	10,000,000	100,000	100	505,000	May	1885	.15	40,000	Feb.	1886	.10
22	Calumet & Hecla, C.	Mich	2,500,000	100,000	25	1,200,000				30,850,000	Sept	1888	5.00
23	Carbonate Hill, S. L.	Colo.	2,000,000	200,000	10	*				80,000	Apl.	1884	.05
24	Caribou Con., S.	Colo.	1,500,000	150,000	10	*				50,000	Mch	1880	.10
25	Castle Creek, G.	Idah.	100,000	100,000	1					51,000	Oct..	1883	.03
26	Catalpa, S. L	Colo.	3,000,000	300,000	10	*				270,000	May.	1884	.10
27	Central, C.	Mich	500,000	20,000	25	100,000	Sept	1861	.06	1,890,000	Aug.	1888	1.50
28	Christy, S.	Utah	10,000,000	100,000	100					10,000	Jun.	1885	.10
29	Chrysolite, S. L.	Colo.	10,000,000	200,000	50	*				1,650,000	Dec.	1884	.25
30	Colorado Central, S. L	Colo.	2,750,000	275,000	10	*				337,500	Oct.	1888	.05
31	Confidence, S. L.	Nev..		24,960		287,440	Apl.	1887	.50	174,720	Aug	1888	1.00
32	Cons. Cal. & Va., G. S.	Nev.	21,600,000	216,000	100	108,000	Jan.	1885	.20	2,224,800	Sept	1888	.50
33	Contention, S	Ariz.	12,500,000	250,000	50					†2,587,000	Dec.	1884	.25
34	**Cop. Queen Cons, C.	Ariz.	1,400,000	140,000	10					70,000	July	1888	.50
35	Crescent, S. L. G.	Utah	15,000,000	600,000	25	*				210,000	Aug.	1886	.05
36	Crown Point, G. S.	Nev..	10,000,000	100,000	100	2,775,000	Apl.	1888	.50	11,588,000	Jan.	1875	2.00
37	Daly, S. L.	Utah	3,000,000	150,000	20					712,500	Aug.	1888	.25
38	Deadwood-Terra, G.	Dak..	5,000,000	200,000	25	‡				§1,000,000	Nov.	1887	.10
39	Derbec B. Grav., G. S.	Cal..	10,000,000	100,000	100	90,000	Dec.	1881	.10	180,000	May	1887	.10
40	Dunkin, S. L.	Colo.	5,000,000	200,000	25	*				335,000	July	1888	.05
41	Eclipse	Colo.	100,000	100,000	1					20,000	Nov.	1887	.10
42	Elkhorn, G. S.	Mont	1,000,000	100,000	10	50,000	July	1883	.50	170,000	July	1887	.05
43	Empire Lt., G.	Mont	500,000	100,000	5					70,500	Oct.	1887	.37½
44	Eureka Con., G. S. L.	Nev..	5,000,000	50,000	100	500,000	July	1886	1.00	4,918,500	July	1888	.25
45	Evening Star, S. L.	Colo.	500,000	50,000	10	*				1,400,000	Nov.	1883	.50
46	Excelsior, G.	Cal..	10,000,000	100,000	100	560,000	Sept	1885	1.00	875,000	Oct..	1880	.25
47	Father de Smet, G.	Dak..	10,000,000	100,000	100	200,000	Nov	1878	1.00	1,125,000	Dec.	1885	.20
48	Franklin, C.	Mich	1,000,000	40,000	25	220,000	Jun.	1871		720,000	July	1888	2.00
49	Freeland, G. S. C.	Colo.	5,000,000	200,000	25	*				190,000	July	1886	.10
50	Fresno Enterprise, G	Cal..	5,000,000	100,000	50		Mch	1883	.10	110,000	July	1882	.10
51	Garfield Lt., G. S.	Nev.	500,000	100,000	5					85,000	Apl.	1888	.12½
52	Golconda, G. S.	Idah.	1,000,000	100,000	10					120,000	May	1888	.60
53	Gould & Curry, G. S.	Nev..	10,800,000	108,000	100	5,301,000	Jun.	1888	.50	3,826,800	Oct.	1870	10.00
54	Grand Central, S.	Ariz.	1,000,000	100,000	10					625,000	Dec.	1882	.25
55	Grand Prize, S.	Nev..	10,000,000	100,000	100	570,000	Apl.	1886	.50	495,000	Mar.	1884	.25
56	Granite, S.	Colo.	125,000	125,000	1					6,250	May	1883	.01
57	Granite Mountain, S.	Mont	10,000,000	400,000	25					4,500,000	July	1888	.25
58	Green Mountain, G.	Cal..	1,250,000	125,000	10	*				212,000	Nov.	1881	.07½
59	Hale & Norcross, G. S	Nev..	11,200,000	112,000	100	5,086,000	July	1887	.50	1,822,000	Aug.	1888	.50
60	Hall-Anderson, G.	N. S..	150,000	150,000	1					7,000	Jan.	1882	.05
61	Hecla Con., S. G. L. C.	Mont	1,500,000	30,000	50					1,197,500	Aug.	1888	.50
62	Hel'a Mg & Red, G. S. L	Mont	3,315,000	663,000	5	*				197,970	July	1886	.06
63	Holmes, S.	Nev..	10,000,000	100,000	0	300,000	Sept	1885	.10	75,000	Apl.	1886	.25
64	Holyoke, G.	Idah.	200,000	200,000	1					27,000	Feb.	1883	.10
65	Homestake, G.	Dak.	12,500,000	125,000	100	200,000	July	1878	1.00	4,193,750	Aug.	1888	.20
66	Honorine, S. L.	Utah	500,000	250,000	2	25,000	Jun.	1883		125,000	Sept	1887	.05
67	Hope, S.	Mont	1,000,000	100,000	10	*				233,252	Apl.	1888	.25
68	Horn-Silver, S. L.	Utah	10,000,000	400,000	25	*				4,000,000	Nov.	1884	.50
69	Hubert, G.	Colo.	500,000	50,000	10	*				234,000	July	1888	.08
70	Idaho, G.	Cal..	310,000	3,100	100					4,943,500	Aug.	1888	10.00
71	Ideal, S. L.	Colo.	1,500,000	50,000	10					15,000	Oct.	1886	.05
72	Illinois, S.	N. M.	100,000	100,000	1	*				25,000	Jan.	1887	.25
73	Independence, S.	Nev..	10,000,000	100,000	100	340,000	Oct.	1886	.20	225,000	Sept	1879	.25
74	Indian Queen, S.	Nev..	250,000	125,000	2					368,750	July	1883	.03
75	Iron Hill, S.	Dak.	2,500,000	250,000	10	111,250	Jun.	1888	.04	156,250	Nov.	1887	.07½
76	Iron-Silver, S. L	Colo.	10,000,000	500,000	20	*				2,300,000	July	1888	.20
77	Jackson, G. S.	Nev.	5,000,000	50,000	100	10,000	Nov	1880	.20	45,000	Oct.	1886	.10
78	Jay Gould	Mont	2,000,000	40,000	5	*				267,000	Jun.	1888	.09
79	Jocuistita, S.	Mex.	2,500,000	250,000	10					1,200,000	Feb.	1885	.50
80	Jumbo, G.	Colo.	2,000,000	200,000	10					35,000	Oct.	1887	.02½
81	Kentuck	Nev.	3,000,000	30,000	100	342,000	Nov	1881	.30	1,350,000	Dec.	1886	.10
82	La Plata, S. L.	Colo.	2,000,000	200,000	10	*				610,000	Sept	1882	.30
83	Leadville Cons., S. L.	Colo.	4,000,000	400,000	10	*				423,000	Apl.	1887	.05
84	Lexington, G. S.	Mont	4,000,000	40,000	100	*				565,000	Jan.	1885	2.00
85	Little Chief, S. L	Colo.	10,000,000	200,000	50	*				800,000	July	1888	.10
86	Little Pittsburg, S. L	Colo.	20,000,000	200,000	100	*				1,050,000	Mch.	1880	.50
87	Manhattan, S.	Nev	5,000,000	50,000	100	250,000	Dec.	1887	1.00	437,500	Feb	1886	.25
88	Marion Bullion, G	N.C.	500,000							15,000	Jan.	1886	
89	Martin White, S.	Nev..	10,000,000	100,000	100	1,150,000	Mar.	1886	.25	140,000	Dec.	1886	.25
90	Mary Murphy, G. S.	Colo.	350,000	3,500	100	*				122,500	Feb.	1888	5.00
91	Minnesota, C.	Mich	1,000,000	40,000	25	420,000	Apl.	1886	1.00	1,820,000	Mar.	1876	
92	Mono, G.	Cal.	5,000,000	50,000	100	616,000	Sept	1887	.50	12,500	Mar.	1886	.25
93	Montana, Lt., G. S.	Mont	3,300,000	660,000	5	*				2,010,968	Apl.	1888	.25
94	Morning Star, S. L.	Colo.	1,000,000	100,000	10					775,000	Mar.	1888	.25
95	Moulton, S. G.	Mont	2,000,000	400,000	5	*				380,000	Dec.	1887	.07½
96	Mount Pleasant, G.	Cal.	150,000	150,000	1	*				150,000	Feb.	1887	.30
97	Mt. Diablo, S.	Nev.	5,000,000	50,000	100	137,500	Jun.	1880	2.00	120,000	Aug.	1888	.20
98	Napa, Q	Cal..	700,000	100,000	7					290,000	Jan.	1883	.10
99	Navajo, G. S.	Nev..	10,000,000	100,000	100	485,000	Apl.	1888	.30	325,000	Feb.	1885	.25
100	N. Hoover Hill, G. S.	N. C.	300,000	120,000	2½	*				30,000	Dec.	1885	.06¼
101	Northern Belle, S.	Nev..	5,000,000	50,000	100	425,000	Jan.	1884	3.00	2,400,000	Apl.	1883	.50
102	North Belle Isle, S.	Nev..	10,000,000	100,000	100	250,000	Mar.	1887	.50	230,000	May	1888	.50
103	Ontario, S. L.	Utah	15,000,000	150,000	100					9,425,000	Aug.	1888	.50
104	Ophir, G. S.	Nev..	10,000,000	100,000	100	4,109,440	Sept	1888	.50	1,595,800	July	1882	1.00
105	Original, S. C.	Mont	1,500,000	60,000	25	*				120,000	Apl.	1888	.05
106	Osceola, C.	Mich	1,250,000	50,000	25	480,000	Apl.	1876	1.60	1,172,500	Sept	1888	1.00
107	Oxford, G.	N. S.	125,000	125,000	1	*				33,500	Oct.	1885	.02
108	Paradise Valley, G. S	Nev.	10,000,000	100,000	100	62,000	Apl.	1888	.15	150,000	Apl.	1887	.10
109	Parrott, C.	Mont	1,800,000	180,000	10					210,000	July	1888	.20
110	Peacock, S. G. C.	N. M.	2,000,000	200,000	10	*				60,000	Nov.	1886	
111	Pleasant Valley, G. S.	Cal..	10,000,000	100,000	100	40,000	Mar.	1884	.10	30,000	Dec.	1882	.05
112	Plutus, G. S. C. L.	Colo.	2,000,000	200,000	10	*				20,000	Feb.	1886	.10
113	Plymouth Con., G.	Cal..	5,000,000	100,000	50	*				2,280,000	Feb.	1888	.40
114	Prussian, S. L.	Colo.	1,500,000	150,000	10					132,000	Jan.	1883	.10
115	Quicksilver, pref., Q.	Cal..	4,300,000	43,000	100					1,471,442	Oct.	1888	1.25
116	" com., Q.	Cal..	5,700,000	57,000	100					151,000	July	1882	.40
117	Quincy, C.	Mich	1,000,000	40,000	25	200,000	Dec.	1862		4,970,000	Aug.	1888	5.00
118	Richmond, S. L.	Nev..	1,350,000	54,000	25	*				4,312,587	Jun.	1887	1.25
119	Ridge, C.	Mich.	500,000	20,000	25	219,939	Mar	1886	.50	99,785	Feb.	1880	.50
120	Rising Sun, S.	Dak..	750,000	150,000	5	*				52,000	May	1881	.07½
121	Robinson Con., S. L.	Colo.	10,000,000	200,000	50	*				585,000	Mar.	1886	.05
122	Robert E. Lee, S. L.	Colo	10,000,000	500,000	20					100,000	Dec.	1882	.50
123	Rooks, G.	Vt.	500,000	50,000	10	*				61,000	Apr	1885	.40
124	Savage, S.	Nev..	11,200,000	112,000	100	6,380,000	Aug	1888	.50	4,460,000	July	1869	3.00
125	Security L. Mg., Mfg.	Colo.	1,000,000	100,000	10	*				50,000	July	1884	
126	Shoshone, G.	Idah.	150,000	150,000	1					7,500	Apl.	1883	.01
127	Sierra Buttes, G.	Cal..	2,225,000	122,500	10					1,492,557	Apl.	1888	.12½
128	Sierra Nevada, G. S.	Nev..	10,000,000	100,000	100	6,125,000	July	1888	.25	102,000	Jan.	1871	1.00
129	Sierra Nevada, S. L.	Idaho	1,000,000	¶	1	*				20,000	June	1888	.01
130	Silver Cord, G. S. L.	Colo.	5,000,000	500,000	10					225,000	Nov.	1883	.25
131	Silver King, S.	Ariz.	10,000,000	100,000	100	50,000	Jun.	1888	.50	1,950,000	July	1887	.25
132	Silver Mg. of L. V.	N. M.	500,000	500,000	1					25,000	June	1888	.05
133	Silverton, G. S. L.	Colo.	2,000,000	200,000	10	*				80,000	Nov.	1886	.02
134	Small Hopes Cons., S.	Colo.	5,000,000	250,000	20	*				3,112,500	Dec.	1887	.20
135	Smuggler, S. L.	Colo.	600,000	60,000	10					66,700	Aug.	1883	.25
136	Spring Valley, G.	Cal..	200,000	200,000	1	50,000	Oct.	1886	.25	50,000	Jan	1881	.25
137	Standard, G. S.	Cal..	10,000,000	100,000	100	25,000	Oct.	1884	.25	8,595,000	Jun.	1888	.05
138	Stormont, S	Utah	500,000	500,000	1	*				155,000	Nov.	1881	.05
139	St. Joseph, L	Mo..	1,500,000	150,000	10	*				844,000	Dec.	1887	.20
140	Surinam, G.	D. G.	3,000,000	600,000	5					105,000	Nov.	1887	.05
141	Swansea, G.	Colo.	600,000	60,000	10	*				9,000	Apl.	1888	.02½
142	Syndicate, G.	Cal..	10,000,000	100,000	100	38,729	July	1882	.15	48,308	Sept	1885	.10
143	Tamarack, C.	Mich.	1,000,000	40,000	25	520,000	Apl.	1885	3.00	440,000	Oct.	1888	5.00
144	Tip Top, S	Ariz.	10,000,000	100,000	100	250,000	Sept	1883	.25	100,000	Nov.	1881	.20
145	Tombstone, G. S. L.	Ariz.	12,500,000	500,000	25	*				1,250,000	Apl.	1882	.10
146	United Verde, C.	Ariz.	3,000,000	300,000	10	*				97,500	Feb.	1884	.20
147	Valencia, M.	N. H.	150,000	1,500	100	*				37,500	Apl	1886	2.50½
148	Viola Lt., S. L.	Idah.	750,000	150,000	5	*				222,500	Dec.	1887	.12
149	Yankee Girl	Colo.	2,500,000	250,000	10					1,275,000	July	1887	.10
150	Yellow Jacket, G. S.	Nev..	12,000,000	120,000	100	5,448,000	Dec	1885	.75	2,184,000	Aug	1871	1.50

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par Value.	Assessments. Total levied.	Assessments. Date & am't of last.		
1	Agassiz Cons., S. L.	Colo.	$2,500,000	50,000	$50	*			
2	Allouez, C.	Mich	2,000,000	80,000	25	$657,000	Jun	1888	1.00
3	Alpha Con., G. S.	Nev..	3,000,000	30,000	100	536,250	Jan.	1888	.87½
4	Alta, S.	Nev..	10,080,000	100,800	100	2,191,200	May	1888	.50
5	Amador, G.	Cal..	400,000	200,000	2	*			
6	American Flag, S.	Colo.	1,250,000	125,000	10	300,000	Jun	1877	.50
7	Anglo-Montana, Lt.	Mon.	600,000	120,000	5				
8	Appalachian, Lt., G.	N. C.	1,500,000	300,000	5				
9	Aspen Mg. & S., S. L.	Colo.	2,000,000	200,000	10				
10	Barcelona, G.	Nev..	5,000,000	200,000	25	*			
11	Bechtel Con., G.	Cal..	10,000,000	100,000	100	173,500	Jan.	1883	.10
12	Belmont, S.	Nev..	5,000,000	50,000	100	735,000	Apl.	1886	.10
13	Best & Belcher, G. S.	Nev..	10,080,000	100,800	100	2,029,390	Jun.	1888	.25
14	Big Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*			
15	Bi-Metallic, S.	Mon.	5,000,000	200,000	25	*			
16	Black Oak, G.	Cal..	3,000,000	300,000	10	*			
17	Boston Con., G.	Cal..	10,000,000	100,000	100	170,000	Nov	1888	.25
18	Bremen, S.	N. M.	5,000,000	500,000	10	*			
19	Brunswick, G.	Cal..	2,000,000	400,000	5	*			
20	Bullion, G. S.	Nev..	10,000,000	100,000	100	4,007,000	Aug.	1888	.50
21	Bye and Bye	Ariz.	1,000,000	100,000	10	*			
22	Calaveras, G.	Cal..	500,000	500,000	1	*			
23	Carisa, G.	Wy.	500,000	100,000	5	*			
24	Carupano, G. S. L. C.	Ven.	200,000	100,000	2	*			
25	Cashier, G. S.	Colo.	500,000	250,000	2	*			
26	Cen. Contin'l, G. S. L.	C. & A	2,000,000	200,000	10	*			
27	Charles Dickens, G. S.	Idah.	1,250,000	250,000	5	*			
28	Cherokee, G.	Cal..	1,500,000	150,000	10				
29	Chollar, S.	Nev..	11,200,000	112,000	100	1,264,000	July	1888	.50
30	Cinnamon Mt., G. S.	Colo.	750,000	150,000	5				
31	Cleveland, T.	Dak.	1,000,000	500,000	2	*			
32	Comstock, G. S.	Nev..	10,000,000	100,000	100	30,000	Mar.	1887	.15
33	Con. Imperial, G. S.	Nev.,	5,000,000	50,000	100	1,175,000	Sept	1887	.25
34	Con. Pacific, G.	Cal..	6,000,000	60,000	100	177,000	Sept	1887	.10
35	Cons. Silver, S.	Mo.	2,500,000	250,000	10				
36	Courtlandt	Colo.	500,000	50,000	10				
37	Crescent, S. L.	Colo.	3,000,000	300,000	10	*			
38	Crocker, S.	Ariz.	10,000,000	100,000	100	105,000	Feb.	1888	.20
39	Crowell, G.	N. C.	500,000	500,000	1				
40	Dahlonega, G.	Ga.	250,000	250,000	1	*			
41	Dandy, S.	Colo.	5,000,000	500,000	10				
42	Dardanelles, G.	Cal..	1,000,000	100,000	10				
43	Decatur, S.	Colo.	1,500,000	300,000	5	*			
44	Denver City, S. L	Colo.	5,000,000	500,000	10	*			
45	Denver Gold, G.	Colo.	300,000	60,000	5				
46	Durango, G.	Colo.	500,000	500,000	1	*			
47	Eastern Dev. Co., Lt.	N. S.	1,500,000	150,000	10	990,000	Mar.	1886	1.00
48	El Cristo, G. S.	U.S.C	1,000,000	500,000	2				
49	El Dorado, G	Cal.	1,000,000	250,000	4	*			
50	El Talento, G.	U.S.C	1,000,000	500,000	2				
51	Empire, S.	Utah	10,000,000	100,000	100				
52	Eureka Tunnel, S. L.	Nev..	10,000,000	100,000	100	*			
53	Exchequer	Nev.	10,000,000	100,000	100	790,000	Sept	1888	.20
54	Found Treasure, G. S.	Nev..	10,000,000	100,000	100	18,030	July	1882	.06
55	Gogebic I. Syn., I	Wis.	5,600,000	200,000	25				
56	Gold Cup, S.	Colo.	500,000	500,000	1	*			
57	Golden Era, S.	Mon.	2,000,000	200,000	10	*			
58	Gold Placer, G.	Colo.	5,000,000	200,000	25	229,314	Dec.	1885	.25
59	Gold Rock, G.	Cal.	1,000,000	500,000	2	*			
60	Goodshaw, G.	Cal..	10,000,000	100,000	100	*			
61	Grand Belt, C.	Tex.	12,000,000	120,000	100				
62	Grand Duke	Colo.	800,000	80,000	10				
63	Great Remance, G.	U.S.C	1,000,000	500,000	2	*			
64	Gregory-Bobtail, G.	Colo.	550,000	550,000	1	*			
65	Gregory Con., G.	Mon.	3,000,000	300,000	10				
66	Harlem M. & M. Co., G.	Cal..	1,000,000	200,000	5				
67	Head Cent. & Tr. S. G.	Ariz.	10,000,000	100,000	100				
68	Hector, G.	Cal..	1,500,000	300,000	5				
69	Highland, C.	Mich	500,000	25,000	25				
70	Hollywood	Cal..	200,000	100,000	2				
71	Hortense, S.	Colo.	2,000,000	200,000	10				
72	Huron, C	Mich	1,000,000	40,000	25	280,000	May	1887	3.00
73	Iron Gold & Silver, S	N. M.	2,000,000	200,000	10	*			
74	Ironton, I.	Wis.	1,000,000	40,000	25				
75	Iroquois, C	Mich	1,250,000	50,000	25				
76	J. D. Reymert	Ariz.	10,000,000	100,000	100	*			
77	Julia Cons., G. S.	Nev..	11,000,000	110,000	100	1,650,000	Apl.	1887	.10
78	Kearsarge, C.	Mich	1,250,000	50,000	25	190,000	Oct.	1887	1.00
79	Lacrosse, G.	Colo.	1,000,000	100,000	10	*			
80	Lee Basin, S. L.	Colo.	5,000,000	500,000	10	*			
81	Lucerne, S.	Colo.	5,000,000	500,000	10	*			
82	Mammoth Bar., G.	Cal..	10,000,000	100,000	100	50,000	Dec.	1881	
83	May Belle, G.	Cal..	10,000,000	100,000	100	84,000	Mar.	1884	.15
84	Mayflower Gravel	Cal..	1,000,000	100,000	10	375,000	July	1888	.50
85	Medora, G.	Dak.	250,000	250,000	1				
86	Mexican, G. S	Nev..	10,000,000	100,000	100	2,725,760	Aug	1888	.25
87	Middle Bar G.	Cal..	400,000	200,000	2	*			
88	Mike & Starr, S. L.	Colo.	1,000,000	200,000	5	*			
89	Monitor, G.	Colo.	100,000	100,000	1	*			
90	Moose Silver, S.	Colo.	3,000,000	300,000	10				
91	Native, C.	Mich	1,000,000	40,000	25				
92	Neath, G.	Colo.	1,000,000	100,000	10				
93	Nevada Queen, S.	Nev	10,000,000	100,000	100	130,000	Dec.	1887	.50
94	New Germany, G	N. S.	100,000	100,000	1	*			
95	New Pittsburg, S. L	Colo.	2,000,000	200,000	10	*			
96	North Standard, G.	Cal..	10,000,000	100,000	100	20,000	Nov		
97	Noonday	Cal..	600,000	60,000	10	208,000	Dec.	1881	.10
98	Oneida Chief, G.	Cal.	500,000	125,000	4	*			
99	Oriental & Miller, S.	Nev..	10,000,000	400,000	10				
100	Osceola, G.	Nev..	5,000,000	50,000	25	*			
101	Overman, G. S.	Nev.	11,520,000	115,200	100	3,737,180	Aug.	1887	.25
102	Park, S.	Utah	2,000,000	200,000	100				
103	Peer, S.	Ariz.	10,000,000	100,000	10	125,000	Nov.	1886	.10
104	Peerless, S.	Ariz.	10,000,000	100,000	100	345,000	Apl.	1888	.25
105	Phœnix	Ariz.	500,000	500,000	100				
106	Phœnix, G. S.	Ark.	5,000,000	200,000	1	*			
107	Phœnix Lead, S. L.	Colo.	100,000	100,000	25	*			
108	Pilgrim, G.	Cal..	600,000	300,000	1	*			
109	Potosi, S.	Nev..	11,200,000	112,000	2	1,349,600	July	1885	.50
110	Proustite, S.	Idah	250,000	250,000	100	*			
111	Puritan S. G.	Colo.	1,500,000	150,000	1	*			
112	Quincy	Colo.	3,000,000	300,000	10				
113	Rappahannock, G. S.	Va.	250,000	250,000	10	*			
114	Red Elephant, S.	Colo.	500,000	500,000	1	*			
115	Ropes, G. S.	Mich	2,000,000	80,000	1	103,200	July	1887	.50
116	Russell, G	N. C.	1,500,000	300,000	25				
117	Sampson, G. S. L.	Utah	10,000,000	100,000	5	288,157	July	1888	1.00
118	San Sebastian, G.	San. S	1,600,000	320,000	5	*			
119	Santiago, G.	U.S.C	400,000	1,200,000	2	*			
120	Security, S.	Colo.	10,000,000	1,000,000	10				
121	Sheridan	N. M.	2,000,000	200,000	10				
122	Silver Queen, C.	Ariz.	5,000,000	200,000	25	*			
123	South Bulwer, G.	Cal..	10,000,000	100,000	100	100,000	May	1881	.25
124	South Hite	Cal..	10,000,000	100,000	100	195,000	Jan.	1883	.05
125	South Pacific	Cal..	500,000	100,000	5				
126	Stanislaus, G.	Cal..	2,000,000	200,000	10				
127	State Line, S.	Nev..	250,000	250,000	1				
128	St. Kevin, G. S.	Colo.	100,000	100,000	1	*			
129	St. Louis & Mex., S.	Mex.	5,000,000	500,000	10	*			
130	St. Louis & St. Elmo	Colo.	2,000,000	200,000	10				
131	St. L. & St. Felipe, G. S.	Mex.	1,500,000	150,000	10				
132	St. L. & Sonora, G. S.	Mex.	1,500,000	150,000	10				
133	St. Louis-Yavapai	Ariz.	3,000,000	300,000	10	*			
134	Sunday Lake, I.	Mich	1,250,000	50,000	25				
135	Sullivan, G. S. L.	Me.	500,000	100,000	5	125,000	Dec.	1882	.25
136	Sutro Tunnel	Nev..	20,000,000	2,000,000	10				
137	Taylor-Plumas, G.	Cal..	1,000,000	200,000	5	10,000	Feb.	1888	.03
138	Tioga Cons., G.	Cal..	10,000,000	100,000	10	295,000	May	1888	.10
139	Tornado Cons. G. S.	Nev..	100,000	100,000	1	*			
140	Tortilita, G. S.	Ariz.	1,000,000	100,000	2	*			
141	Tuscarora, S.	Nev..	10,000,000	500,000	100	110,000	Oct.	1881	.15
142	Union Con., G. S.	Nev..	10,000,000	100,000	100	2,185,000	Nov.	1887	.50
143	Utah, S.	Nev..	10,000,000	100,000	100	95,000	May	1888	.25
144	Washington, C.	Mich	1,000,000	40,000	25				
145	West Granite Mt., S.	Mon.	5,000,000	500,000	10	*			
146	Zelaya, G. S	C. A.	600,000	300,000	2	*			
147									
148									
149									

G. Gold. S. Silver. L. Lead. C. Copper. * Non-assessable. † This company, as the Western, up to Dec. 10th, 1881, paid $1,400,000. ‡ Non-assessable for three years. § The Deadwood previously paid $275,000 in eleven dividends, and the Terra $75,000. Previous to the consolidation in Aug., 1884, the California had paid $31,320,000 in dividends, and the Con. Virginia, $[illegible],390,000. ** Previous to the consolidation of the Copper Queen with the Atlanta, Aug., 1885, the Copper Queen had paid $1,350,000 in dividends. ¶ 1,300,000.

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Sept 8. H.	Sept 8. L.	Sept 10. H.	Sept 10. L.	Sept 11. H.	Sept 11. L.	Sept 12. H.	Sept 12. L.	Sept 14. H.	Sept 14. L.	Sept 15 H.	Sept 15 L.	SALES
Adams, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Alice, Mont	....	....	....	....	....	....	....	....	....	....	....	....	.....
Argenta, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Bassick, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Belcher, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Belle Isle, Nev	....	....	.45	....	....	....	....	....	....	....	....	....	1,000
Bodie Cons., Cal	....	....	1.75	....	....	....	....	....	1.55	....	....	....	500
Breece, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Bulwer, Cal	....	....	.80	....	.60	....	....	....	....	....	....	....	1,300
Caledonia, Dak	....	....	....	....	2.65	....	2.70	2.60	....	....	2.60	....	400
Central, Mich	....	....	....	....	....	....	....	....	....	....	....	....	.....
Chollar, Nev	....	....	....	....	....	....	....	....	.35	....	....	....	.....
Chrysolite, Colo	....	....	....	....	....	....	....	....	....	....	....	....	100
Colorado Cent'l, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cons. Cal & Va., Nev.	10.25	9.50	11.00	*$10	10.63	....	9.75	9.00	9.50	9.00	9.38	....	2,900
Crown Point, Nev	....	....	....	....	....	....	....	....	5.00	....	....	....	100
Deadwood, Dak	....	....	....	....	....	....	....	....	....	....	....	....	.....
Dunkin, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Eureka Cons., Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Father de Smet, Dak	....	....	....	....	....	....	....	....	....	....	....	....	.....
Freeland, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Gould & Curry, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Grand Prize, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Green Mountain, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hale & Norcross, Nev	....	....	....	....	....	....	....	....	4.45	....	4.40	....	200
Holyoke, Idaho	....	....	....	....	.06	....	....	....	....	....	....	....	1,000
Homestake, Dak	....	....	....	....	11.00	10.5	....	....	....	....	....	....	542
Horn-Silver, Ut	....	....	....	....	.88	....	....	....	....	....	....	....	100
Iron Hill, Dak	.20	....	....	....	....	....	....	....	....	....	....	....	500
Iron Silver, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Ladville C., Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Little Chief, Colo	....	....	....	....	....	....	....	....	.28	....	....	....	500
Little Pittsburg, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Martin White, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mono, Cal	....	....	....	....	....	....	....	....	1.10	....	....	....	110
Mount Diablo, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Navajo, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
North Belle Isle, Nev	3.35	....	....	....	....	....	2.90	....	....	....	....	....	300
Ontario, Ut	....	....	38.00	....	....	....	32.00	....	....	....	33.25	....	70
Ophir, Nev	6.25	....	....	....	....	....	....	....	5.75	....	....	....	300
Plutus, Colo	1.00	....	1.00	....	1.05	1.00	1.05	1.00	.95	....	.95	....	2,500
Plymouth, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Quicksilver Pref., Cal	....	....	....	....	....	....	37.00	....	....	....	38.75	....	300
" Com., Cal	....	....	....	....	....	....	....	....	9.50	....	....	....	200
Robinson Cons. Colo	....	....	....	....	....	....	.92	.90	.95	....	....	....	1,100
Savage, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sierra Nevada, Nev	3.40	....	....	....	....	....	....	....	3.15	....	....	....	550
Silver King, Ariz	....	....	2.15	....	2.15	....	2.10	....	....	....	....	....	250
Silver Mg. of L. V	....	....	....	....	....	....	....	....	....	....	....	....	.....
Small Hopes, Colo	....	....	....	....	.75	....	.80	.77	....	....	....	....	700
Standard, Cal	....	....	....	....	....	....	1.25	1.20	1.25	....	....	....	300
Stormon, Utah	....	....	....	....	....	....	....	....	....	....	....	....	.....
Yellow Jacket, Nev	4.50	....	....	....	....	....	5.00	....	5.13	....	....	....	200

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY	Sept. 8 H.	Sept. 8 L.	Sept 10 H.	Sept 10 L.	Sept. 11. H.	Sept. 11. L.	Sept. 12. H.	Sept. 12. L.	Sept 13 H.	Sept 13 L.	Sept 14 H.	Sept 14 L.	SALES.
Alta, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Amador, Cal	2.80	....	2.75	2.70	2.75	2.50	2.50	2.40	2.60	2.25	2.70	2.60	5,300
Am'can Flag, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Astoria, Cal	.28	....	.29	.28	.29	.28	.28	....	.28	....	.28	.27	10,700
Barcelona, Nev	....	....	....	....	....	....	....	....	1.00	....	....	....	100
Best & Belcher, Nev	....	....	3.85	....	....	....	....	....	....	....	5.25	....	300
Brunswick, Cal	....	....	.24	.23	.24	....	.22	....	.21	.20	.20	.19	7,300
Buffalo Iron Min'g	....	....	....	....	....	....	....	....	....	....	....	....	.....
Bullion, Nev	....	....	....	....	2.00	....	2.00	....	1.90	....	....	....	500
Carupano, Venez	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cashier, Colo	....	....	.11	.10	.11	.10	.10	....	.11	.10	.11	....	12,000
Castle Creek, Id	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cleveland, Dak	....	....	....	....	....	....	....	....	....	....	....	....	.....
Confidence, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Con. Imperial, Nev	....	....	.38	....	....	....	....	....	....	....	.37	....	4,000
Con Pacific	....	....	....	....	....	....	....	....	....	....	....	....	.....
Denver City, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Eastern Oregon	....	....	....	....	....	....	....	....	....	....	.03	....	3,000
El Cristo, U. S. Col	....	....	....	....	....	....	....	....	....	....	1.00	....	200
Exchequer, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Found Treas'e, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hector, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hollywood, Cal	....	....	....	....	.39	....	.40	.39	.40	.39	.39	....	3,900
Huron, Mich	....	....	....	....	....	....	....	....	....	....	....	....	.....
Julia, Nev	....	....	....	....	.50	....	.50	....	.50	....	.50	....	1,100
Kingst'n & Pemb'ke	....	....	....	....	2.63	2.50	2.63	....	....	....	....	....	1,000
Kossuth, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Lacrosse, Colo	.10	....	....	....	....	....	....	....	....	....	.11	.10	2,500
Lee Basin, Colo	....	....	....	....	.72	....	....	....	....	....	.70	....	900
Mexican, Nev	4.00	....	....	....	....	....	....	....	....	....	3.70	....	400
Middle Bar, Cal	.46	....	.45	....	.46	.45	.46	....	.46	....	.46	....	3,300
Monitor, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
N'th Standard Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Oriental & Miller	....	....	....	....	....	....	....	....	....	....	....	....	.....
Phœnix Lead, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Phœnix of Ark	....	....	....	....	....	....	....	....	....	....	....	....	.....
Potosi, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Proustite, Idaho	....	....	1.00	....	1.00	....	1.00	....	....	....	....	....	1,100
Rappahannock, Va	.11	....	....	....	....	....	....	....	....	....	....	....	500
San Sebastian, S'nS	....	....	....	....	....	....	....	....	....	....	....	....	.....
Santiago, U. S. Col	3.95	....	....	....	....	....	....	....	....	....	....	....	300
*Security, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Shoshone, Idaho	.13	....	.14	.12	.14	.13	.14	.13	.13	....	.13	....	8,300
Silver Cliff, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver Cord, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver Queen, Ariz	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sutro Tunnel, Nev	.11	.10	.12	.10	.12	.10	....	....	.10	....	.11	.10	8,700
" Trust Cert	....	....	65.00	....	....	....	....	....	....	....	....	....	3,000
Sutter Creek, Cal	1.20	1.15	1.20	1.15	1.20	1.15	1.20	1.15	1.15	1.10	1.15	1.10	3,800
Taylor Plumas, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Tornado, Nev	.35	....	.35	....	....	....	....	....	....	....	.36	.33	2,000
Union Cons., Nev	3.50	....	....	....	....	....	....	....	....	....	....	....	100
Utah, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....

*Ex dividend. Dealt in at the New York Stock Ex. Unlisted Securities †Assessment unpaid. Dividend shares sold, 16,022. Non-dividend shares sold, 81,700. Total New York, 95,722.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY	Sept. 7.		Sept. 8.		Sept. 10.		Sept. 11.		Sept. 12		Sept 13.		SALES.
Atlantic, Mich	18 38	18 00	18 00	17.75	18.25	18.13	18.00	....	....	....	....	....	1,130
Bodie, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Bonanza Developm't	1.69	1.63	1.69	....	1.63	....	1.63	....	1.63	....	....	....	1,150
Bost. & Mont., Copper	53.00	51 50	52 50	52.00	53.00	52.00	53 00	51.50	52.25	52.00	52.00	51.25	2,600
Breece, Colo	....	....	....	....	....	....	....	....	....	....	.32	....	100
Calumet & Hecla	285	283	283	280	299	285	298	292	291	290	291	287½	389
Catalpa, Colo	....	....	....	....	....	....	.22	....	....	....	....	....	100
Central, Mich	....	....	....	....	....	....	....	....	....	....	....	....	.....
Chrysolite, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Con. Cal & Va., Nev	....	....	....	....	....	....	19 38	....	....	....	....	....	50
Dunkin, Colo	....	....	.82½	....	....	....	.85	....	.87½	.85	.85	....	900
Enterprise	....	....	....	....	....	....	....	....	....	....	....	....	.....
Eureka, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Franklin, Mich	20.00	19 50	20.00	....	20.25	20.00	20.00	19.75	19.75	19 50	19 50	19.00	1,710
Hale & Norcross, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Honorine, Utah	....	....	....	....	....	....	....	....	....	....	....	....	.....
Little Chief, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Little Pittsburg, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Martin White, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mono, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Napa, Cal	....	....	1.81	....	1 88	....	....	....	....	....	1.88	....	400
Osceola, Mich	22 50	22 00	22 00	....	22 00	....	....	....	21.00	20.50	21.00	....	614
Pewabic, Mich	3 75	....	3 50	....	3 50	....	3.50	....	4.00	3.75	4.13	4.00	1,400
Quincy, Mich	80.00	78 00	80 00	79.00	....	....	80.00	....	....	....	....	....	210
Ridge, Mich	2.00	....	1.75	....	2.13	2.00	2.25	....	2.25	2.00	2.13	....	3,100
Sierra Nev., Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver King, Ariz	....	....	....	....	....	....	....	....	....	....	....	....	.....
Standard, Cal	....	....	....	....	....	....	*	....	....	....	....	....	.....
Tamarack, Mich	185	....	185	183	189	183½	187	186	187	185	186	....	334

NAME OF COMPANY.	Sept 7.	Sept. 8.	Sept. 10	Sept. 11.	Sept. 12.	Sept. 13.	SALES
Alloues, Mich	*3.50	3 50	*3.38 3.25	*3.50 3.25	3 50	3.44 *3.50	3.31 1,735
Arnold, Mich	....	.30	.47½	....	....	....	 500
Aztec, Mich	....	....	.12	....	.12½	.... .12	 80
Brunswick, Cal	.25	.25	.25	.25	.25	.... .25	 2,100
Canada	....	....	....	.05	....	....	 200
Contentment	....	....	....	....	....	....	....
Crescent, Colo	....	....	....	....	....	.... .10	 200
Cusi, N. Mex	....	....	....	....	....	....	....
Everett	....	....	.25	.27½	.27½	.... .27½	 1,400
Hanover, Mich	....	....	....	....	....	....	....
Humboldt, Mich	....	....	.18	....	....	....	 200
Hungarian	....	....	.20	....	....	....	 100
Huron, Mich	6 00	5 50	6.00	5 75	5.50	.... 5 50	 1,380
Kearsarge, Mich	9.13	8.75	9.25 9.00	10.00 9.38	9 75	9 38 9.60	9.63 7,940
Menard, Mich	....	....	....	....	52½	....	 500
National, Mich	5.13	5.00	5.13	5 25	5 25 5.13	5 25 5.13	5.25 1,400
Native, Mich	....	....	....	....	....	....	....
Oriental & M., Nev	.10	....	....	....	....	....	 500
Pontiac	....	....	....	....	....	.... .27½	 100
Rappahannock, Va	....	.09	....	....	....	....	 200
Security, Colo	....	....	....	.... .07	....	....	 1,000
Shoshone Idaho	.12	.12	.... .13	.... .12	....	.12	 1,200
South Side, Mich	....	.20	....	....	....	....	 25
St. Mary's	.25	....	....	....	....	....	 300
Sullivan	....	....	....	....	....	.... .27½	 300
Sutro Tunnel, Nev	....	....	....	....	....	....	....
Taylor Plumas, Cal	....	....	....	....	....	....	....
Washington	....	....	....	.25	.25	....	 200
Winthrop, Mich	....	....	....	....	....	.... .20	 300

* Assessment paid. Boston: Dividend shares sold, 14,196. Non-dividend shares sold, 22,280. Total Boston, 36,476.

COAL STOCKS.

NAME OF COMPANY.	Par val. of sh'rs.	Sept. 8. H.	Sept. 8. L.	Sept. 10. H.	Sept. 10. L.	Sept. 11. H.	Sept. 11. L.	Sept. 12. H.	Sept. 12. L.	Sept. 13. H.	Sept. 13. L.	Sept. 14 H.	Sept. 14 L.	Sales.
American Coal	....	....	....	....	....	....	....	....	....	....	....	45	....	100
Barclay Coal	....	†16	....	†16	....	†16	....	....	....	....	....	....	....	.....
Cbes. & O. RR	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Chic. & Ind. Coal RR	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Do. pref	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Col. & Hocking Coal	100	25	....	26¾	25	26½	25½	26⅞	26⅝	24½	24	24½	24	2,510
Col., C. & I	100	38¼	....	38½	87⅞	....	....	37½	....	....	....	37	36⅝	1,370
Connellsville Gas Coal	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Consol Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Del. & H. C	100	119¾	119	119⅝	119¼	119⅜	119¼	....	....	118½	....	118	116¼	1,987
D., L. & W RR	50	144¾	144	144¾	143⅝	144⅝	143⅞	144½	143½	143	141⅞	142½	140¾	169,612
Hocking Valley	100	32¼	31⅞	35¾	32½	36¾	34¾	35¾	33⅞	34¼	33	36	34	23,102
Hunt. & Broad Top	....	....	....	21¾	21	....	....	21¾	21⅜	21⅛	....	....	....	1,526
Do. pref	....	45¼	....	46½	45½	46¾	....	46¾	46¼	46⅛	46	....	....	5 930
Lehigh C. & N	50	52	....	52¼	52⅛	52	....	52	51⅝	51½	....	....	....	2,723
Lehigh W. B. Coal	....	24	....	25	24	26	28	25⅛	30	25	31	30	3,611
Lehigh Valley RR	50	57⅞	57	57⅛	57	57⅜	56⅝	‡56	55⅞	55⅝	55¼	....	....	14,553
Mahoning Coal RR	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Do. pref	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Marshall Con. Coal	100	....	....	....	....	14	....	....	....	....	....	....	....	100
Maryland Coal	100	....	....	14	13	....	....	....	....	14	....	....	....	400
Montauk Coal	50	....	....	....	....	....	....	....	....	....	....	....	....	.....
Morris & Essex	100	144½	....	....	....	143	144⅞	....	....	....	....	....	....	131
New Central Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
N. J. C. RR	50	91⅛	91	91	90¼	91	90¼	91	90¼	90	88¾	89½	88½	20,650
N. Y. & S. Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
N. Y., Susq. & Western	100	10⅞	10⅝	11	10½	11	10½	11⅛	11	11¼	10¾	11⅛	10⅞	11,985
Do. pref	100	35¼	35	35⅝	35	36¼	35	37	36	36⅜	35¾	36⅜	35¾	13,523
N. Y. & Perry C. & I	100	....	....	....	....	....	....	25	....	....	....	....	....	100
Norfolk & Western R R	100	21⅞	21⅝	22⅛	21⅝	2 1¼	21⅞	23	24¼	23¼	22¾	23	22⅝	8,410
Do. pref	50	57⅜	57¼	57⅝	56¼	57¾	57	57¾	57	56⅞	56	57¼	56	25,598
Penn. Coal	50	....	....	....	....	....	....	....	....	*57	....	....	....	.....
Penn. RR	50	56	55¾	55⅞	55¾	56⅜	55⅞	56¼	55⅞	55¾	55¼	....	....	21,647
‡Ph. & R. RR.**	50	54⅞	54⅛	54⅜	54⅜	54⅜	53⅞	54¼	53¾	53	52¼	53	51⅝	266,377
Tennessee C. & I. Co	100	32¾	31¾	33⅜	32¼	33⅛	32½	38⅛	31⅞	32	31¼	31½	30⅜	21,085
Westmoreland Coal	100	....	....	....	....	....	....	....	....	*64	....	....	....	.....
Whitebreast Fuel Co	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Wyoming Vall-y Coal	....	†50	*48	....	....	....	....	....	....	....	....	....	....	.....

*Bid. †Asked. ‡Ex-dividend.
**Of the sales of this stock, 63,947 were in Philadelphia, and 199,430 in New York. Total sales, 617,030.

San Francisco Mining Stock Quotations.

COMPANY.	CLOSING QUOTATIONS. Sept. 7.	Sept. 8.	Sept. 10.	Sept. 11.	Sept. 12.	Sept. 13.
Alpha	....	....	....	....	....	.....
Alta	1.60	1.55	.....	1.60	1.60	1.60
Belcher	....	....	.....	....	....	.....
Belle Isle	....	....	.....	.45	.45	.....
Best & Bel	3.55	3 50	.....	3 50	3.50	3 40
Bodie	1.60	1.60	.....	1.50	1.50	1.45
Bulwer	.75	.70	.....	....	....	.....
Chollar	2.80	2.70	.....	2.75	2.75	2.75
C'm'weal'h	....	4.25	.....	4.45	4.45	.....
Con. C. & V	9.75	10.25	.....	*8.87½	8.87½	9.00
Con. Pac.	....	....	.....	....	....	.....
Crown Pt.	4.70	4.55	.....	4.70	4.70	4.65
Eureka C.	....	2.75	.....	....	....	3.25
Gould & C.	2.85	2.75	.....	1.75	1.75	2.70
Grd. Prize.	....	....	.....	....	....	.....
Hale & N.	4.25	4.30	.....	4.25	4.25	4.30
Mexican	3.40	3.25	.....	3.50	3 50	3.50
Mono	....	1.00	.....	1.00	1.00	.....
Mt. Diablo	....	....	.....	....	....	2.60
Navajo	....	....	.....	....	....	1 40
Nev. Queen	....	4.30	.....	4.20	4.20	3.93
N. Belle I.	2.75	2.75	.....	2.90	2.90	2.53
Ophir	5.88	5.75	.....	5.74	5 74	5 62½
Potosi	2.70	2.65	.....	2.65	2.65	2.70
Savage	2.90	2.95	.....	2.95	2.95	2.90
Scorpion	....	....	.....	....	....	.....
Sierra Nev	3.35	3.25	.....	3.10	3.10	3.15
Sutro Tun.	....	....	.....	....	....	.....
Tip Top	....	....	.....	....	....	.....
Union Con.	3.40	3.30	.....	3.20	3.20	3.25
Utah	1.30	1.30	.....	1.20	1.20	1.25
Yellow Jkt.	4.15	4.10	.....	3.95	3.95	4.05

*Ex-dividend.

Bulwer, which has been neglected for many weeks, was in sympathy with Bodie, and declined from $1.75 to $1.55. Mono shows one sale at $1.10, and Standard a few at from $1.20 to $1.25.

The "Amadors" are still making things lively. Astoria heads the list with a business of 7300 shares at 27@29c. Amador comes next in line with 5300 shares, declining from $2.80@$2.25, but selling again to-day at from $2.60@$2.70. Middle Bar is quiet and steady at 45@46c., and Hollywood at 39@40c.

The Colchis Mining Company, of Grant County, New Mexico, has applied to have its stock listed on the Consolidated Stock and Petroleum Exchange. The capital stock is $500,000; shares, $1 each. The officers are: Hon. R. G. Ingersoll, President; C. D. Jenkins, Vice-President; Frank N. Wedge, Treasurer. These officers, together with H. W. Folsom and Nathan Charvis, constitute the Board of Directors. The office is at 40 Wall street, New York City. The company's property comprises the Jenkins mine, the Golconda mine, and the Colchis mill site, located in Grant County. The application states that the capacity of the milling machinery is 150 tons per day, and of the hoisting and mining machinery 100 tons per day.

Small Hopes shows but little change and is firm at from 75@80c. It is said that this stock ought to be selling at much higher figures. Robinson Consolidated remains unchanged at from 90 @95c. Plutus was active, but declined from $1.05 to 95c. Little Chief shows one sale at 23c. and Chrysolite one at 35c. Little is done in Lee Basin, which is now selling at from 70 to 72c. Lacrosse at 10@12c. Cashier showed some of its old time activity this week, and was largely dealt in at 10@11c.

Sutro Tunnel is dealt in at 10@11c. One sale of 3000 Trust Certificates was made on Monday at $65.

Consolidated Cal fornia & Virginia has declared its usual monthly dividend. The stock sold at from $9 to $11. Little is doing in the other Comstock stocks.

Barcelona has lost favor for the present; but one sale is recorded at $1.

There is absolutely nothing doing in the Tuscarora shares, but work is being pushed vigorously at many of the mines in this district, and the prospects are said to be favorable. Belle Isle is now selling at 45c. North Belle Isle declined from $3.35 to $2.90. Tornado shows a small business at 33@35c.

FINANCIAL STATEMENTS.

The following are the financial balances of the various mining companies on September 1st:

CASH ON HAND.

Alpha Con	$8,295.89	Holmes	1,161.00
Alta	23 376.29	Independence	3 893.26
Andes	7,538 00	Julia	1.1 6.00
Belcher	11,079.11	Justice	3,973.00
Belle Isle	5,746.56	Mexican	294.13
Best & Belcher	8,011.13	Mono	13,022.00
Bodie	26 624.35	Occidental	5,249.00
Bullion	4,627.84	Overman	20,945.00
Bulwer	17,509 00	Peerless	8,909 91
Caledonia	805 00	Sierra Nevada	16,005 40
Commonwealth	10.366.29	Standard	37,559.54
*Con. Cal & Va	146 012.41	Scorpion	6,044.70
†Confidence	92,910.00	Summit	175.68
Crocker	11,480.00	Syndicate	9,523.00
Dudley	435.00	Tioga	1,463.00
Exchequer	4,511.85	Union Cons	14,361.00
Found Treasure	684 00	Utah Cons	7.835.87
‡Gould & Curry	16 846 00	Weldon	3,670.74
§Hale & Norcross	$58,150.03		

* Cash in bank and unsold bullion on hand and to arrive before the close of the fiscal month.
† With unsold bullion valued at $17,000.
‡ With $8666 in unsold bullion.
§ Not including unsold bullion on hand.

INDEBTEDNESS.

Crown Pt	$7.721.00	North Belle Isle	4,507.17
Challenge Cons	2.466.99	North Commonwealth	13.984.92
*Chollar	29,419.42	†Ophir	5 378.85
Del Monte	6,295 63	Peer	3,254 54
Grand Prize	31,758.86	Potosi	36,611.60
Imperial	214.08	Savage	84.860.60
Lady Washington	269.28	Sec. Belcher	12.505.55
Locomotive	10.040.48	Tuscarora	522.70
Mt. Cory	49,668.00		
Navajo	8,876.86		

* With assessment pending, to be collected.
† With assessment levied September 3d, to be collected.

Pipe Line Certificates.

Messrs. Watson & Gibson, stock and petroleum brokers, 49 Broadway, report as follows for the week:

The oil market this week has been irregular and of relatively little public interest. The export trade is quiet, as there are not enough vessels in port to carry out our refined oil, and besides, the rates are nearly twice as high as last year. The Producers' Protective Association had a meeting at Bradford, but they are not communicative as to their action, though it is understood that drilling hereafter will be allowed in all old territory. The shut-down agreement does not expire till November 1st, and it probably will not be renewed. The monthly reduction of stocks is about three quarters of a million barrels, and with the strong commercial position of the commodity, we think it is a purchase on all breaks.

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Sept. 8	96⅛c.	96⅜c.	95¼c.	96⅛c.	730,000
10	96⅛	96⅝	94¾	95¾	1,360,000
11	94⅞	95⅛	94	95½	892,000
12	95⅝	95⅛	94¼	95	845,000
13	94⅝	95	92¾	93¼	1,533,000
14	93⅛	94⅝	92	92⅛	1,280,000
Total sales in barrels					6,650,000

NEW YORK STOCK EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Sept. 8	96⅛c.	96⅝c.	95⅜c.	96⅛c.	691,000
10	96	96⅜	94¾	94⅞	1,030,000
11	94⅛	95⅛	94⅛	95⅜	725,000
12	95⅛	95⅛	94¼	94¾	420,000
13	94⅛	95	93	93¼	838,000
14	93	94¼	91⅝	91¾	1,118 000
Total sales in barrels					4,822,000

Dividends.

The following dividends have been declared:

Colorado Central Consolidated Mining Company, of Colorado, dividend No. 24, five cents per share, or $13,750, payable October 10th at the Farmers' Loan and Trust Company, New York City.

Consolidated California & Virginia Mining Company, of Nevada, dividend No. 21, fifty cents per share, or $108,000, payable September 11th in San Francisco.

Quicksilver Mining Company, of California, quarterly dividend on preferred stock, one dollar and a quarter per share, or $53,750, payable October 1st at No. 20 Nassau street, New York City.

Assessments.

Company.	No.	When levied.	D'l'nq't's in office.	Day of sale.	Am'nt per share.
Anchor, Utah	7	July 31	Sept. 3	Sept.22	.10
Atlas, Dak		July 11	Aug.15	Oct. 10	.00¼
Baker Divide, Cal	16	Aug. 13	Sept.17	Oct. 8	.25
Beaver Oil, Dak	1	July 23	Sept.11	Sept.28	.001
Bullion, Nev	34	Aug. 4	Sept. 7	Sept.24	.50
Chollar, Nev	25	July 20	Aug.23	Sept.11	.50
Deer Mt., Dak	2	July 27	Sept. 3	Sept.22	.00½
Dickert & Myers, Utah	1	Sept. 4	Oct. 9	Oct. 30	.50
Eagle Oil, Dak	2	June 8	Sept. 1	Sept.20	.00½
El Dorado, Dak	4	Aug.17	Sept.19	Oct. 9	.001
Exchequer, Nev	26	Sept. 6	Oct. 10	Oct. 31	.20
Golden Fleece, Cal	13	July 31	Sept. 8	Oct. 1	1.00
Hartshorn, Dak	2	Aug. 1	Sept 4	Sept.20	005
Keyes Nev	2	July 19	Aug.23	Sept.24	.50
Lady Wash., Nev	7	Aug.21	Sept.26	Oct. 16	.25
Loami, Cal		July 30	Sept.15	Oct. 1	.01
Lockport Dak	4	Aug. 4	Sept. 5	Sept 22	002
Locomotive, Nev	3	Aug.21	Sept.26	Oct. 16	.25
Live Oak Drift	10	Aug.20	Sept.27	Oct. 19	.05
Mayflower, Cal	42	July 31	Sept. 3	Sept.25	.50
Mexican, Nev	36	Aug. 9	Sept.13	Oct. 3	.25
Montreal, Utah	1	Aug.17	Oct. 1	Oct. 20	.01
Navajo Queen, Nev	1	Aug. 3	Sept. 5	Sept.24	.20
New Era, Dak	4	Aug. 9	Sept.10	Sept.26	.01
Ophir, Nev	54	Sept. 1	Oct. 4	Oct. 24	.50
Pondere, Cal	1	Aug.10	Sept.18	Oct. 10	.05
Savage, Nev	70	Aug. 3	Sept. 5	Sept.25	.50
Scott Bar, Cal	1	July 26	Sept. 3	Sept.20	.10
Spring Valley, Cal	3	July 17	Aug. 25	Sept.24	.10
Virginia Creek, Cal	6	Aug 29	Oct. 9	Oct. 24	.06

Boston Mining Stocks. Sept. 13.

[From our Special Correspondent.]

The "boom" in "copper stocks" is still "marching on," and this week has witnessed some lively movements. Calumet & Hecla has been the leader and almost verified my prediction last week of $300 this year, actually selling at $299 within a fraction of a round $30,000,000 for the property and cheap even at that, for the resources of the mine are almost unlimited.

This $299 is the highest figure ever reached in the market, the next highest being $295, December 31st, 1879. This was just before an extra dividend of 20 per cent in stock (making 100,000 shares), and therefore $299 now is practically equal to 373¾ on the old basis of 80,000 shares. Good enough. The product of this mine for the week ending Monday last was 777 tons (magic figures), the largest ever produced, and will, it is believed, carry the month's product to 3500 tons, being 500 tons ahead of any month's product in the history of the mine. Not to be outdone by its older neighbor, Tamarack took a start from $181 to $189 (a gain of $16⅛ per share this month). This company has increased its quarterly dividends from $3 to $5 per share. It will be here remembered that "Tamarack Junior" was set off from the parent company less than six months ago, and sold at $10 per share. Now it is $35 bid, and no prospect of earning a dollar for three years to come! The two stocks named held the prominent position, but some others have attracted attention. Kearsarge advanced from $9¼ to $10, and stands among the promising properties of the future. National, which went up last week from $4¼ to $6, fell back to $5, and is now $5¼. Recent advices from this property are highly satisfactory, and some day not far distant the present price will look cheap for it. Pewabic is more sought for, gaining from $3½ to $4⅛. Quincy has been a strong stock, running up from $75 to $80, and holds at that bid. Ridge is firm, at $2@$2⅛, with a good outlook for better prices in the future. In others not named the variations have been light.

Boston & Montana copper, around $52, has held its own well, in view of the fact that 50,000 new shares are to be issued, making 150,000 in all. This stock will be issued at its par value of $25, affording quite a "plum" to the old shareholders. The object of this increase is to "provide an efficient smelting plant" in place of the present "crude and expensive" methods. Stockholders can take two shares at $25 for every five old ones up to December 1st, 1888, the other 10,000 to remain in the treasury for future uses.

The silver stocks command little attention. Dunkin hangs around 85c. waiting for a "a strike" in the mine, which those who know the property best have every confidence is not far distant. Breece normal at 30c. bid, 33c. asked. Catalpa firm at 20c. bid, and Crescent 10c. The coppers still attract the lion's share of attention, and silver is of no account.

3 P. M.—The market weakened under the panic pressure from New York, carrying down railroad stocks and holding back buyers from mining. This check may prove a healthy one, as there was little disposition to "push things" too rapidly.

LATER PRICES.

(*By Telegraph*)—September 14th, 1 P.M.—Calumet & Hecla, $290; Boston & Montana, $51; Kearsarge, $9.50; Allouez, $2.18¾; Tamarack, $186; Osceola, $20.