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CONTENTS.

THE House of Representatives acted on the Sherman law repeal bill with very little delay, but the Senate still talks, much to the disgust of a very great majority of the people. The time for argument and discussion has gone by and action is needed. The Senate will do well to consider this, and to do at once what it should have done weeks ago.

THE stealing of 5,000 ounces of gold from the Philadelphia Mint was one of those singular affairs which now and then perplex the observer. It is hinted that the trusted employee, COCHRANE, who stole the gold, was the victim of one of those obscure monomanias which sometimes affect men whose ability and sanity are generally unquestioned. However this may be, a system which permits a theft like this, extending over several years, seems to be in need of some amendment.

No compromise on the Silver question is possible in the present state of affairs, and the silver men are only hurting their own cause by their present action. The only settlement of the question which is possible or permanent must be an international one, approved by all commercial nations. The International Monetary Clearing Honse plan presents a solution which is practicable and reasonable, but the adoption of such a settlement is made more and more difficult every day by the folly of the the professed friends—but real enemies—of bimetallism.

WE have before referred to the appropriation made to test the practicability of using electricity for towing on the New York State canals. It is now announced that after correspondence with several companies an arrangement has been made with the Westinghouse Electrical Company to put up an experimental plant, the point chosen being the Rochester level. Transmission or trolley wires will be strung over the canal from poles set up on either bank. It is, of course, too late to have the plant in operation this season, but it is expected to be ready for the opening of navigation next spring.

THE English stockholders of the Seven Stars Gold Mining Company are still looking vainly for the payment of the quarterly dividend which became due July 1st, and anxious inquiries have so far failed to bring out any definite information from the company itself or from the parties—the Mining and Industrial Guarantee Company, and H. H. WARNER—who "guaranteed" the payment of 15 per cent. dividends on the stock. In view of this and of the facts which have been published in our news columns, the investors may well paraphrase the old Latin epigram and ask "Who shall guarantee the guarantors?"

THE amount of passenger travel on the railroads is always a sign of the financial condition of the country, and the increase now reported, which is very general and not confined to the World's Fair specials, is an encouraging sign of returning confidence. While business is still depressed, the fact that many people are able to travel shows that the panic is at least partly over, and that there is a feeling that the country has at least started on the way to better times. Our industrial column shows the same tendency in its reports of resumption of work in many establishments, and the confidence inspired by the decisive action of the House of Representatives on the Sherman law is beginning to be felt. If this action is followed up by the Senate the tendency to improvement will be confirmed.

THE financial situation, which began to improve when the House of Representatives passed the Sherman Law repeal bill by so large a majority, is now again unsettled, in consequence mainly of the long delay in the Senate. The best information is that there is a sure majority for the bill, should it be brought to a vote, but the free-silver minority seem to be talking against time, not only for the mere delay of a few days, but also in the hope of wearying the majority into making some compromise. True to their previous tactics they are insisting that the repeal bill cannot pass as it is, and that some qualification of its terms must be made. There seems to be no real basis for this statement, and attempts have already been made to close the debate and come to a vote; but so far they have been defeated. The custom and rules of the Senate permit unlimited discussion, and the silver men are taking advantage of this in their attempt to defeat the undoubted desire of the people.

THE restriction in anthracite coal production, of which we have heard a good deal lately, has been carried out to some extent, as the official report of shipments for August shows a decrease of 10·4 per cent. from last year. This was not evenly divided, however, as the coal sent to market from the Lehigh region was very nearly the same in both years, while the Wyoming and Schuylkill districts reduced their shipments in nearly equal proportions. Under the present method of reporting, the trade shipments are given by regions or districts only, and it is impossible to say what proportion is furnished by the several coal companies. The indications are, however, that a large proportion of the decrease in shipments was borne by the Reading company. It is not a favorable indication of the state of the trade that, in spite of the reduced shipments, the stocks of

undelivered coal at tidewater increased considerably; much more, in fact, than is usual at this time of the year.

A GREAT coal trust has been proposed in England by Sir GEORGE ELLIOTT, to avoid in future such trouble as now exists from strikes. His plan is to form an immense co-operative union which will operate all the British coal mines, basing his calculations on a capital of $550,000,000 and a yearly production of 145,000,000 tons. The capital is to be represented by 5 per cent. debentures and by ordinary stock, to be issued to present mine-owners and lessees. In operation, after 5 per cent. has been paid on debenture shares and 10 per cent. on ordinary stock, the next 5 per cent. shall be divided among the workmen and shareholders. Profits beyond this will be divided among the lessees and workmen and a purchasers' board of trade or reference will be appointed. The Lord Chief Justice will be intrusted with fixing the price of coal.

The practicability of this scheme may well be doubted and its many weak points could easily be pointed out, but it is of some interest as showing a certain drift of opinion which is not uncommon on the other side of the water.

THE reports of the blast furnaces for September show a still further reduction in the weekly production, which is now at a lower point than it has been for a long time; so low, in fact, that some reaction and an increase in activity seem certain to come before long. In the early part of the year the furnaces generally kept at work, although there was not an active market for their products. and the total falling off from last year's figures up to date is not so great as might have been expected. At the present rate, however, the year will show a great reduction from 1892 in pig iron output; and this rate seems likely to continue for a month at least. Even if a reaction should come, its effects will hardly be seen until the November reports come in, and very probably will not be apparent until December. With the frequent general or partial resumptions of work in the iron and steel mills, which are referred to elsewhere. the demand for pig iron ought to improve, and some of the furnaces now shut down will be obliged to blow in to supply the wants of their customers. It must be confessed that at present prices of pig there is little temptation to start up a furnace, but on the short production, with an increasing demand, a better return may be realized before long.

MINERS' WAGES IN THE WEST.

At the present time the resumption of work at many of the silver producing mining camps of the Rocky Mountain region hinges upon the acceptance by the miners of a rate of wages lower than that previously in force. At Leadville, Aspen, Rico and at other important mining centers where the decline in the market value of the white metal has been most seriously felt, an effort is being made to adjust the scale of wages in accordance with the present condition of the industry. That the miner should show some obstinacy in resisting a reduction of his daily wages is only natural. That the mine-owner should refuse to work his property for philanthropic purposes is equally intelligible; but both the one and the other should, and we believe will, be able to meet the situation in a fair and reasonable spirit.

The adjustment of miners' wages will mark an important era in Western mining. This question has arisen frequently of late years; it has caused much bitter feeling and produced many serious hindrances to the successful operation of the mines. During the past few weeks the problem has again presented itself with an added importance, for it depends upon its proper solution whether many mines be reopened or remain shut down, whether many hundreds of miners obtain employment or continue to be idle. The fall in silver has done what a general strike would have done, without, however, any of the bad feeling and bitterness inseparable from strikes.

All those engaged in the carrying on of the mining industry must recognize the obstinate logic of events. The railroads have done so, and have long since lowered their freight rates in order to compete with their rivals, and in recognition of the development of the country; the smelters recognized the necessity of lowering their charges when the railroads increased their ore supply on the one hand and decreased the practical distance to the refineries on the other. Similarly, the prices of merchandise, provisions, supplies of all kinds, have gone down. The miner alone demands the same wages as were paid in the days of big prices, high freights and heavy smelting charges. Indeed, it is safe to say that, as compared to ten years ago, while the miners' pay has diminished but little, railway freights have decreased by more than one-half, smelting charges by nearly one-half and the cost of living by one-third.

That the scale of wages is extravagant can readily be shown by comparison with other regions. Australia is in a position in many ways similar to the West, being a new country sparsely populated, at a distance from large manufacturing centers, and handicapped by a high tariff. At the present time the average pay of the miner in that country is $2 per day, and yet it is a fact that in spite of such a low rate of wages the Australian miner living at any of the older established mining towns of Victoria and New South Wales enjoys more of the comforts and happiness of life than his brother at Butte City or Leadville.

Why does the miner receiving $3.50 per day get less for it than his brother whose wages are $2 per day? Because the former is more extravagant and because—in justice it must be added—he has to meet the higher prices of storekeepers, etc. There is no doubt that this question must be carried beyond the miner, and that the storekeepers and others, who provide the toiler with both the necessaries and the luxuries of his life, must be called upon to recognize the march of events and be compelled to do their business on a less speculative basis, and to lower their prices in accordance with the present condition of things. Others also must come into line. A little sacrifice here and a little there, though each be small, will make a big sum total. The result will be to make not only the miner but also the mine-owner less extravagant, and to place the mining industry on a basis of stability which will be beneficial alike to the workman and to the capitalist.

THE SITUATION IN THE CŒUR D'ALENE REGION.

There has been a movement on foot in Idaho to resume operations in the Cœur d'Alene silver-lead mines, which could be run at least without loss, and probably at a profit, with the present prices for silver and lead. if wages were cut down to a reasonable basis, as we have previously pointed out in the ENGINEERING AND MINING JOURNAL. The mine-owners are anxious to begin work again, even if there is no immediate outlook for profit, in order to avoid the loss which always ensues in closing a mine. especially if it fills with water; so long as it is not the intention to abandon a mine entirely, it is desirable to keep it open, maintaining the timbering and machinery in proper condition, if this can be done without too great expense. Most of the Cœur d'Alene companies, therefore, have made offers to their men to give them work if they will accept wages of $2.50 per day, which is $1 per day less than they were paid before the shut-down.

These proposals have been coupled, moreover, with the promise of the old rates when the prices for silver and lead rise again. The Cœur d'Alene Silver-Lead Mining Company, operating the Poorman mine at Burke, for instance, volunteered to take on a shift of 110 men at once, increasing the number to 200 within 60 days, on a sliding scale of wages according to the price of silver and lead—beginning at $3 per day and rising to $4.50 when the metals reached the level quoted in 1873. The miners evidently have no confidence that silver will return to its former basis; they declined this and all other offers, apparently without much consideration.

A week ago, however, work was resumed in the Poorman mine, the management yielding to the demands of the miners and conceding the old wages, *i. e.*, $3.50 per day. "The advance in the price of lead made this possible," said Mr. CLARK, the superintendent of the mine, but "with lead at $3.20 it would have been impossible." Doubtless the reason for the early back-down on the part of this company is due to the fact that its mine is wet and, being opened by shafts, constant pumping is necessary. Many important mines of the district, though, are entered by tunnels, and consequently are more independent. These should stand out firmly for the absolutely necessary readjustment of the wages-question, since the disproportionately high cost of labor has been a heavy burden on their mines even when silver and lead were high, and has retarded the prosperity of this extremely promising field. The time of exorbitant wages in the Rocky Mountains has passed, and rates are now coming down to a logical level.

The situation in the Cœur d'Alene has been so sensibly described by Mr. ROBERT CHEYNE, formerly connected with the Bunker Hill & Sullivan Company, in an interview in the Spokane *Chronicle* of August 31st, that we reprint the following paragraphs:

"I believe all the mines would reopen immediately if the men would accept $2.50 per day," said Mr. Cheyne, "and I do not believe that more than $2.50 to $3 will ever be paid again by any of the mines. The mine-owners would be glad to resume work if they could barely make expenses at first, trusting to the future for higher prices and more perfect systems of operating.

"The managers of the Bunker Hill and Sullivan have a standing offer to furnish work to all men who will accept $2.50 per day. Up to the present time not a man has applied for work. The offer made by the owners of the Poorman, a sliding scale ranging from $2.50 to $4.50 and beginning at $3, has been refused.

"The miners are in no danger of suffering so long as the offer of $2.50 is open to them, but up to date they will not listen to such a scale. For the present I believe the mines will remain idle, but when they do resume I do not believe wages will run over $2.50 to $3."

The merchants of Burke, Wardner, Wallace and the other towns of the district are anxious to see the wheels of industry in motion again, and are using their influence on the stubborn miners. The railroads which handle the traffic are also deeply interested in the question and doubtless will make concessions from the excessively high freight rate formerly charged. in order to secure the carriage of the ore, now wholly cut off. With these forces at work we are sure that operations will soon be resumed in the Cœur d'Alene. We hope, however, that the mine-owners will not be led to recede from their position by the increase in the price of lead. The day for high-priced lead as well as for $3.50 wages has passed; the development of the industry and the increasing facilities for transportation are lowering both. and it is folly to close one's eyes to these facts.

NEW PUBLICATIONS.

A WEEK AT THE FAIR. Chicago: Rand, McNally & Co. Pages 246; illustrated. Price, in paper, 50 cents; cloth, $1.

This is a guide to the Exposition, intended to save visitors time and trouble, and to point out to them the points most likely to interest them and to indicate what the different buildings contain. It has also a list of hotels and restaurants and a general guide to the city. As a companion to visitors at the Fair it must be very convenient, and it is certainly the best guide-book we have seen. It is profusely illustrated.

HAND-BOOK OF ALABAMA. A COMPLETE INDEX TO THE STATE. By Saffold Berney. Second and Revised Edition. Birmingham, Ala.: Roberts & Son. Pages 564; illustrated with map. Price, $2.

This book belongs to a very useful class of publications. It is not a history, although it has some historical matter included; its aim is to give such information in relation to the geography, climate, resources, business and law of the State as will be needed for reference by residents, by those who wish to become residents, or by those who have business connections and interests there. Much of the space is given to the State government, laws, taxation and institutions. There are condensed descriptions of the counties and of the leading towns and cities, and also of the railroads and water lines. Special chapters are given to the coal, iron and other mineral resources and their development and production, and there is also a general account of the geology of the State. The work appears to have been carefully done, and the statistics have been brought up to the latest attainable date. Some improvements in their arrangement and perhaps a little more complete index would be desirable, but the book is a good one of its kind and a useful and convenient hand-book.

THE MINING INDUSTRY OF JAPAN DURING THE 25 YEARS 1867-1892. By Wada Tsunashio, Director of the Mining Bureau. Tokyo, Japan; printed at the Tokyo Tsukiji Type Foundry. Pages 206; with maps and illustrations.

The title of this book expresses its contents, as titles do not always do. The introduction is a history of the mining industry of Japan from the earliest dates to the present time, and this is followed by detailed accounts of the various mines, their special history, methods of working and production. The statistics are generally brought up to the close of 1891, and many interesting figures are given as to the cost of working, nature of ores and other points.

Japan is a country of great and varied mineral wealth, gold, silver, copper, iron, coal, manganese, antimony, sulphur and petroleum being among its mineral productions. The Japanese have been miners from a very early date, and some of the mines described in the book have been worked for over a thousand years. In the ninth century gold, silver, copper and lead mines were opened, some of which are still yielding ore. The past 25 years has been a period of especial interest, since in that time modern methods of mining and milling have superseded those formerly in use. The Japanese have been quick to see and select the best, and some of their mines will now compare favorably in workings and apparatus with any in the world. It may be noted that American mining machinery seems to have found favor, and is in extensive use.

The book is handsomely printed and bound, and the illustrations are of good quality. A large map of Japan shows the location of the various mines and their connection with the lines of traffic.

VICTORIAN YEAR-BOOK, 1892; 13TH YEAR OF ISSUE. By Henry Heylyn Hayter, Government Statist of Victoria. Melbourne, Victoria: Sand & McDougall, Ltd. Two volumes; pages 1,130.

We have frequently had occasion to call attention to the excellence of the annual statistical reports of the Australian colonies. This book, however, seeks to include too much, and is an example of "how not to do it." It has, indeed, the merit of promptness, which, in a statistical work, covers a multitude of the sins of commission and omission, and for this the statist in charge is worthy of commendation. It should be understood that the annual year books of the Australian colonies partake more or less of the nature of our census reports, and that definiteness of aim, orderly arrangement and the exclusion of irrelevant matter are necessary. The volumes now before us aim to give not only the statistical history of the colony, but also to compare it with the other Australian colonies and, indeed, the rest of the world. The figures given bear evidence of hurried compilation and in many cases are quite incorrect, as, for example, the gold production of the United States, South Africa and Russia. Other instances might be cited, but these will suffice.

As for the arrangement of the subject matter, it defies comment, because no particular order is observable. An important point should be clearness of definitions—that is, in the meaning of the various sub-heads or chapters, titles which enable the student to find without delay the particular information of which he is in need. In this respect the volumes before us are lamentably wanting. The tables of contents show the subject matter to be divided into ten great heads called: constitution and government; population; finance; vital statistics; accumulation; interchange; law, crime, etc.; production; defences; and social condition. The nature of the matter given under most of these heads is clear, but, on the other hand, accumulation, production and interchange convey but little meaning. They are not defined, and the reader is left to form his own opinion. Under the head of "Accumulation" there are given foreign moneys and British equivalents; gold received and coined at Melbourne Mint; coins struck at London Mint; exports of gold coin; financial position of banks; deposits and advances; life assurance returns of Australian colonies; fire and marine insurance; mortgages and building societies, etc., etc. Under the head of "Interchange" there are given exports and imports; shipping; railways; shipping of foreign countries; postal and telegraph systems; railway earnings and general wages. Under the head "Production" there are given agricultural and mineral production; applications for and occupation of the Crown lands; agricultural colleges; breadstuffs imported and exported; production of beet sugar in Europe and consumption of sugar in various countries; water-works; live stock; brickyards and potteries, and finally copyrights. All of this matter is interesting and much of it of value, but the arrangement is of such a character that it cannot be found without difficulty. The rather copious index refers to paragraphs, and not to pages, as is usually the case, making it less useful than it might otherwise have been.

BOOKS RECEIVED.

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

Utah. Salt Lake, Utah; issued by the Rio Grande Western Railway Company. Pages 96; illustrated.

Le Mexique a la Porte. By F. Bianconi. Paris, France; Imprimerie Chaix. Pages 144; with map.

The Miner's Handbook. Compiled by John Milne, F.R.S. London, England; Crosby Lockwood & Son. Pages 316.

Jahrbuch der Chemie. Jahrgang II., 1892. By Richard Meyer. Braunschweig, Germany; Friedrich Vieweg & Sohn. Pages 584.

Maryland: Its Resources, Industries and Agricultural Condition, 1893. Baltimore, Md.; the A. S. Abell Company. Pages 64; illustrated.

The School of Mining and Metallurgy of the University of Minnesota. Minneapolis, Minn.; issued by the University. Pamphlet, pages 32; illustrated.

Record of the Mines of South Australia. By Henry Y. L. Brown, Government Geologist. Adelaide, South Australia; Government Printer. Pages 144.

The Journal of the Iron and Steel Institute. Volume XLIII. Edited by Bennett H. Brough, Secretary. London, England; E. & F. N. Spon. Pages 476; illustrated.

Ninth Annual Report of the Inspector of Mines of the State of Kentucky, 1892. Charles J. Norwood, Inspector. Frankfort, Ky.; Public Printer. Pages 284; illustrated.

Report of the Secretary of Mines of Tasmania for the Year 1891-92. F. Belstead, Secretary. Hobart, Tasmania; Government Printer. Pages 68; with maps and plates.

Text Book of Bi-Metallism. By Gullford L. Molesworth. London, England; E. & F. N. Spon. New York; Spon & Chamberlain. Pamphlet, pages 52. Price, 20 cents.

South Australian School of Mines and Industries and Technological Museum. Annual Report, 1891. Adelaide, South Australia; Government Printer. Pages 206.

American Railway Master Mechanics' Association Proceedings, 1893. Edited by Angus Sinclair, Secretary. New York; published by the Association. Pages 376; illustrated.

The Mountain State: the Natural Resources of West Virginia. Prepared by George W. Summers. Charleston, W. Va.; issued by the Board of World's Fair Managers for West Virginia.

Origin of the Bendigo Saddle Reefs and Cause of Their Golden Wealth. By L. A. Samuels. Bendigo, Victoria; Bolton Brothers. Pamphlet, pages 40, illustrated. Price (in New York), 80 cents.

Mexico: Its Trade, Industries and Resources. By Antonio Garcia Cubas, C. E. Translated by William Thompson and Charles B. Cleveland. City of Mexico; National Printing Office. Pages 440.

Virginia: A Hand-Book of Its History, Mineral Wealth, Educational, Agricultural and Industrial Advantages. Prepared by Thomas Whitehead, Commissioner of Agriculture. Richmond, Va.; issued by the State Board of Agriculture. Pages 344; illustrated.

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.

Some Notes About Corundum.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: Do you not think that when you class emery and corundum together there is a tendency to mislead? Emery is a silicate of alumina and iron, sometimes also carrying much mica; it is 8 to 8½ in hardness, is opaque, fracture conchoidal, homogeneous and tough. Corundum, the abrasive metal so called, is an oxide of aluminum; and, unlike emery, is marked with striae or lines running at right angles to each other; it is not opaque, like emery, but translucent; is not tough or conchoidal in fracture, but perfectly rectangular; it is, I think, no relation to emery. As to its matrix, I have found it in the form of "float," where nothing but glacial action could have placed it unless its mother rock may have dissolved or eroded away into soil, while the indestructible gem or oxide dropped loose and lay about where it was released. I have found corundum inclosed in the crystalline serpentine rock, in its original crystal all the way from a pinhead to a body weighing 50 lbs. I have in my office a piece of white corundum that will weigh 75 lbs., inclosed in chloritic serpentine. Each form of serpentine carries a distinct variety of corundum, and while nearly all corundum comes from serpentine, all serpentine does not produce corundum; I have found blue corundum or sapphire crystals in situ in porphery, and also in feldspar. Chromic serpentine carries pink or red corundum; chloritic serpentine produces white or light colored corundum; precious serpentine carries the spinel ruby variety, which is not as hard as the sapphire variety. You say, in your "Mineral Industry," that corundum is found along the contact of the gneiss and olivine rocks, and you say also "along the contact of the two are found the veins (or beds) of decomposed rock, which have the corundum disseminated through them." I do not know who is your authority for this statement. I have never found corundum so situated. I have found corundum: 1. Fast imbedded in solid crystalline serpentine; 2. Disseminated through disintegrated serpentine, both crystalline, chloritic and chromic; 3. Disseminated in rich ocherous clay, both red and yellow; 4. Fast imbedded in solid

gneiss (I have the samples in my office); 5. In a vein with crystals of albite and chlorite and chalcedony; 6. Inclosed, or wrapped up closely in a dense wall of scaly corundoffie, or mica, green, blue and bronze in color (I am now mining corundum from such a vein about 5 ft. wide, with a dividing body of chalcedonic formation splitting the vein in two); 7. Fast imbedded in rock consisting of nickel and silica, a low order of genthite; 8. With chalcedony, the crystal consisting of two parts.

HIAWASSEE, Ga., June 29, 1893. CHARLES HEATON.

A "Stray" Piece of Brown Ore (Limonite).

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: In answer to Dr. W. B. Phillips' note in your issue of September 9th, I have the following to offer in explanation of the strange find. The "pot" of ore, like the cucumber in the bottle, certainly was not thrust violently into its place of abode, neither is it possible that the isolated mass was of sedimentary or of drift origin. We are to conclude, then, that it was evolved by slow process of growth, or transformation of materials at hand into a distinct mineral, or an accretion of limonite, as differing from the environing rock, made up of its shot-like concretions of red ore with interstitial matter of crystalline limestone. And yet it seems a little strange that preference should fall to the one spot, favoring such an occurrence. We are to assume that there chanced to be local conditions not common to the entire mass of stratified ore. These conditions should be such as to favor the transformation of ferric iron into hydrated ferric iron, and the removal of carbonate of lime. They should also favor transportation and fixation of the materials into the make-up of the pot of limonite.

The belt of ferruginous limestone is of organic origin, as evidenced by its fossil remains, but the diminutive fossils, I believe, are homogeneously distributed throughout this rock mass. However, we will suppose the possible occurrence of a mass of organic matter imbedded in the rock-forming materials, which acted as a nucleus and a local condition favoring the transformations as above. Organic matter in the presence of any oxidizing influence will produce carbonic acid, which is a most active solvent agent in rock and mineral transformations. In this case an excess of the acid would dissolve both lime and iron, the latter having been reduced to the ferrous state by the organic matter. The acid carbonate of lime and of iron thus left to the forces of capillary attraction and osmotic flow would become diffused throughout the environing rock. The lime carbonate could not suffer further change by the surrounding conditions so long as it retained its solvent carbonic acid. By this means it will be understood that all of the limestone would be removable from the immediate neighborhood of the nucleus of organic matter. On the other hand, the acid ferrous carbonate would undergo oxidation the moment it was removed from the reducing action of the organic matter and encountered the oxidizing influence of the atmospheric waters of the general mass of rock. This oxidation would give hydrous ferric oxide or limonite, with the liberation of carbonic acid—$2(Fe_2CO_3 + H_2CO_3) + O = Fe_2O_3 + 2H_2CO_3$. This liberation of carbonic acid would in turn exercise its solvent action to remove a further proportion of limestone from the limits of the growing mass of limonite. The carbonic acid would act as a carrier of the iron and lime radially from the organic matter, the iron being redeposited in the immediate neighborhood, while the lime would be transported to an indefinite distance. The environing atmospheric waters would act as a barrier to arrest the osmotic flow of the solution of ferrous iron, and also to transform it into a new chemical state. Other constituents of the ferruginous limestone, as alumina, silica and phosphoric acid, would remain unaffected by the chemical reactions and become embodied in the limonite. The trace of manganese would become hydrated and remain with the limonite.

These chemical influences would operate until all of the organic matter was consumed, when there would remain a cavity that would naturally fill with water by capillary seepage.

NASHVILLE, Tenn., Sept. 16, 1893. ALONZO C. CAMPBELL.

The Report on the Bendigo Gold Fields.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: I note in your issue of September 2d Mr. T. A. Rickard's criticism of Mr. E. J. Dunn's admirable report on the Bendigo gold fields. It appears to me that the fissuring and simultaneous filling of these fissures with molten lava is the only rational explanation of the Bendigo "lava streaks" or dykes, as shown by reference to the explanations of Le Conte, Dana, Judd and other authorities. Mr. Rickard, however, claims this reasoning may be in keeping with the catastrophic theories of the past, but that it is not in accord with the evidence obtained by his examination of the Bendigo mines. But even a casual examination of the literature on Vulcanology will show that the movement of the earth's crust in connection with volcanic action does not conform to any set theory; sometimes in large volcanoes, like those of Hawaii, the lava continues in quiet ebullition until the crater is filled or bursts, when it wells forth without earthquake shock or violence of any sort; at other times, catastrophic eruptions of the fiercest nature take place, as, for example, that of Vesuvius in 79, which resulted in the blowing out of the southern half of the ancient crater, burying the cities of Pompeii and Herculaneum in that mantle of tufa that so effectively hid them from the world for seventeen centuries.

In 1783 a lava torrent burst from Skapta Jokul, in Iceland, which filled rivers and lakes 400 to 600 ft. deep, spreading over wide alluvial plains in broad burning lakes 12 to 15 miles wide and 100 ft. deep. The two principal streams were respectively 40 and 50 miles in length and 7 to 15 miles wide. Bishof estimated the total amount of lava poured forth during this single eruption as surpassing in magnitude the bulk of Mont Blanc. Mr. D. J. Forbes reports the Cotopaxi Volcano as having hurled a 200-ton block 9 miles. Possibly, the most stupendous catastrophe on record occurred in our own time, to wit: at Krakatoa, in August, 1883, when the greater part of the island was blown out, causing a detonation that was felt over an area of 7,000,000 square miles. Scott and Strachey state that the air wave from the explosion passed 3½ times around the earth before it ceased to be perceptible, while, according to Major Baird, the tidal waves are computed to have risen to a height of 100 ft. at the island and to have been perceptible 5,000 miles distant, having traveled with a maximum velocity of 467 miles per hour. The site of this volcano is now covered with water to a depth exceeding 1,000 ft. Other eruptions might be cited, but it is as useless to multiply examples as it is to state that the so-called catastrophic theories are not based on imagination, and cannot be relegated to the oblivion of exploded theories for the purpose of harmonizing (?) evidence obtained in mines, evidence that, in all probability, could be just as satisfactorily explained on some other theory.

Mr. Dunn states that the lava dykes "occur along the course of every anticlinal axis, but have not been noticed anywhere else," to which Mr. Rickard replies: "Of this interesting fact he offers no explanation." An explanation is unnecessary; the fissures followed the lines of least resistance, breaking through the anticlinals—some of which had already reached the point of rupture—in preference to the synclinals, which are, in fact, a series of inverted arches, offering the maximum resistance to fissuring by upward pressure. Mr. Dunn says of the saddle reefs: "Generally, they appear to have been formed in cavities caused by the bending over sharply of the unyielding rocks." To this view again Mr. Rickard takes exception; and as regards the phrase "unyielding rocks," the exception is well taken; the rocks have yielded to the tangential pressure, some of them, the slates, for example, which give evidence of plastic flow, having thickened on the anticlinal axes and thinned on the limbs. At the same time, we find the sandstone beds forming the principal members of the corrugated series of rocks were well nigh unyielding, and they must necessarily have been strong enough to lift the superincumbent load formed by the development of the anticlinal arches. Doubtless it was to these beds Mr. Dunn particularly referred. It will be seen that the load on the anticlinals is transferred to the support of the arches at the point of inflection* and downward into the synclinals; therefore any opening or cavity formed at the axis of the anticlinals, through the slipping of the beds over each other, would remain open indefinitely or until the arches, continuing under increased bending strain and upward flexion, reached the point of rupture. The "Miner" should also remember that these corrugations were formed in rocks saturated with water; any cavity formed therein would, of course, immediately be filled with water, as incompressible as the inclosing rock.

The diagrams in Mr. Dunn's report are extremely valuable from a structural point of view. They show very clearly one process of land elevation or mountain formations. In one a block of strata one mile long and 2,000 ft. thick is shown in its original horizontal position, while another represents the same block in its present position, contracted from 5,280 ft. in length to 2,250 ft. At the same time, the height was increased by the contraction and corrugation from 1,000 to 4,700 ft. In another series of figures Mr. Dunn traces the Silurian rocks from their original horizontal position through the folding which shows the development of cavities on the anticlinals—a not uncommon geological phenomena. In a granitic intrusion below the Silurian beds is assumed, metamorphic action induced, the cavities filled with quartz forming saddle reefs, etc., while another shows a series of lava dykes penetrating the axis of the anticlinals and faulting the already formed saddle reefs, and a third shows that by subsequent movement the lava dykes were faulted. Here, then, in brief, is the whole process of the elevation of land, including the volcanic phenomena, which are almost invariably associated with local elevation, as pointed out by Darwin.

The numerous deep shafts and extensive mine workings at Bendigo have given a wide field for observation and research. Seldom, indeed, has the geologist had such an opportunity for examining the physical characteristics incidental to the elevation of land areas, the formation of auriferous quartz veins and the injection of basalt in dykes. That Mr. Dunn has made the most of his opportunity and presented us with a clear and concise explanation and description few will deny. His concluding report on this interesting gold-field will be looked for with much interest. PHILIP ARGALL.

DENVER, Colo., September 15, 1893.

Arizona Diamonds.—The occurrence of diamonds in the meteoric iron of Canyon Diablo, Arizona, which was announced by Dr. Foote, of Philadelphia, a few months ago, and concerning which considerable doubt was expressed by scientists the world over, says the New York "Evening Post," seems to be confirmed through the minute researches of Friedel, of Paris, to whom specimens were submitted for examination. The foreign bodies contained in the iron, to which a hardness of diamond had been ascribed, were determined, chemically, optically and by burning, to be virtual "carbonades." This discovery sustains the earlier announcements of Yerofeieff and Latchinoff and of Weinschenk regarding the association of diamonds with the meteorites of Novo-Urei and Arva. No satisfactory explanation of the association is as yet possible, but it seems indubitable that the diamond particles were formed coincidently with the solidification of the inclosing magma. The doubt may, however, suggest itself to some that not all so-called meteorites are truly such, and that more than ordinary caution for a proper discrimination is now necessary, since it has been shown, as in the case of the famous Ovifak and basaltic irons of Greenland, that the presence of the Windmanstattian figures is not an absolute criterion of meteoric structure. The specimens of the Ovifak iron brought back by the late expedition of the Philadelphia Academy of Natural Sciences, in their intimate association with an adhering basalt, practically place beyond question their telluric origin, and give to them the position to which they were doubtfully assigned by Steenstrup.

* See "Studies in Structural Geology, by Willis, Transactions American Institute of Mining Engineers, Vol. XXI.

MINING AT THE COLUMBIAN EXPOSITION.

Specially Reported for the Engineering and Mining Journal.

THE ROSE GARNET EXHIBIT.

At the Paris Exposition of 1889 a small piece of stone attracted the attention of one of the French magazines, and an article was written in same relative to the specimen. This described the stone as being of a white color with pink garnets of large size imbedded in it. Mr. William Niven, a mineralogist, of New York, read this article and went to Mexico, where, after a search of several months, the source of the stone was discovered. A beautiful exhibit of this stone can be seen in the Mexican exhibit, Mines Building, where huge pieces of it are cut into slabs and columns and highly polished, making in itself a most attractive display. The stone is a white siliceous limestone, closely resembling marble, imbedded in which are garnets of a beautiful rose color and varying in size from half an inch in diameter to 1½ in.; also scattered through the stone is bright yellow vesuvianite. The material is susceptible of a high polish, the garnets especially being very brilliant and gem-like. As a material for high-grade decorative purposes, it is very good, as the exhibit shows. It can be used for wainscoting, tiling, columns, altar work, pedestals, table tops, etc. It has already awakened interest among the decorators of New York, not only on account of its beauty, but also of its uniqueness. The material is harder than granite, but can be worked as cheaply. It stands weather admirably, and the cost of transportation from the mine to New York is but $13 per ton.

THE ROSE GARNET QUARRY AT XALOSTOC, MEXICO.

The quarry, a picture of which we give herewith, is situated at Xalostoc, Mexico. It is 10 miles from the railroad, and is reached by wagon roads recently completed by the company. The blocks of stone are shipped to Vera Cruz and thence by steamer to New York. The stone averages about 10 cu. ft. to the ton, and is found in a low spur of the mountain. This spur has a height above the plain of 125 ft., and is quite bold to the northwest. Near the summit of this bluff is a shaft 14 ft. in depth, which makes a better showing at bottom than at top. The Rose Garnet material is found over a surface of 300 ft. by 400 ft., and is exposed on the northwest for a short distance to the depth of 60 ft. Making full allowance for irregularity of surface and for whatever uncertainty there may be in the less exposed parts, it is estimated that 240,000 tons of Rose Garnet are in sight.

Lately the quarry has been developed by a large amount of blasting and clearing away of waste material. The face is now 40 ft. high and 200 ft. across. The company invites especial attention to this exhibit, its representative being always ready to describe the product shown.

SOME NOTES IN THE MINING BUILDING.

Mexico has in the Mines Building upward of 50,000 sq. ft. of space, devoted to the display of minerals. A dozen or more massive cases are filled with specimens of most every known mineral, and masses of Mexican onyx are distributed about the floor. In the center of the pavilion and surrounded by a brass railing is the exhibit made by the Batopilas Mining Company, of Batopilas, Mexico. A huge glass case incloses masses of native silver ore, some chunks weighing hundreds of pounds and others much smaller, but none the less valuable in proportion to size; $50,000 worth of silver is exhibited in this case, and it is the greatest collection of native silver ores ever exhibited by any one mine. The exhibit of Mexico is very attractive to one versed in mining or interested in mineralogy, but it does not cater to the crowds, for it is a fact that the pavilion is practically empty at all times, while the Cape Colony attraction next door draws immense crowds the live long day.

The British section in the Mines Building is fortunate in having for one of its exhibitors the firm of Johnson-Matthey & Co., Limited, of London, England. Such valuable metals as platinum, iridium, osmium, rhodium, ruthenium and palladium are displayed in their native states, and in alloy with other metals such as gold and silver in the manufacture of concentrating and laboratory apparatus, wires, sheets, crucibles, dishes, tubes, etc. A nugget of pure platinum weighing 158 oz. is displayed. A lump of melted iridium weighing 240 oz., and an ingot of pure palladium weighing 1,000 oz. extracted from native gold and platinum of the value of about $11,000,000, and valued at $35,000, are also exhibited. There is also a large plaster cast of the first piece of platinum ever melted. The original was melted by intense heat of combined gases in the presence of a large number of distinguished metallurgists in the company's platinum works in London, in order to prove the practicability of the process on a commercial scale. It weighed 2,300 oz. and was valued at $22,000. The entire exhibit of this company is valued at $100,000.

The mineral exhibit of the State of Michigan has been much enhanced in value and interest by the contributions of the following persons: Mr. Stephen Carkeek, Houghton; John Duncan, Calumet; Edward Ryan, Hancock; W. T. Edwards, Houghton; J. T. Reeder, Calumet; Col. Jas. W. Cox, Calumet; Graham Pope, Houghton; Fred Smith, Allouez; B. T. Judkins, Houghton; Mr. Burns, Central Mine; W. A. Childs, Calumet; Mrs. J. S. Dimock, Red Jacket; John H. James, Central Mine; Capt. Josiah Hall, Calumet; Dr. John McRae, Central Mine; Samuel Brady, Detroit, Mich.

The specimens here are all of copper ores, and show almost every formation known of that metal. The exhibit, as a whole, forms the most remarkable collection of copper-bearing ores ever gotten together. Our readers who visit the Fair should give these ores their attention.

The two greatest attractions in the Mines Building, World's Fair, are, first, the silver statue of Justice in the Montana pavilion, and, second, the diamond exhibit of Cape Colony, South Africa.

From morning until night the Montana pavilion is crowded with people anxious to gaze at the silver statue. Likewise the Cape Colony exhibit of diamonds attracts, continually, crowds who stand without the immense glass box and look with seeming awe at the half-million dollars worth of gems displayed within. The Mines and Mining Building is, partly on account of these exhibits, one of the best patronized of all the buildings on the ground; no other building outside of the Liberal Arts can compare with it in point of attendance.

THE M'CULLY ROCK AND ORE CRUSHER.

Among the machinery exhibits in the Mines Building, Fair, is the exhibit of the McCully Rock and Ore Crusher Company, of Philadelphia. We present herewith illustrations and description of the same. The shaft and crusher-head of this crusher are suspended and adjusted entirely from the top of the machine, the point of least movement or gyration of the shaft, thus diminishing the supporting

friction of the shaft and crusher-head to a minimum. Its shaft has upper and lower line bearings corresponding to its set angle, and as this angle is never changed, all adjusting friction due to change of the shaft angle and consequent finding or wearing of new bearings by the shaft when adjusted, and the increased consumption of power during the finding or wearing of such new bearings by the shaft, are avoided. It has a manhole or large opening in the lower casing section for access to the lower shaft-bearing and the actuating mechanism for oiling the same while the machine is in operation, without danger to the attendant; hence there is no loss of output due to stopping the machine for oiling. It has a removable bottom supporting the lower shaft-bearing with its actuating mechanism, so that all of said parts can be easily and quickly removed from the machine for repairs or replacement and be correspondingly returned without dismantling the shaft, crusher-head or other parts of the machine.

In Figs. 1 and 2 the top-plate B has a central hub-bore (b) with bottom flange b^2, upon which rests the sleeve b^3. The bore b may taper outwardly, from below upwardly corresponding to the angle

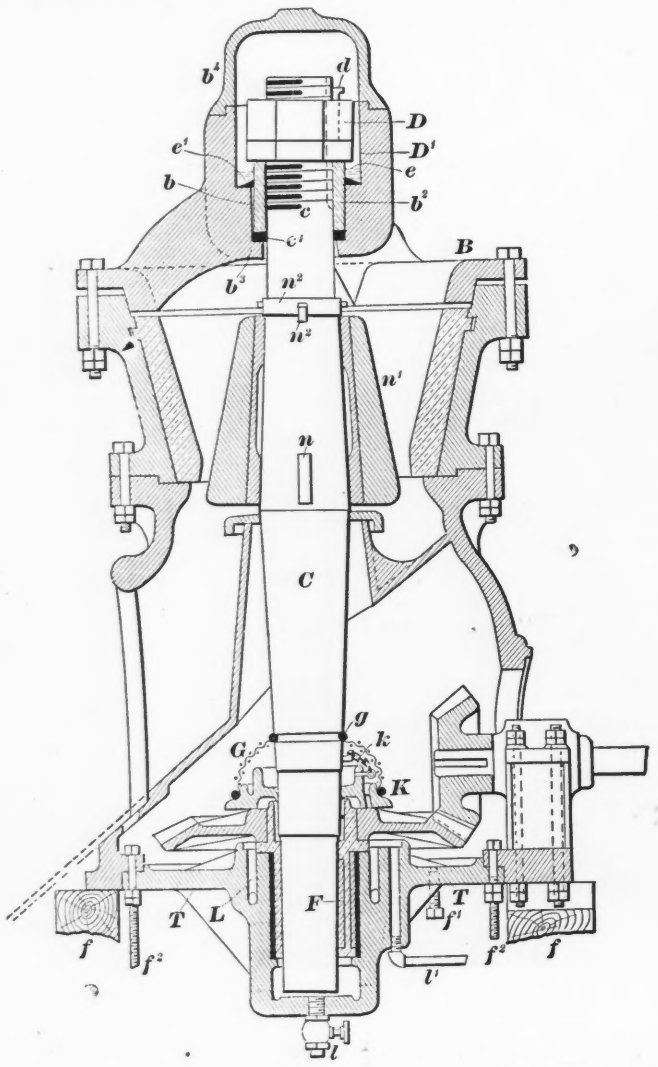


FIG. 1.

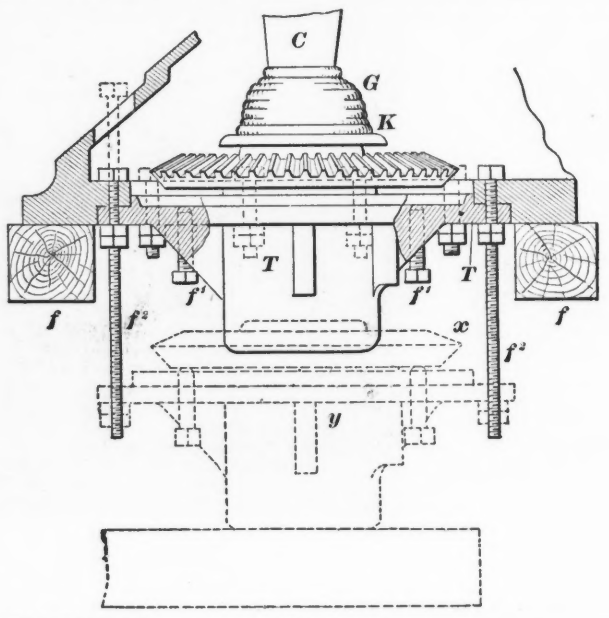


FIG. 2.

THE MCCULLY ROCK AND ORE CRUSHER.

or incline of the shaft C, or said bore may be cylindrical and the outside periphery of the sleeve b^2 taper from below upwardly, corresponding to the angle or incline of the shaft, as shown in Fig. 2. Two superposed steel nuts D, D^1 on the end of c of shaft C above sleeve b^2 support the shaft at its upper end. The upper nut D is shown provided with a key, d. In either case the nut with the key is the adjusting nut, and the threads of the upper nut D alone support the weight of the shaft and the downward pressure incident to crushing. The other nut is a locking nut for the adjusting nut, and both are tightly screwed up so as to be rigid on the shaft to prevent all wear. The support, therefore, never wears loose. In Fig. 1 a single cap or cover, b^4, and in Fig. 2 a double or sectional cap or cover, b^4, are shown for obtaining access to the nuts D, D^1, and for supplying oil to chamber e in bore b, in which chamber is an annular outer feather-edge ring e^1 for directing away from the shaft any grit or dirt and for graduating the supply of oil to the bearings for sleeve b^2 in bore b. A thin steel washer c^1 rests loosely on top of flange b^3, and steel sleeve b^2 is on said washer; the sleeve measures from 11 to 12 in. long and the thickness of its shell is from 1¼ to 2¼ in.; this depends on the size and weight of machines. The sleeve b^2 has its bearings in the hub opening b, to correspond with the incline of shaft C, and angle or incline of eccentric bearing at bottom and the sleeve is bored to fit shaft nicely. The shaft has a screw movement in the sleeve b^2 of from 6 to 7 in. up or down, as may be necessary to adjust for the degree of fineness required, or take up for wear of crushing faces. At same time, when it is down to the lowest point, there is then not less than from 5 to 6 in. of solid shaft without screw, inside of said sleeve. This prevents the screw-threads from cutting the bearings inside the sleeve.

It will be seen that all the weight of the shaft and crusher-head, together with the downward pressure when crushing, all rest on the nut D, sleeve b^2, washer c^1, and is finally all supported on the annular flange b^3 at the bottom the hub; this being the center of movement, or point of fulcrum, there is very little motion of the shaft. The sleeve b^2 gyrates with the shaft, which gives it a rolling or traveling movement on its bearing, and also on washer c^1 on flange b^3. By this improvement, as there is no rubbing or sliding, all unnecessary friction is avoided, and very little oil is required at this point, which in this machine never heats. The shaft being cylindrical and of uniform thickness at top and bottom ends, it makes no difference as to the distance it may move up or down; the line of bearing at top and bottom never changes, and the point of fulcrum is always in the same position. Shaft C swings freely as a clock pendulum and without friction, the eccentric hub F forcing it to gyrate. The bearings here move in a bath of oil, and, having no unnecessary friction, will never heat if properly oiled. The engine power is all exerted directly on the rock being crushed.

The lower section of the machine is constructed with a large opening or manhole with a close-fitting cover or door, as hown in figure, for the purpose of giving free access to the actuating gear and bottom bearings for adjusting, fitting and oiling at pleasure. The outer eccentric-bearing is oiled direct through said opening by means of a cup having a pipe conection with oiling chamber L. The collar K answers as a dust protector for the bearings. This collar does not revolve with the gear wheels, but moves with the gyration of the shaft, consequently the oil is not thrown out of the cup. It is attached to and gyrates with the shaft by a hook and chain connection k, which allows the shaft to slide freely through the collar K when adjusted from the top of the machine. G represents a hood or cover of canvas or other flexible material having an annular ring fastened to the bottom of same and resting on the outside ring of collar K, and fastened rigidly to the shaft at g. The cock l, at the bottom, is for drawing off the oil if required to wash out or make changes, and l^1 is the overflow pipe leading to a suitable overflow receptacle outside of the machine; n represents a key set rigidly in shaft G and a corresponding key seat in crusher-head n^1, so that the latter will pass down said key; this prevents the crusher-head from passing down below the proper position, and also any horizontal movement, and n^2 shows the fastening keys and ring at the top of the crusher-head to prevent it rising on the shaft.

The machine is made in nine sizes, No. 1 having a capacity of from 4½ to 8½ tons per day, while No. 9 can crush from 120 to 170 tons in the same time.

JOHN H. M'GOWAN COMPANY'S EXHIBIT.

In the exhibit of the John H. McGowan Company, of Cincinnati, located in Section 27, Columns K, L, 36, may be found excellent specimens of steam pumping and hydraulic machinery. The exhibit shows to the best advantage the merits of the various machines. Some valuable improvements (a number of which have been patented) have been added to both their single and duplex pumping machines. The pumps supply two fountains in the main basin of the hall as well as a handsome floral cascade near the center of their own space, which produces an artistic effect, being surrounded with palms and ferns. The power for operating the machines on the space is supplied by a new design of air compressor with an automatic pressure regulator which governs the pressure of air in the receiver from which the supply is taken. The exhibit comprises pumps of both single and duplex type, intended for every service. This company also makes a special line of pumps for mines. Attention is called to the twin-lever and glide direct double-acting pump, with removable, reversible anti-acid linings, as well as the patented valve seat.

VARIATIONS IN THE MILLING OF GOLD ORES.—NO. VII. SHOES AND DIES.

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

To illustrate the functions of the parts of a stamp mill we may employ the familiar analogy of the hammer and anvil. The stamp, viewed as a whole, is the hammer, whose impact crushes the ore, and similarly the bottom of the mortar box may be considered the anvil upon which that crushing is performed. The work is, however, more particularly done by and upon certain small portions of the mechanism, such as the shoes and dies, which are, therefore, made so as to be replaceable when they break or become worn out.

In modern milling practice the shoes and dies are made of a variety of kinds of iron, but it was not always so. In the valleys of the hills of Transylvania (Hungary) there can still be seen wooden stamps shod with agate falling upon a stone pavement lining a wooden mortar box. In the United States and Australia it will be found that the material of which the shoes and dies are made varies from chrome steel to wrought iron, and that the use of this or that variety of metal is a question to be decided quite as much by the distance from the foundry as by the initial cost or the excellence of the material.

The shoes and dies form those parts of the mill which finally subjugate the hardness of the ore preparatory to delivering it to the agents of amalgamation; it is on them, therefore, that the brunt of wear and tear necessarily falls, and other things being equal, the hardest ore will cause the greatest abrasion of iron. But these "other things" are not always equal, and we therefore find that a very wide variation is effected by certain conditions, among which may be mentioned the state of division in which the ore is delivered (large or small, even or uneven), the height that the stamp drops, the depth of the discharge or issue, the regularity of the feeding and the shape of the mortar box itself.

For the purpose of our inquiry into the variations in the wear of the shoes and dies it will be found convenient to express the excellence of their service by the number of tons of ore crushed from the moment when they are first placed in position to that time when they are discarded as being worn out and unserviceable. The difference in weight between the new shoes and dies and their worn out remnants represents the amount of metal consumed in the mechanical reduction of a certain number of tons of ore. If the remnants can be sold (as scrap) to a neighboring foundry the return so obtained will help, to a small extent, to diminish the initial cost. Figures will, however, be most expressive. In the comparative table which we give there are given the results of the use of different kinds of shoes and dies in various districts and under varying conditions. The figures were obtained by the writer during the past four years and represent the practice of eight mining centers, four in the United States and four in Australasia; they give the work done and the expense incurred at certain periods and under certain conditions, which, owing to alterations in the construction of the mills and the diminution of freights, are ever shifting.

A glance at this tabulated statement will indicate the wide difference between the results obtained at the different mills. It will be our business to inquire into the reason of these great variations, and to endeavor to determine whether they are warranted by the diverse conditions which obtain in milling centers so wide apart.

The wear of the shoe varies from 3·6 oz. to 21·3 oz. of metal per ton of ore crushed, while that of the die has a minimum of 3 oz. and a maximum of 7·9 oz. In the matter of expense the least cost of the shoe is at the rate of 2·02 cents and the greatest 7·64 cents per ton of ore, the minimum cost of the die is at the rate of 0·71 cent and the maximum 5·5 cents, while the combined cost under this head varies from 4·06 cents to 13·14 cents for every ton of ore crushed.

Brief reference to each milling center quoted will be of service in explaining some of these differences. In Gilpin County, the oldest established mining center of the State of Colorado, we find that cast iron is the metal employed. Chrome steel shoes and dies, manufactured at Brooklyn, N. Y., have been tried, but the millmen of Blackhawk prefer the product of the local foundries. It is mainly a question of economy. Though the steel wears in the ratio of only 9·3 oz. per ton of ore, as compared to 15·7 oz. of cast iron, yet the former costs twice as much as the latter, and therefore the resulting expense is in the proportion of 7·15 cents to 5·95 cents. Here, as is usually the case, the scrap iron is salable at 1 cent per pound, while the steel remnants are worthless. In the actual working of the mill it has been found that cast iron wears more evenly than steel, the latter tending to develop an irregular surface; this (called "cupping" by the millmen) diminishes the crushing surface and increases the vibration of the mechanism of the stamps.

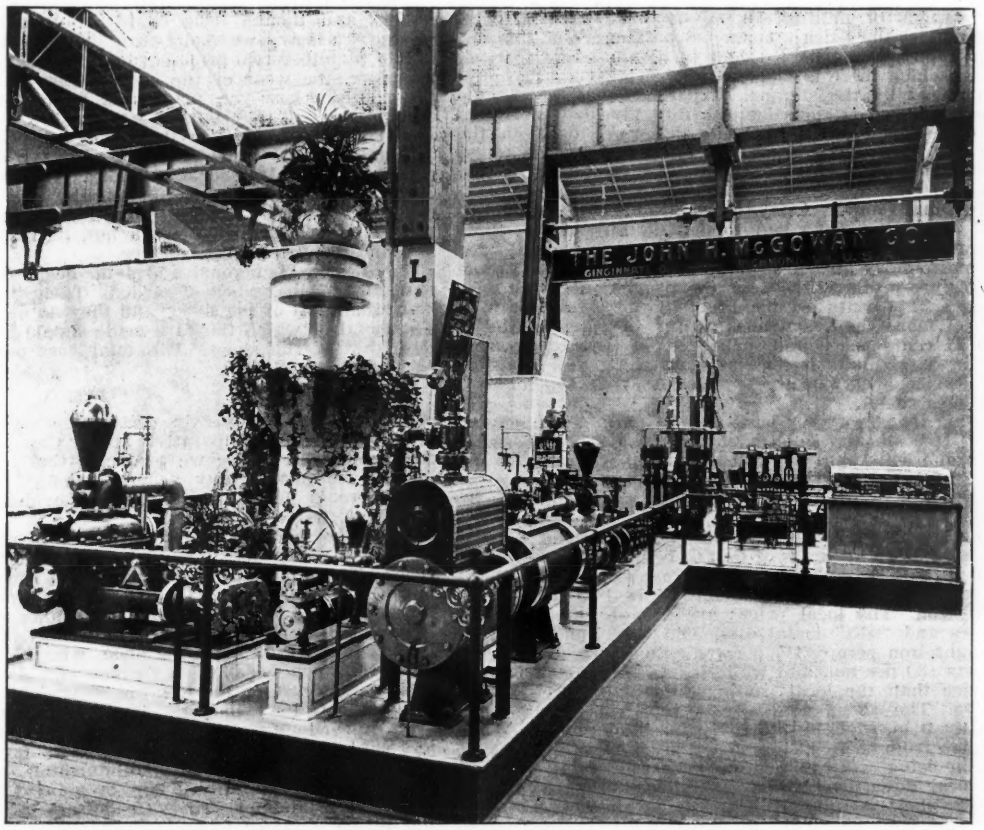


EXHIBIT OF THE JOHN H. MCGOWAN COMPANY AT CHICAGO.

The wear in this district is excessive, for the ore is of less than ordinary hardness. This is due in part to the extremely long drop prevailing in the mills, namely, from 16 to 20 in., but it is also caused by the absence of rockbreakers and automatic feeders.

At Grass Valley, in Nevada County, Cal., the ore is extremely hard. It is composed of white quartz and a varying, but very large, proportion of the syenitic county rock. The metal of the shoes is chrome steel, which comes from New York, while the dies are cast at the local foundry and contain a fifth part of steel, being the remnants of worn out shoes. It has been found, at the North Star mill, that the use of cast iron dies with steel shoes materially adds to the life of the shoes, and is much better than the use of the same metal in both shoes and dies. At the Empire mill both cast iron and steel dies are in use. There does not appear to be any marked difference in their manner of wear, and the steel does not exhibit "cupping." The seeming contradictory feature of this experience, as against that of Gilpin County, Colo., is to be explained by the fact that the more rapid drop of the California mill, accompanied as it is by a turn of the stamp, tends to equalize the wear and to maintain an even surface better than the very slow drop of the Colorado mill. At the Idaho mill chrome steel from Brooklyn has been found to give much longer service than steel shoes and dies manufactured in California. When the chrome steel and cast iron dies do not show much difference in the cost per ton of ore crushed, it is found that the millmen prefer the former because, though more costly, they last longer and therefore require less frequent replacement.

At Angels' Camp, in Calaveras County, Cal., the conditions are very

WEAR OF SHOES AND DIES IN STAMP MILLS.

	Name of district.		Metal.	Weight. New.	Weight. Worn out.	Ore crushed during time of service.	Metal worn per ton of ore crushed.	Cost of the metal per lb.	Value of the scrap.	Cost per ton of ore crushed.	Total cost per ton of ore crushed.	Remarks.
				Lbs.	Lbs.	Tons.	Oz.	Cents.	Cents.	Cents.	Cents.	
United States.	Gilpin County, Colo.	Shoes	Cast iron	83	27	80	11·2	4	1	3·82	5·95	No rock breaker; no automatic feeders; ore moderately soft; long drop; wear of the dies is very variable.
		Dies	Same	42	26	78	4·5	4	1	2·13		
	Grass Valley, Cal.	Shoes	Chrome steel	111	31	202	6·3	8	....	4·39	7·15	Rock breakers and feeders; ore very hard; dies contain ⅛ steel scrap.
		Dies	Same	55	25	159	3·0	8	....	2·76		
	Angels' Camp, Cal.	Shoes	Chrome steel	152	48	251	6·6	9	1½	5·17	9·43	Rock breakers and feeders; ore soft; short drop.
		Dies	Cast iron	93	45	93½	7·9	4½	1½	4·26		
	Mammoth, Ariz.	Shoes	Chrome steel	175	40	585	3·6	9	....	2·70	4·06	Ore medium. rockbreakers and feeders; no grizzlies.
		Dies	Cast iron	95	35	275	3·5	4½	1½	1·36		
Australasia.	Bendigo, Victoria.	Shoes	Chrome steel	132	40	190	7·7	11	....	7·64	13·14	No rockbreakers and no feeders; ore variable but medium hardness.
		Dies	Same	120	37	240	5·6	11	....	5·50		
	Clunes, Victoria.	Shoes	Cast iron	180	38	115	19·7	2½	¾	3·66	4·37	No rockbreakers; feeders used; ore almost entirely quartzose.
		Dies	Wrought iron	98	26	335	3·4	2½	⅛	·71		
	Harrietville, Victoria.	Shoes	Cast iron	196	56	105	21·3	2¾	¾	4·67	5·55	No rockbreaker; feeders used; dies wear very irregularly.
		Dies	Wrought iron	138	30	420	4·1	2¾	⅛	·88		
	The Thames, New Zealand.	Shoes	Fagot iron	172	38	185	11·5	3½	....	3·25	4·72	No rockbreakers or feeders; ore of very variable hardness.
		Dies	Same	84	37	200	3·7	3½	....	1·47		
		Shoes	Cast iron	170	51	135½	14·1	3	1	3·40	5·65	
		Dies	Same	108	42	141	7·5	3	1	2·25		

favorable to a minimum wear. At the time of my last visit the height of drop was 5 to 6 in. and the stamps dropped 95 times per minute. Since then the principal plant, the Utica mill, has been enlarged and the methods of milling slightly modified. The Stickles mill has also come under the Utica management. The ore of this district is particularly soft; the quartz occurs in small seams forming very wide lodes, in which there is more slate than quartz. The millstuff is readily crushed by the stamps. Experience has taught the local millmen that steel shoes and cast iron dies give better results than shoes and dies of similar metal. The difference between the wear of steel on cast iron, and of cast iron upon cast iron is found to be very small while the cost per ton varies by a fraction of a cent only.

At Mammoth, in Pinal County, Ariz., the conditions are very different to those with which we have had to deal in any of the three milling centers previously noted. The nearest railway is 52 miles distant and there is no foundry able to provide cheap castings. Chrome steel shoes and dies are preferred because the freight on cast iron is so high (from Denver, 2½ cents per pound), that the extra length of service of the steel more than compensates for the increased first cost. Steel costs 11 cents per pound, delivered, as against about 7 cents for cast iron. Here there is no doubt as to the fact that the greater length of service of chrome steel much more than compensates for its slightly higher cost.

The ore of this district is not very hard and the wear must be considered excessive. It is due to some extent to the absence of sizing bars (grizzlies) in the mill and the consequent unevenness of the material delivered to the stamps, and it is also in part caused by the small but varying depth of discharge which has a minimum of 1½ and a maximum of 6 in.

Going to the southern hemisphere, we find the wear and tear of shoes and dies is very much in excess of that to be noted in the United States. At Bendigo, both shoes and dies are furnished by the local foundries. The former are invariably made of cast iron and the latter of wrought iron. The local prices are £12 per ton for both "hard" metal shoes and "soft" metal dies. Old cast iron brings £4 per ton and wrought iron scrap £1½ per ton. Steel, when imported from England, costs £30 per ton, and while it has been found to give much longer service than the local castings, its high price renders its use prohibitive. The shoes generally weigh from 180 to 195 lbs. and are usually 9 in. high by 9½ to 10 in. in diameter. When worn out they weigh from 35 to 42 lbs. They give very poor service. 16 to 25 oz. of iron being worn away for every ton of ore crushed. Neither do they wear down evenly, but exhibit an irregular surface which much impairs their usefulness. The dies weigh from 80 to 110 lbs., their depth varies from 3½ to 4½ in. When worn out they weigh from 20 to 30 lbs. They give excellent service, wearing slowly and evenly. The loss of iron per ton of ore crushed varies from 3½ to 13½ oz.

Notwithstanding the excessive wear of the shoes, yet by reason of the excellent service given by the dies and because of the low first cost of the metal of both shoes and dies, the total cost is only about 4½ cents per ton of ore, a figure which compares well with the same item of expense at the American mills.

At the Thames district, in New Zealand, the excessive wear of the shoes is again marked and is again due to the absence of rock breakers and automatic ore feeders, causing the delivering of irregularly broken millstuff at a variable rate dependent upon the caprice of a combination of boy, shovel and sledgehammer.

Both shoes and dies are made of cast iron obtained at a local foundry. They differ in that the former is, and the latter is not, chilled. The price is £13 per ton. Old scrap is taken at £5 per ton.

The shoes weigh from 168 to 215 lbs. and vary in depth from 9 to 10 in. When worn out they weigh from 30 to 50 lbs. The wear is equivalent to from 6 to 16 oz. of iron per ton of ore crushed, the minimum rate being only obtained with soft surface ores.

The dies when new weigh from 80 to 116 lbs.; they are usually octagonal and they have a thickness varying from 3½ to 5 in. When worn out they weigh from 35 to 45 lbs. The wear varies from 5½ to 8½ oz. per ton of ore crushed.

The service given by both shoe and die is poor and is largely due to the very bad irregular feeding which is common to the mills of the district. The very variable hardness of the ore and the little care taken to maintain a constant depth of discharge are also factors in the production of this excessive waste of metal.

At Clunes, as at Bendigo, cast iron is worked against wrought iron. The shoes weigh 192 to 198 lbs. when new, and from 45 to 60 lbs. when worn out. They do not wear so evenly nor last so long as the dies, which weigh 130 to 140 lbs. when new, and from 25 to 35 lbs. when discarded.

The ore treated at the mills of this district is very nearly clean quartz, and though it is readily broken, its ultimate pulverization produces a heavy wear and tear. The South Clunes United mill has, unlike the other two principal plants (now idle), no rockbreaker, and, therefore, the wear of the shoe is very excessive. The low cost of the castings, however, makes the final cost far from high, since it amounts to only 5½ cents per ton of ore treated.

At Harrietville, also in the colony of Victoria, the shoes and dies are made of the same material, viz., fagoted white iron. It is obtained from a Melbourne foundry. The cost is £16 per ton. The castings are unsalable at Harrietville.

The shoes are 9 in. high by 9½ in. in diameter; they weigh, when new, 172 lbs., and when worn out, 38 lbs. They give good service and retain a fairly even surface.

The dies are octagonal and 4 in. deep. They weigh 84 lbs. when new, and 37 lbs. when discarded. Their time of service is less constant than that of the shoes, and they do not retain so even a surface. The metal of which they are made should be, but is not, more tough than that of the shoes. The total cost per ton of ore amounts to 4¾ cents.

CONCLUSION.

We have now passed in review the eight districts whose figures are given in the comparative table. Can anything be learned from the comparison or are we to decide that the results are too contradictory to warrant any generalizations? We shall, I believe, find that there is more harmony in the evidence of these figures than would at first sight appear.

Take, for instance, the fact, which is readily apparent, that the wear of the dies does not vary in an equal degree with that of the shoes. The minimum to the maximum is in the former as 1 to 2·6, but in the latter it is as 1 to 5·9. The explanation is to be sought for by referring to the analogy of the hammer and anvil. The die, which is the anvil, is protected by the ore which lies upon it and the brunt of hard work falls upon the shoe, which is unprotected.

The ore upon the die is a cushion and the more constant the thickness of that cushion the less the wear of the die. Here is where bad feeding does its evil work. The regular supply of ore particles of even dimensions is never obtained by the use of the sledgehammer and shovel, the absence of sizing bars (grizzlies) and of automatic feeders is a potent cause in diminishing the time of service of the dies. In this connection it may be pointed out that the depth of discharge—the distance from the bottom of the screen to the top of the die—is a factor whose importance is universally underestimated in stamp milling. In many mills, particularly in Australia, it will vary in the ratio of 1 to 2, or even 1 to 3½; such variation must necessarily assist in impairing the regular working of the mill and cause a heavy waste of iron, because under such changing conditions it is doubly difficult to regulate the thickness of the ore upon the die.

Experienced millmen always maintain that the use of a rockbreaker diminishes the wear of the shoes and dies. Is this confirmed by the tabulated figures? If you examine the results obtained under varying conditions, you will find that every milling center which does not use the rockbreaker, preferring the simple barbarity of sledgehammer treatment, has an excessive wear, which is most noteworthy in respect of the shoe. The effect upon the die is not marked, because, as explained above, the cushion of ore upon it serves as a protection, equalizing the wear and tear.

It will be noticed that the mills of Gilpin County, the Thames, Bendigo, Clunes and Harrietville, though working under a variety of conditions and crushing ore of very different hardness, have each of them a wear of iron exceeding 10 oz. per ton of ore crushed, while the rockbreaker districts—Grass Valley, Angels Camp and Mammoth—also working with ores which have a very different character, from very soft to extremely hard, show none of them a loss of iron exceeding 7½ oz. per ton of ore. In the cases of Grass Valley and Bendigo, the contrast is very marked, since while the millstuff of the California district is extremely hard, yet the liberal use of rockbreakers renders the wear only one-third that of the Australian center.

These results are in accord with common everyday experience. It is the hammer that must suffer the brunt of the unnecessary wear entailed by the attempt to crush particles of stone of unequal size. One moment the stamp falls upon particles of ore fine as dust, but the next it is dancing upon a large stone which it does not break at the first blow, doing useless work and having its iron unnecessarily abraded and chipped.

The low price of castings in the milling centers of the antipodes accentuates the high prices which still obtain in the mining camps of the United States. These high prices seriously handicap the economic success of mining and milling in the Great West; they are in many instances out of date and out of keeping with the diminution in freights and the cheapening all over the world of everyday commodities.

The great variety of metal used in the shoes and dies of the various mills is due to a rule-of-thumb policy. The analogy of the hammer and anvil shows that the metal of the anvil should be, and is, softer and tougher than that of the hammer. It should be so in the case of the shoe and die. The best results are to be obtained not so much by the employment of the hardest material, as by having the die made of metal more tough, less brittle, than that of the shoe. Thus steel and cast iron, chilled and unchilled iron, cast and wrought iron, are combinations which generally give good service. The excellent work done by wrought iron dies at Clunes and Bendigo should teach a lesson to those who are seeking to obtain a metal of excessive hardness for the manufacture of dies.

In summing up, we find, as common sense and ordinary experience would suggest, that in the matter of the shoes, it is the use or otherwise of the rockbreaker (with grizzly and self-feeder) which will most affect their wear, and in respect of the die the desideratum is a metal which shall be less hard and more tough than that of the shoe which falls upon it.

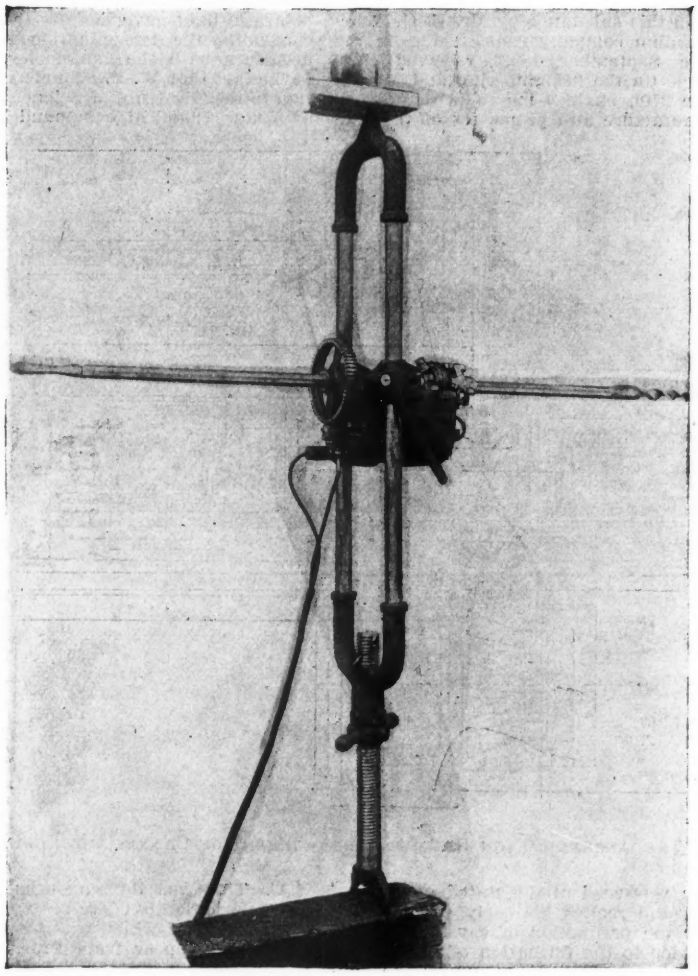
Salt in Russia.—A recent report of the British Consul at Faganrog gives some particulars as to the salt industry of the province of Astrakhan. The works at the Elton Lake, which had been in operation since 1847, have been entirely abandoned, owing to the cost of transporting the salt to the shipping points on the Volga. The same may be said of the salt hill at Chapchachi. The chief source of supply at present is the Baskunchak Lake, which covers an area of 66 square miles, underlaid by a bed of salt. Surveys made in 1883 prove the bed to be from 20 to 28 ft. deep; and the analysis made by Professor Fedchenko, shows as follows: Chloric natron, 97·436%; chloric magnesium, 0·403%; sulphate of magnesia, 0·132%; sulphate of lime, 0·659%; mineral matter, indissoluble in water, 0·373%; organic matter, 0·157%; and water, 0·782%. The bed is worked in a primitive manner, the salt being broken up by crowbars and hammers and carried to the shore in rafts. The output for four years has been, in metric tons: 1892, 222,552; 1891, 231,421; 1890, 236,905; 1889, 221,586 tons. The other source of supply is a group of 70 small lakes near Bassora, in the southeast part of the province, where the nature of the deposit and the methods of working are very similar to those described. The output of these lakes is diminishing, having been for four years: 1892, 35,024; 1891, 42,349; 1890, 65,434; 1889, 91,892 tons.

A NEW PORTABLE DRILL FOR COAL MINES.

A small portable drill for both anthracite and bituminous mines to supplant the laborious breast drill, and to be used in place of percussion hand drills in work involving the removal of the slate or rock roof and floor, long needed, has been recently put out by the General Electric Company. Two types are made, one for heavy work in anthracite or drilling in hard slate or "boney"; the other for lighter anthracite drilling and for bituminous coal. The drills are interchangeable in their mounting, the same post taking either. The control of the motor is effected by a small plug switch. Feed screws of different pitch are furnished for varying the speed of boring, and a friction clutch protects the motor should any particularly hard obstacles be struck suddenly. The columns are made in different lengths, and each is adjustable for about 2 ft. variation. The construction of the drill and its method of mounting enable the operator to drill close to the roof, floors or walls as well as in any direction as above noted.

A series of tests with one of the drills were made at a colliery of the Connell Coal Company at Duryea, Pa. The drilling was done with a feed-screw having 4 threads per inch, and the following results were obtained: 1. Hard slate, 2 ft. in 30 seconds. 2. Hard slate, 2 ft. 6 in. in 32 seconds. 3. Anthracite coal, 2 ft. in 17 seconds. 4. Anthracite coal, 2 ft. 6 in. in 17 seconds. 5. Hard slate, 2 ft. 1 in. in 20 seconds. 6. Hard slate, 2 ft. 6 in. in 25 seconds. The tests were then made with a feed-screw having 6 threads per inch, as follows: 7. Rock, 2 ft. 6 in. in 50 seconds. 8. Rock, 2 ft. 6 in. in 1 minute 34 seconds. Test No. 4 showed a rate of drilling of 6 ft. in 48 seconds. Tests Nos. 7 and 8 were made in a very hard rock, locally called "boney." It is about the same nature as a very hard white slate. A heavy blow from a mine pick makes very little impression upon it, and it does not cut easily or chip.

After the above tests were made the drill was taken to a part of the mine where the floor was being blasted up to get into another vein. This floor consisted of very hard rock (boney). No breast auger or hand machine drill could be used in it. The holes that had been put in previous to the arrival of the drill had been put in by the hand jumper, one man holding the bar and the other driving it with a sledge. The two men could put in a hole 3 ft. deep in from 2 to 2½ hours. There was a large amount of water in this part of the mine, and it was expected that considerable difficulty would be experienced in getting rid of the dust and cuttings, as the water runs into the holes as fast as they are drilled. Two men placed the drill in position, handling the frame and drill together. The time for drilling the 5-ft. hole was 3 minutes 20 seconds. The augers when taken out of the holes were too hot to handle, and had the appearance of having been pressed against a rotating grindstone, as fully ¼ in. was ground off. The augers had been so hardened that



THE GENERAL ELECTRIC COMPANY'S NEW ROTARY COAL DRILL.

a file would not make any impression on them, and they must, therefore, have met some very hard material. Five holes were drilled and blasted by two men in 2½ hours, and about 500 cu. ft. of rock was loosened up ready for loading onto the mine cars. On the following day the drill was used for taking down 300 ft. of roof along the main gangway, commencing at the shaft. The width of the gangway was 8 ft. 6 in.; average thickness of material blasted down, 3 ft. Two men handled the drill, two men tamped the holes for blasting, and eight laborers took away the material. Two men put in 60 ft. of holes in 2½ hours, tamping four of the holes in the meantime to allow two tampers to catch up, as it was found that two men could easily drill holes faster than two men could tamp them for blasting. The nature of the material in the roof was hard slate and boney. All the holes were put in at an angle of from 30° to 40°.

The smaller drill weighs, with post complete, only about 160 lbs., the drill itself weighing 100 lbs. In bituminous coal this drill shows a speed of drilling of 5 to 7 ft. per minute with a six-thread screw. These tests seem to show that these rotary drills meet the severe requirements of minework, and are a valuable addition to the coal miner's equipment.

CARBORUNDUM.

Written for the Engineering and Mining Journal by Wm. P. Blake.

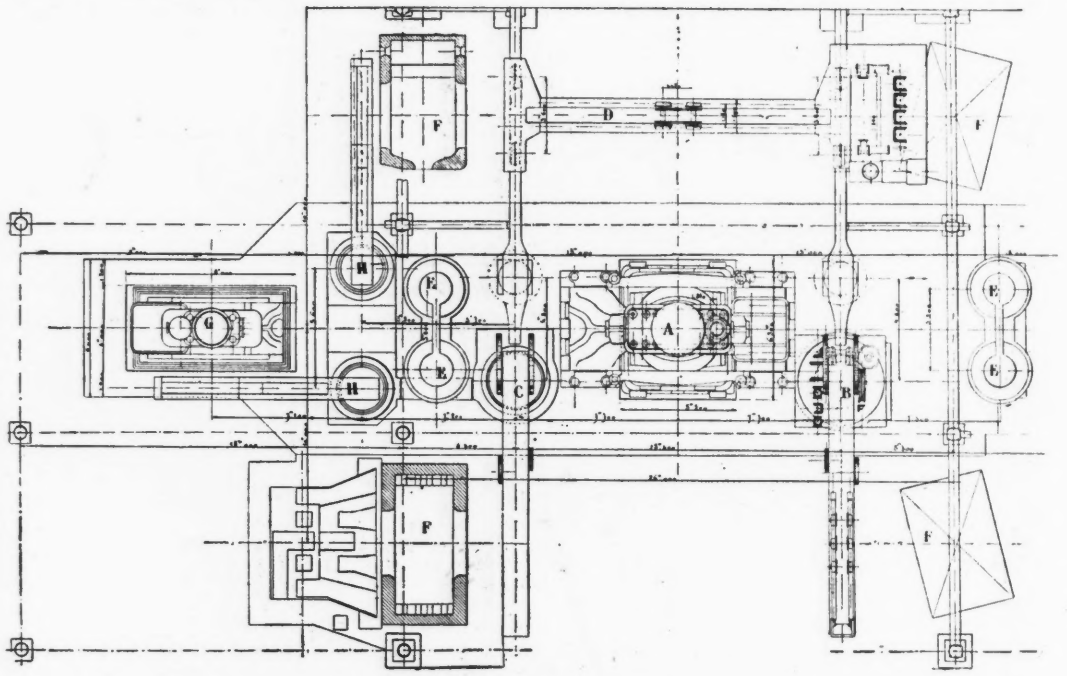
The publication of a memoir upon this substance by Mr. E. G. Acheson, the president of the Carborundum company (reprinted from the Journal of the Franklin Institute, September, 1893), received after the publication of the former article (in the "Engineering and Mining Journal" for September 9th, page 270), enables me to present some further information upon the manufacture and properties of the substance. Mr. Acheson's description was read at the stated meeting of the Franklin Institute, June 21st, and recites his early experiments, as far back as the year 1890, for the production of crystallized carbon in the electric furnace, which led to the formation of the carbide of silicon, to which he gave the name carborundum, under the supposition that he had formed a combination of carbon and aluminium, the mixture in the furnace originally consisting of carbon and corundum, for which, later, a mixture of carbon, silex and common salt was substituted. Salt was found to be beneficial in facilitating the fusion and in protecting the mass from oxidation. Experience has shown that a good proportion for the mixture is 20 parts of carbon, 25 parts of sand and 10 parts of salt, by weight. A core of carbon is used to connect the poles and is found unaltered after the operation, it being surrounded by the mixture, while it serves to conduct the current, and by its resistance to transform the electrical energy into heat energy. In later forms of the furnace four carbon electrodes are used at each end of a rectangular box, or trough, built of fire-brick, and 6 ft. long, 18 in. wide and 12 in. deep. The core is tubular and extends nearly the length of the box. An alternating, and not a direct, current is used. To produce 150 lbs. per day of 24 hours requires an expenditure of 78 H. P. for a like period, amounting to 12 H. P.-hours for each pound of carborundum produced. A furnace of the capacity and construction named requires from 7½ to 8 hours' time to complete the transformation of a portion of the charge into 50 lbs. of carborundum, and three charges are worked in 24 hours.

The carborundum as removed from the furnace is a mass of crystals incrusting the core in comparatively loose radial aggregates, which are crushed in water and then digested with dilute sulphuric acid for seven days to remove iron and other impurities. It is found that the crystals are not acted upon by any of the acids, not even hydrofluoric acid, which may be used to remove any excess of silica, nor are they affected by a current of hot oxygen by which any excess of carbon is removed, but they are slightly acted on by the caustic alkalies and the carbonates of the alkalies, and are decomposed by fusion with carbonate of soda. Analysis of a sample well cleaned by the above indicated methods showed the composition to be: Silicon, 69·10; carbon, 30·20; with small quantities of alumina, iron and lime as impurities, the presence of which gives the color, for if pure carbon and pure silicon are used the crystals are white.

Mr. Acheson gives the results of several analyses by Dr. Mulhaeuser, the company's chemist. He found the specific gravity of some of the green crystals to be 3·22. Prof. J. W. Richards found the specific gravity as 3·123 for the green crystals, and that the blue crystals have a lower specific gravity.

A crystallographic examination has been made by Prof. B. W. Frazier, of Lehigh University, who finds that the crystals are rhombohedral, their disc shape being due to the predominance of the basal pinacoid. He says: "The observed forms consisted of numerous direct and inverse rhombohedra with the basal pinacoid, and in some crystals the prism of the first order. In some crystals the rhombohedral symmetry was evident, in others the direct and inverse rhombohedra of the same parameters were found on the same crystal, so as to impart to it an appearance of holohedral hexagonal symmetry. This holohedral habit was observed in bluish green and blue crystals, while in those yellowish-green crystals which were examined in the goniometer the habit was rhombohedral."

The value for the length of the vertical axis, calculated from four good measurements, was found to be c = 1·2264. An examination in polarized light gave the interference figure of a uniaxial mineral, thus confirming the determination of hexagonal symmetry made by measurements with the goniometer. Mr. Acheson also directs attention to the fact that W. P. Schuetzenberger, in May, 1892, in a communication to the Academy of Sciences of France, described the manufacture of a new chemical compound of simple formula, the symbol being



THE MARREL 100-TON HAMMER—ARRANGEMENT OF CRANES AND FURNACES.

S C. This was three months after Mr. Nikola Tesla had exhibited an electric lamp containing carborundum (silicide of carbon), the composition of which was not, however, known at that time.

It would appear from Prof. Frazier's report on the crystallization that there is a great difference in the habit of the crystals made at different times and under different conditions, thus confirming my own conclusions. The crystals I had were all tabular and decidedly rhombic in habit, with the rhombohedral planes so small that I could not measure their inclination with any instruments at hand. It should have been more distinctly stated in the former article that the figures given were intended as mere sketches of the general appearance of the crystals rather than as exact crystallographic drawings.

Mr. Acheson states that the powder of carborundum has been successfully used in polishing diamonds, and he believes that in the form of a very fine powder it compares favorably in hardness and cutting qualities with diamond powder of equal fineness.

A New Swiss Electric Water Power Plant.—The communities of Neuchatel, Loche and La Chaux-de-Fonds, in Switzerland, are about to carry out a comprehensive water power project looking to the utilization of the waters of the River Reuse for the generation and distribution of electric power for general power and lighting purposes. The project provides for damming the river and carrying the water through an artificial channel to a large storage and distributing reservoir at Combe Garrot, immediately above the site chosen for the station. The head of water made available in this way will be about 300 ft., and the channel to be built is to have a capacity of about 177 cu. ft. per second. The normal flow of the river, however, is considerably less than this, averaging about 106 cu. ft. per second, while the minimum flow does not amount to more than about 60 cu. ft. per second. It is, however, rarely the case that the river reaches this low point.

THE MARREL 100-TON STEAM HAMMER.*

The firm of Marrel Freres owns large works at Etaings and Rive-de-Gier, forming one of the group of great forges and furnaces in the Department of the Loire in France. Their works have been gradually built up from a modest establishment in which Francis Marrel, nearly a century ago, began to make cannon and war material for the first French Republic. Armor plate and gun-forgings are an important business still, but are by no means the whole of the work done in these forges, since ship forgings, shafts and other work for stationary and marine engines are turned out.

Up to 1855 a 25-ton hammer was the largest tool in these works. Later a 50-ton hammer was built, and still later plans were made for a 100-ton hammer, on which work was begun in 1891; it was built entirely in the shops of the firm, and was finally completed and began to work in 1892. It is in some respects more powerful than the 100-ton hammer at the Schneider Works in Creusot and that at the steel works of St. Chamond, and is only exceeded in size by the great 125-ton hammer lately completed by the Bethlehem Iron Company.

The anvil, which is entirely independent of the hammer, is placed upon a foundation of heavy oak timber resting on a bed of concrete on solid rock. It is composed of four tiers, the lower consisting of three blocks of cast iron, each weighing 90 (metric) tons; the second works on tracks supported by heavy pillars. This crane can traverse the entire length of the shop.

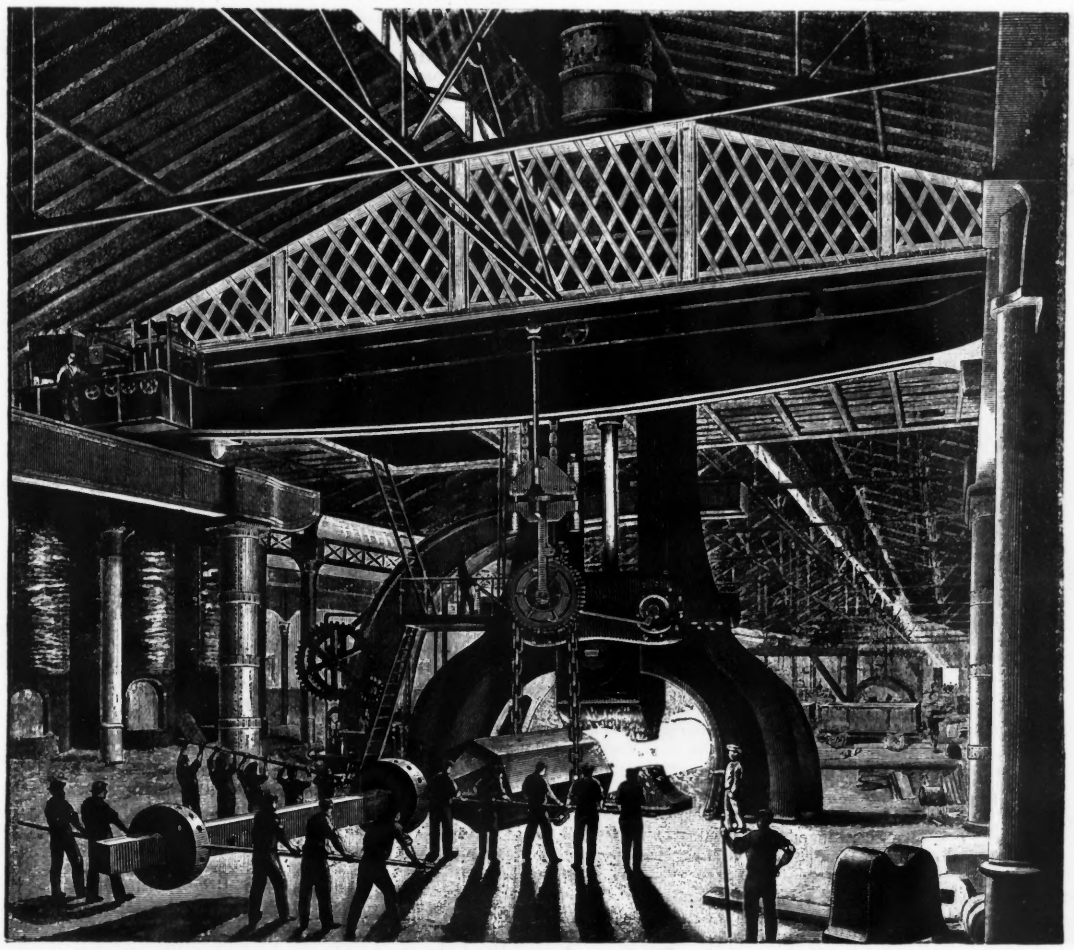
In the plan of the hammer shop A is the 100-ton hammer; B the 180-ton swinging crane; C a 90-ton crane; D the 120-ton traveling crane above referred to; E E the vertical boilers, and F F the heating furnaces. The older 50-ton hammer is shown at G, and at H H the cranes which serve it.

The 100-ton hammer stands in a building especially erected for it, and proportioned so that it will contain also a hydraulic press for armor-plates, which is to be added hereafter.

LE CHATELIER'S PYROMETER.

Written for the Engineering and Mining Journal by B. K. Grati ny.

This pyrometer has been so frequently described that it needs no introduction as a new instrument. Thermo couples, as is known, generally possess certain defects, but in practical work about a blast furnace or steel works the inability to read to 0·1° or even 10° is a matter of no great moment. Unless such reports have escaped notice, this pyrometer yet awaits the scrupulous examination that some others have received, and for that reason we record a few facts which seem to show that it deserves more extensive application.



THE 100-TON HAMMER AT THE MARREL FORGES, ETAINGS, FRANCE.

and third each of two blocks of 90 tons, and the top tier of a single block of 125 tons of cast iron. The bolts and keys holding these blocks together weigh at least 5 tons more, making the weight of the anvil 760 tons.

The pillars or legs of the hammer are in two pieces; they rest on heavy cast iron shoes anchored each to a masonry pillar, built up from the bedrock. These legs are 10·80 metres in height and carry the entablature upon which rest the cylinder and steam-chest. The cylinder is 2·00 m. in diameter and 5·60 m. stroke. The piston rod is 0·37 m. in diameter. The valve is of the piston type and receives steam through a pipe 0·65 m. in diameter, while there are two exhaust pipes each 0·35 m. diameter. The valve motion is of a very simple type and is readily controlled by the hammerman. As to other dimensions, the guides in which the hammer-head works are 2·30 m. apart. and the clear space above the anvil is also 2·30 m. The top of the cylinder is 18·80 m. above the floor level. The weight of the hammer, independent of the anvil, is 596 tons. The aggregate weight of the moving parts is 100 tons. made up as follows: Hammer, 77; piston rod, 8; piston, 6; die and head, 9 tons. The larger illustration is a general view of the hammer at work on a gun forging; the other shows the general arrangement of the shop.

The hammer is served by two cranes. One is a swinging crane with a capacity of 180 tons, which is believed to be the largest ever built; the other is a traveling crane of 120 tons capacity, which

* Translated and abstracted from artfele in "Le Genie Civil."

Delicacy, accuracy and constancy can be claimed for this pyrometer. The delicacy of thermo couples needs no remark. We would conclude from the fixity of platinum and rhodium that, with reasonable precautions, any alteration must be so slight that the electro-motive force of the couple would remain unchanged.

A couple was exposed for more than two weeks' time to a temperature of about 850°C., during which period the zero of the pyrometer had not changed. The couple was protected by a single wrap of thin platinum foil. During the two weeks' exposure full opportunity was given for the occlusion of gases; if any occurred—and a pyrometer will seldom be exposed to more trying conditions—its effect was inappreciable. The constancy of its indications with such treatment justifies some confidence in its accuracy.

Next a portion of the lead wires was exposed unprotected to the flame. After several days of such exposure there was evidence of brittleness; the wires were removed and tested, and it was found that an increased resistance had resulted. With the removal of the injured portion the galvanometer again deflected normally. The covering of the couple was then removed and a like exposure of the junction to the point of brittleness also caused the lowering of its indication of a standard temperature. From the above it is obvious that the couple and wires should be protected from direct flame, gases, metallic vapors or any other agency that would effect alteration. This is a matter that will determine the constancy of such a pyrometer.

Although some users of this couple have found it sufficient to merely twist the wires together, I have been unable to obtain concordant results by such contact. Several twists of the wires to hold them together, the tip being fused in the oxyhydrogen flame, work satisfactorily. The method adopted to secure this protection, and simultaneously uniform conditions as to length of wire exposed, thus maintaining constant resistance, has been to inclose the couple in a small porcelain tube in which a roll of mica has been placed to prevent contact with the porcelain; the wires are insulated from each other by means of a mica septum. The external diameter of the tube is 7 mm.; internal, 3·5 mm.; length, 9 cm. This is fitted into a soft iron water-cooler, 5 cm. of the porcelain tube being allowed to project; of course, the projecting end contains the coupie.

For ordinary work the porcelain tube is sealed at the exposed end; but where very small and sudden changes of temperature are to be recorded, such as the recalescence and other critical points of iron and steel, the entire apparatus is in every respect similar, except that the outer end of the porcelain tube remains open; the couple is pushed forward till it projects 1 cm.; this is protected by a single wrap of very thin platinum foil. A pyrometer so simple, yet accurate, will, no doubt, be of value to many.

SPELTER PRODUCTION IN THE UNITED STATES.*

The production of zinc in the United States increased again in 1892, though it was less than in 1891. The steady expansion of this industry has been due to a general development in all the zinc districts of the country, especially in those of the Western States. In Illinois 1,640 tons more zinc were produced in 1892 than in 1891; in Kansas and Missouri, 1,574 tons; and in the Eastern and Southern States, 187 tons less.

The chief ore supply of the Illinois smelters is the Joplin district of Kansas and Missouri, less important amounts being derived from the Wisconsin mines; while all the metal made in Kansas and Missouri is from ores originating in the southeastern corner of the former and the southwestern corner of the latter State. The past year was one of greatly increased activity in this region, and the greater part of the gain in the make of spelter can be traced directly to its mines.

Outside of the Joplin district, where a new smelter was built by the American Smelter Company, and a new departure made by the shipment to Europe of several small lots of ore and one lot of spelter, there were no important developments in the zinc industry in the United States. The Hanover district in New Mexico, whence 700 tons of ore were shipped in 1891, did nothing in 1892, the Mineral Point Zinc Company, which owns the mines, having concluded to suspend operations for the present. There are said to be large deposits of zinc ore at this place, but they are too far from market to be of much value yet.

PRODUCTION OF SPELTER IN THE UNITED STATES.*

	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.
Tons of 2000 lbs.	7,343	10,000	15,833	16,000	17,500	19,000	21,000	23,239	30,000
Tons of 2240 lbs.	6,556	8,928	13,690	14,286	15,625	16,964	18,750	20,740	26,786
Metric tons, 2204 lbs	6,664	9,074	13,914	14,520	15,281	17,242	19,057	21,080	27,225

States.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Illinois	18,201	16,792	17,594	19,427	21,077	22,279	22,445	23,860	26,279	28,660	30,300†
Kansas	7,366	9,010	7,859	8,502	8,932	11,955	10,432	13,658	16,380	21,460	23,088
Missouri	2,500	5,730	5,230	4,677	5,870	8,660	13,465	11,077	13,530	16,205	16,161
Eastern and Southern States	5,698	5,340	7,861	8,082	6,762	7,446	9,561	10,265	11,153	13,938	13,751
Total tons of 2000 lbs.	33,765	36,872	38,544	40,688	42,641	50,340	55,903	58,860	67,342	80,262	83,300
Tons of 2240 lbs.	30,138	32,837	35,317	36,328	38,072	44,946	49,913	52,553	60,126	71,662	74,375
Metric tons of 2204 lbs.	30,642	33,375	35,585	36,921	38,696	45,682	50,731	53,414	61,111	72,836	75,594

* The figures for the years 1873 and 1875 and for 1882 to 1888, inclusive, are taken from the *Mineral Resources Report of the United States Geological Survey.* The figures for 1880 are from the Census report for the year 1880, ending May 31. Those for 1889 are from the Census report for that year. The figures for 1874 and for 1876 to 1879, inclusive, and for 1881 are estimated. The figures for the years 1890, 1891, and 1892 are from returns made to the *Engineering and Mining Journal* by each of the producers.

† In this figure, however, is included a small amount made by a new works just started in Indiana.

California Midwinter International Exposition, San Francisco, Cal.—An international exposition will be held at San Francisco, Cal., from January 1st to June 30th, 1894. The site of this exposition is located in Golden Gate Park and will cover an area of about 100 acres. There will be five principal buildings for the Midwinter Fair, viz., Manufacturers' and Liberal Arts, Agricultural and Horticultural Hall, Mechanical Arts, Fine Arts and Decorative Art, and Administration. Mr. M. H. de Young, vice-president of the national commission, World's Columbian Exposition, Chicago, will act as director general and president of the executive committee of the Winter Fair; the other members of the administration and officers are: Irwin C. Stump, vice-president; P. N. Lilienthal, treasurer; Col. A. Andrews, R. B. Mitchell, Hon. Eugene J. Gregory, Sacramento; Jacob H. Neff, Colfax; Fulton G. Berry, Fresno; J. S. Slauson, Los Angeles; Alexander Badlam, secretary; R. Cornely, assistant director-general. Information for intending exhibitors, maps of the grounds, buildings, etc., may be obtained by applying to the Department of Publicity and Promotion, California Midwinter International Exposition, Mills Building, San Francisco, Cal. Ground was formally broken last week.

* From the "Mineral Industry" for 1892: copyright by the Scientific Publishing Company. The article gives full details of production in the several States.

TREATMENT OF SULPHIDES AT BROKEN HILL, N. S. W.

In his semi-annual report, presented July 27th, Manager Howell discusses the vexed subject of the treatment of sulphides. He says that the present experiments and researches are to find, if possible, some cheaper and yet effective method of treating the ores under existing conditions at the mine. The ores are complex in character, and the lead, zinc, iron, copper, sulphur and silver, the principal components, are so very intimately associated that they may be considered to a great extent as chemically combined, and no one direct treatment, like smelting, can break up this combination and liberate the valuable metals. The principal minerals, however, combine in very varying proportions in the same ore, and in any small piece of the ordinary sulphides the eye can detect particles of lead and zinc having respectively their own natural crystalline form, while side by side with these can be seen particles of the two minerals blended together in apparently chemical combination. Unfortunately, all the combinations carry nearly equal proportions of silver, so that a separation of the zinc and lead by any mechanical process leaves us with all the separated products valuable in silver. The experiments so far have been to ascertain to what extent concentration can be applied to the separation of the minerals, with a view of making one product high in lead and sufficiently low in zinc to be a good smelting material, leaving the other principal products which would be high in zinc and silica to be treated by some less expensive process for the recovery of the silver they contain. There have so far been put through the experimental plant about 300 tons of the different kinds of sulphides. The results as far as the concentration of a portion of the whole into a product high in lead and sufficiently low in zinc to make a good smelting material is concerned has proved satisfactory. From 24% to 31% of a concentrated material has been obtained, carrying over 60% lead, containing from 20 to 34 oz. of silver, and from 7 to 9% of zinc per ton, according to the varying contents of the above minerals in the crude ores. The great bulk of the remainder is a product high in zinc, silica and garnet, and containing from 7 to 12 oz. of silver to the ton. This material is now being treated by a desulphurizing and chloridizing roasting in revolving cylinder furnaces for the purpose of chloridizing the silver, to be subsequently extracted by hyposulphate of soda leaching. It is well known that this method is one of the cheapest by which silver can be extracted from its ores, and the important part of the operation is the chlorodizing of the silver, for by the leaching process the combination of silver and chlorine (chloride of silver) is the only one that can be successfully treated. It is difficult to chloridize the silver contained in a dense zinc blende to a high percentage, and so far results have been variable on the highly zinciferous tailings, but mixed with about one-third of low-grade silicious ores, the percentage of the silver chloridized was high and the results very favorable. Further experiments in this direction will be made. So far experiments with concentrating the sulphides have established two important facts; one is, that the concentrates obtained from the crude ore will pay for the cost of mining, crushing, concentrating and smelting, and leave a very fair profit without taking into account anything that may be made out of the residue or tailings. The other fact is, that with these high-lead concentrates there is no fear of a scarcity of lead fluxing ores for the successful treatment of all the kaolin and other semi-dry ores in the mine. The treatment of the ores by these methods will leave the great bulk of the zinc in the tailings in a concentrated form, to be afterward treated if it should be found that the extraction of zinc could be made profitable.

Coal Production in Spain in 1892.—The production of coal in Spain in 1892 amounted to 1,290,464 tons, against 1,353,860 tons in 1891.

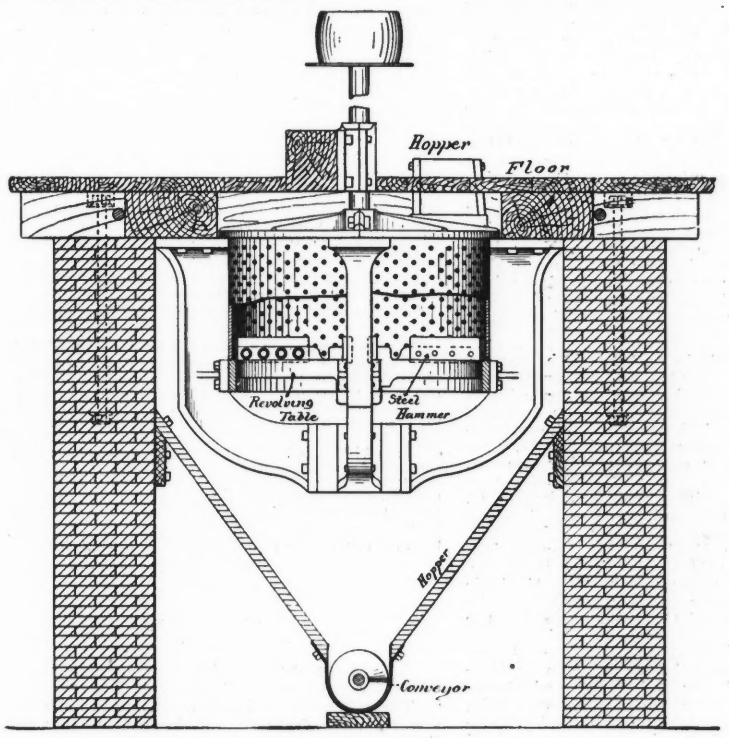
Mineral Imports of Great Britain.—The imports of metals into Great Britain for the month of August included 18,236 tons copper, 17,610 tons lead, 4,123 tons zinc, 45,395 cwt. tin and 421,370 tons iron ore. For the eight months ending August 31st the imports included 147,213 tons copper, 126,629 tons lead, 429,538 cwt. tin, 36,833 tons zinc, 445,619 tons pyrites and 2,968,687 tons iron ore. The exports for the eight months to August 31st included 435 tons copper and 1,000,785 tons of iron and steel.

THE MAGIC CRUSHER.

This machine reduces phosphate rock, rock asphalt, bones, ores and all friable and semi-friable materials from masses up to 12 in. cube or diameter to any grade desired from size of nut coal to size of sand. It takes the place, for fine crushing, of jaw crushers, roller crushers, etc., doing the work at one operation, and has successfully reduced rock asphalt, cattle hoofs, raw bone and other equally refractory materials. This machine involves a principle of operation consisting essentially in violently striking and shattering the masses of material while falling in mid-air. This manner of reduction has proved satisfactory, and by it all crushing or grinding surfaces and strains are done away with, and it is adapted to a great variety of materials.

The machine consists of a heavy rapidly revolving table, with four steel hammers, or splintering blocks, attached, placed upon a vertical shaft and surrounded by a perforated casing, within which it revolves and through which the crushed material is discharged. The material entering through the iron cover is disintegrated at a rate of 4,000 to 5,000 shattering blows per minute. The fineness of the product is governed by the perforations in the steel cylinder, which may be from ¼-in. to 1½-in. diameter. When of the smaller diameter these holes are enlarged outwardly for free discharge of the material.

The wear on the steel cylinder is chiefly on its lower part. It may be reversed (turned upside down) when much worn, thus doubling its durability. The steel hammers wear principally upon the outer upper surface and are easily reversed, end for end and upside down, thus securing four wearing surfaces. They are renewed at small cost. The cost of wearing parts per thousand tons crushed is about the same as on jaw crushers. On rock asphalt and many other materials it is merely nominal.



THE MAGIC CRUSHER.

Many of these machines are in use on various materials and are highly commended. The builders are Geo. T. McLauthlin & Co., of Boston, Mass. The illustration is a section, showing the construction of the machine and the usual manner of setting it up. It is generally placed as shown in a receiving vault or chamber, which may be of brick, wood or other suitable material. The pulverized matter from the crusher is thrown out into the hopper and carried off by a conveyor at the bottom.

MINING IN PERU.*

By Arthur L. Pearse.

It is only within the last few years that the more modern metallurgical methods have obtained any foothold in Peru. The first move in this direction was made some 14 or 15 years ago, when a large stamp mill for dry crushing was sent from the United States; owing, however, to the Chilean war it has never been erected. Semi-modern appliances certainly existed previously at the Cerro d'Pasco, where there is a large camp, and one of the most advanced. Here, however, many of the old methods are still in vogue; the arrastra and a species of impoverished Chilean mill are still the most used, and nothing but the more easily beneficiated ores are treated. Dry crushing and amalgamating plants have been put up in six other centers, all of which are at work and doing well. Smelting operations have as yet only been carried out successfully in two places, one of which is at Casapalca, some 95 miles from Lima, on the Oroya railroad, at a height of 13,670 ft. Various attempts previously made on a small scale, and with probably inefficient appliances, at a similar height, had proved failures; and at Yauli only a moderate degree of success was attained, though the charge had been so well prepared and was of such a character that an absolute failure in smelting would have been well nigh impossible. Dr. Percy, I believe, refers to smelting at great heights, and deemed it impracticable. But it is only a question of providing for the peculiar conditions involved in the fact that not more than 54% of the air (and consequently the oxygen) we have at sea level is obtainable. When these conditions were carefully calculated and allowed for success attended the first trial of a 10-ton furnace at Casapalca. By augmenting the blowing power to balance the deficiency of oxygen at this height no unusual trouble was found in the water jacket itself. Roasting furnaces are capable of only doing half the work performed by them at sea level, thus entailing a greater cost in additional plant, coal and labor to oxidize a charge sufficient to supply the demand of the shaft furnace. Most of the silver ore in Peru is refractory, being in great part compound sulphides, generally in combination with arsenic or antimony. For this reason preliminary roasting is necessary, not only for smelting but for amalgamation. All furnaces at present used for roasting as a preliminary to amalgamation are of the reverberatory type. Any innovation in the shape of mechanical roasters has been looked at askance, for the class of labor and variety of ore render the simpler furnace the more certain, although probably not the more economical.

Notwithstanding that the bulk of the silver lodes worked not only now but in times gone by have been the richer and narrower, there remain some very rich ones, which, in future, are likely to become prominent factors in the silver production. Two are well worthy of notice. The Carahuaca is a segregated lode carrying a mean width of 75 ft. for a distance of about 2½ miles, and having some outcroppings plainly visible for 4¾ miles. In such a width there is a great deal of poor rock, but, on the other hand, pockets have been discovered from time to time, one of which, within the last few years, has produced over $425,000. The average value probably does not exceed, say, 30 oz., and it is for beneficiating this average ore that the works I have alluded to on Remy's system are being erected. Another notable lode is the San Christobal, of the Caylloma district, a fissure traceable for over three miles, extensively worked for this distance by the old people, and in some parts to a depth of over 200 ft.

*Abstract of a paper read at the Institution of Mining and Metallurgy, London.

Coal Exports of Great Britain.—The exports of coal from Great Britain in August were 2,368,908 tons, a decrease of 746,582 tons, or 24%, from August, 1892. For the eight months to August 31st the exports were 19,778,944 tons, an increase of 267,584 tons, or 1·4% over the corresponding period of 1892. The coal shipped for steamers in foreign trade was 699,889 tons in August and 5,370,805 tons for the eight months.

PATENTS PUBLISHED IN GREAT BRITAIN.

The following is a list of patents published by the British Patent Office on subjects connected with mining and metallurgy:

WEEK ENDING SEPTEMBER 9TH, 1893.

13,047 of 1892. Manufacture of Chlorine. H. W. Wallis, London.
15,197 of 1892. Electrolytic Apparatus. H. M. E. Andreoli, London.
17,25[illegible] of 1892. Welding Tubes. J. E. & H. Howard, Birmingham.
18,016 of 1892. Obtaining Brine from Rock Salt. T. W. Stewart, Newcastle.
18,085 of 1892. Hollow Railroad Rails. R. Mannesmann, Berlin.
18,793 of 1892. Leaden Pans for Concentrating Sulphuric Acid. F. J. R. Carulla, Derby.
18,966 of 1892. Electrolytic Decomposition of Metallic Sulphides. Siemens Brothers & Co., London.
23,219 of 1892. Rock Drills. E. J. Rule, Redruth.
5,459 of 1893. Rock Drills. W. Jones, London.
9,296 of 1893. Electrolysis of Salt. T. Craney, Bay City, Mich.
9,965 of 1893. Electric Welding. A. Longsdon, London. (F. Krupp, Essen, Prussia.)
11,579 of 1893. Electric Welding. W. P. Thompson, Liverpool. (C. L. Coffin, Detroit.)
12,426 of 1893. Recovering the Manganese Dioxide Used in Chlorine Manufacture. A. Campbell, London, and W. Boyd, Fife.

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:

TUESDAY, SEPTEMBER 5TH, 1893.

504,322. Casting Ingots. Henri A. Brustlein, Unieux, France.
504,324. Process of Making Aluminum Compounds. Willard E. Case, Auburn, N. Y.
504,325. Process of Making Aluminum Fluosulphate. Willard E. Case, Auburn, N. Y.
504,355. Elevator Bucket. Timothy Long, Cleveland, O., Assignor of one-half to the Excelsior Iron Works Company, same place.
504,361. Steel Founding. James G. McRoberts, St. Louis, Mo.
504,393. Feed Table for Rolling Mills. William H. Maddock, Pittsburg, Pa.
504,394. Transfer Mechanism for Rolling Mills. William H. Maddock, Pittsburg, Pa.
504,395. Feeding Mechanism for Rolling Mills. William H. Maddock, Pittsburg, Pa.
504,431. Shaft or Bar Iron. John Green, Renovo, Pa.
504,477. Cement. Charles F. Le Fevre, Hagerstown, Md.
504,494. Drive Chain. William H. Hart, New Britain, Conn., Assignor to the Stanley Works, same place.
504,496. Electric Welding Apparatus. Hermann Lemp, Lynn, Mass., Assignor to the Thomson Electric Welding Company, of Maine.
504,508. Amalgamating Machine. Jacob C. Wiswell, Medford, Assignor to Charles P. Gorely, Boston, Mass.
504,548. Coke and Carbonizing Oven. Theodor Bauer, Berlin, and George Mendheim, Munich, Germany.
504,566. Machine for Truing Rolls. David J. Davidson, Brockway, Mich., Assignor of two-thirds to Amos A. Haskell, same place, and Abraham S. Martin, Port Huron, Mich.
504,584. Refractory Brick. Alfred E. Hunt, Pittsburg, Pa.
504,622. Gas Valve for Blast Furnaces. William Rotthoff, Rankin Station, Pa.
504,628. Machine for Forming Sheet Metal. Herman Senger, Jersey City, N. J.
504,665. Ore Separating Machine. Hezekiah Bradford, Philadelphia, Pa., Assignor to Samuel E. Griscom, same place.
504,666. Process of Separating or Concentrating Ores. Hezekiah Bradford, Philadelphia, Pa., Assignor to Samuel E. Griscom, same place.
504,673, 504,674, 504,675. Discharge Apparatus for Coal or Ore Bins. Richard W. Ericson, Aurora, Ill.
504,678. Amalgamator. Willard M. Fuller, Denver, Colo.
504,687. Machine for Making Pipes or Tubes. George H. Winser, Central Falls, Assignor to himself, Henry Randall Wilcox, trustee, Cranston, and Stephen Cushing Harris, Providence, R. I.
504,689. Machine for Disintegrating Clay, Ores, Etc. Herman S. Albrecht, St. Louis, Mo.
504,691. Governing Device for Compound Engines. Milan C. Bullock, Chicago, Ill.

PERSONALS.

Mr. F. W. Taylor, mining engineer, is now connected with the smelting works at San Luis Potosi, Mex.

Mr. Charles Balbach, who has been examining mines in Boise County, Idaho, has returned to Omaha.

Col. W. M. Griswold, superintendent of the Gold Bullion mine, of Arizona, is now in New York on a business trip.

Mr. D. C. Borton, civil and mining engineer, of Massillon, O., is spending a few weeks in Chicago examining the Fair.

Chas. N. Fairchild, of Boston, Mass., is now in Chicago, where he proposes spending a few weeks looking at the Fair. He is interested in copper mining.

Mr. Alex. Gilfillan, a mining engineer and metallurgist of Melbourne, Australia, is now in Chicago, where the Fair will attract his attention for a few weeks yet.

Mr. John H. Henderson, a well known real estate man of Washington, D. C., and his wife have been spending the past few weeks in Chicago, looking over the exhibits at the Fair.

Mr. J. B. Martin, of Steelton, Pa., is now in Chicago. He is connected with the Pennsylvania Steel Company, at Steelton, Pa., where he has charge of the Bessemer department.

Mr. Edward Halse sails from Liverpool September 23d for New York, on his way to Mexico on professional business. His address will be Puente de San Francisco, No. 1, City of Mexico.

Messrs. J. R. and M. H. Walker, H. W. Lawrence, W. L. Pickard and Boyd Park, of Salt Lake City, directors of the Alice Gold and Silver Mining Company, have been visiting their property in Butte, Mont.

Mr. J. Coventry l'Anson, civil and mining engineer, of London, England, is in Chicago. He is corresponding for several technical journals of his city and is making a specialty of the exhibits within the Mines Building.

Mr. S. E. Bretherton, superintendent of the American Smelting Company, of Leadville, Colo., where he has been in full charge for nearly 10 years, has resigned since the low price of silver has caused the closing down of the smelters. Mr. Bretherton is taking a much needed rest. He will be in Chicago from about September 27th to October 10th, at the Grand Pacific Hotel, and after the latter date Leadville, Colo.

OBITUARY.

Wilton R. Brown, a mining engineer, well known in Colorado and New Mexico, was killed at Parral, Mex., September 2d, by the accidental discharge of a pistol.

John S. Leib, who died suddenly in Baltimore September 18th, aged 68 years, was one of the oldest railroad officers of the country. He had been treasurer of the Northern Central Railway Company since it was organized, in 1854, and for five years previously had been treasurer of the York & Cumberland Company, which was one of the corporations consolidated to form the Northern Central.

Sir Alexander T. Galt died at Montreal, Ont., September 19th. Alexander Tilloch Galt was born in Chelsea, England, in 1817. At the age of 16 years he became a clerk in the service of the British & American Land Company, a connection which continued until 1856, having for a time had the entire management of its estates in Canada. Mr. Galt entered the Canadian Parliament in 1849. In 1853 he was again elected nd continued to take an active part in politics till his second retirement, in 1872. In 1858 he was invited to form a cabinet on the resignation of the short-lived Brown-Dorion Government, but declined, though he joined the succeeding Cartier-Macdonald ministry as Minister of Finance. He was connected with the construction of the Atlantic & St. Lawrence Railroad, and was instrumental in securing its amalgamation with the Grand Trunk. He was a government director of the Grand Trunk for five years. As Minister of Finance he succeeded in restoring something like order in the pernicious and corrupt financial system of that time. In 1875 he was a commissioner under the Treaty of 1871 with the United States. From 1880 to 1883 he was High Commissioner for Canada in England, and in 1881 was a delegate to the International Monetary Conference. In 1879 he was made a Knight Commander of the Order of St. Michael and St. George, and in 1878 a Grand Cross of the same order. He received the degree of LL. D. from Edinburgh University.

SOCIETIES AND TECHNICAL SCHOOLS.

The Southwest Silver Convention.—This body met in Albuquerque, N. Mex., on September 19th. There was a large attendance from all over the Southwest, including Texas and Arizona. Resolutions were adopted demanding the free coinage of silver at a ratio of 16 to 1 and indorsing the senators and representatives who are now struggling for the "restoration of silver."

American Society of Civil Engineers.—At the meeting held on the evening of Wednesday, September 6th, the paper by J. A. Ockerson, on "Erosion of the Banks of the Mississippi and Missouri Rivers," was further discussed in writing by Arthur Hider, William Starling, Samuel H. Yonge, H. B. Richardson and H. M. Marshall. At the regular meeting of September 20th Mr. James D. Schuyler read a paper on the "Water-Works of Denver, Colo.," which was briefly discussed by members present.

International Irrigation Congress.—The official call for this Congress, to be held at Los Angeles, Cal., for one week, beginning October 10th, has been issued. Governors of States, county boards, chambers of commerce, agricultural societies and other incorporated bodies interested in the question of irrigation, are invited to send delegates, and members of the American Society of Irrigation Engineers are requested to attend. The subjects selected for report and discussion are:

Irrigation as applied to agriculture and horticulture engineering. Its far-reaching ethical and social possibilities and effects.
Irrigation legislation, State, national, international, foreign.
Irrigation securities.
Irrigation machinery and appliances.

Federated Institution of Mining Engineers.—The yearly meeting, which included the summer meeting of the Mining Institute of Scotland, was held September 6th, at Glasgow, under the presidency of Mr. George Lewis. A paper by Mr. Walcot Gibson was read on "The Geology of the Southern Transvaal," and another by Mr. Daniel Murgue, on "The Friction of, or Resistance to, Air Currents in Mines." Discussions afterward took place on a paper by Mr. R. T. Moore on "The Mineral Oil Industries of Scotland"; on a paper by Mr. Arnold Lupton, on "Spontaneous Combustion in Coal Mines"; and a paper by Sir Archibald Geikie on "The Work of the Geological Survey." A number of other papers were held as read, including "The Hilderstone Silver Mine, Near Linlithgow," by Mr. Henry Aitken; "Limestone Mining in Scotland," by Mr. John Morison. Excursions were made to various important works and collieries in the district, as well as to many of the most interesting and picturesque places.

German Geological Society.—The 40th general meeting was held August 14th and following days in the old imperial city, Goslar, of the Lower Harz, under the presidency of Berghauptmann (retired) Herr von Strombeck, of Brunswick. The attendance was good, 62 members from Germany, Holland, Norway and other countries being present. The following papers were read: "Die Chemischen Verhaltnisse der Krystallinen Schiefer," by Dr. O. Lang, of Osterode; "Obsidianbomben aus Australien," by Bergrath Professor Stelzner, of Freiberg; "Ueber die chemische Bindung des Logenaniten Krystallwassers in den Mineralien," by Prof. Dr. Kosmann, of Charlottenburg; and "Die Geologie von Attika," by Professor Lepsius, of Darmstadt. Professor Brackebusch, of Cordoba, explained the structure of the Cordilleras by means of his new chart of central Argentina. On the second day of the meeting the Rammelsberg mine, near Goslar, was visited, Prof. Dr. Klockman, of Clausthal, under whose direction the meeting was held, explaining the geology of the ore deposits. The next annual meeting of the Society is to be held at Coburg, under the direction of Dr. Loretz, of the Imperial Geological Survey.

INDUSTRIAL NOTES.

The Crescent Steel Works, Pittsburg, has its plant running about half time.

The Glasgow Iron Company, Pottstown, Pa., started up a part of its works September 18th.

The Pitssburg Forge and Iron Company started up its works September 18th, but has refused to sign the scale.

The Pencoyd Iron Works, of Philadelphia, have posted notice of a reduction of 10% on all salaries and wages, taking effect September 18th.

The Southern Pump Company, Birmingham, Ala., has resumed operations, after being closed some weeks on account of the depression in business.

The Sterling Steel Company, Pittsburg, recently shipped a consignment of two carloads of steel projectiles for the government, to Watervliet Arsenal, N. Y.

Notice has been given by the Brown-Bonnell Iron Company, of Youngstown, O., of a cut of 10% in the wages of all those employees outside the Amalgamated Association.

About one-half the puddlers are at work on single turn at the plant of Singer, Nimick & Co., of Pittsburg. The guide and 16-in. mills are working single turn and the plate mill double turn.

The Lackawanna Iron and Steel Company, at Scranton, Pa., on September 16th gave notice of a general reduction of 10% in the wages of all its employees, in consequence of the general business depression.

The Bellaire, Riverside and Wheeling Iron and Steel companies' works, in Bellaire, O., and Benwood, W. Va., after 10 weeks' stoppage, have started at a reduction of wages of from 20 to 30%. Work will be continued while orders last.

The Illinois Steel Company has filed a bill in the Circuit Court asking that a receiver be appointed for the Chicago Steel Company, which, it alleges, is insolvent, and, further, that its directors are not managing it in the interest of creditors.

The Stirling company reports from its New York office recent sales of 100 H. P. Stirling safety boilers to Lynn, Mass.; 250 H. P. to Lutz, Libby & Co., and 400 H. P. to the Algonquin Coal Company. A better feeling, indicated by an increase of inquiries, is reported.

At a meeting in Pittsburg, September 19th, of some of the creditors of the Oil Well Supply Company, called in behalf of distant creditors, mostly from New York, who wanted information about the assets, President John Eaton said they exceeded the liabilities by over $1,000,000, and that while nothing definite has been done about an extension, yet he thought it would be arranged for.

The Sharon Estate Company has been incorporated, with a capital of $8,000,000, $4,000,000 of which is paid up. The directors of the company are D. O. Mills, Henry B. Laidlaw, Frederick W. Sharon, William C. Gullire, Charles W. Peterson, of New York City; F. G. Newlands, of Reno, Nev., and J. Milton Ferry, of Bayonne. The organization is incorporated under the laws of New Jersey. The object of the company is to carry on the business of the various investments made and held by the estate of the late Mr. Sharon.

The new station for the Lynn Gas and Electric Company, at Lynn, Mass., will be built by the Berlin Iron Bridge Company, East Berlin, Conn. The dynamo-room is 58×157 ft., the whole space being controlled by a traveling crane. The boiler-room will be 48×157 ft. The roof of this building will be entirely of iron constructed under the well known patent of the Berlin company, which seems in great favor with electric companies as it is fireproof and at the same time there is no drip or condensation on the underside of the corrugated iron.

MACHINERY AND SUPPLIES WANTED.

If any one wanting machinery or supplies of any kind will notify the "Engineering and Mining Journal" of what he needs he will be put in communication with the best manufacturers of the same.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning goods of any kind, and forward them catalogues and discounts of manufacturers in each line.

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

GENERAL MINING NEWS.

ALABAMA.

Randolph County.

(From our Traveling Correspondent.)

Goldberg District.—Southwest from the Pinetuckey mine, 22 miles distant, and close to the western line of the county, is situated this mining district, so named by a number of western miners who came into the vicinity last spring. This is on the west side of the Big Tallapoosa River, and comprises that valley, the bottoms on each side of Crooked Creek as well as the hill sides and ridges for a distance of about six miles in a northeast and southwest course, with a width of about seven miles, as shown by the outcrop. Two and a half miles of this distance across the formation, and about the center of the district, occurs what is locally known as the red gold ore, a very soft decomposed quartz, while on each side a hard grey ore, very highly sulphureted, has been exposed in the shallow prospect workings.

The district is a series of ridges extending in a northeast and southwest course almost parallel with each other and separted by ravines or shallow gulches, many of which are made by the windings of Crooked Creek, a stream of sufficient volume and fall to furnish an ample supply of water for hydraulic purposes. The idea of the occurrence of placer deposits rich enough to work, still remaining untouched in a country that has been settled for nearly 100 years, seems incredible, but it is a fact nevertheless. Situated 25 miles from any line of railroad, sparsely settled by a population of farmers, without any knowledge of minerals or the methods of saving gold either in placer or quartz except with a pan and longtom rocker, these mountainous sections are really newer and less explored and prospected than the most distant and inaccessible gulches in the Rockies. While the bottom lands in this district, drained by Crooked Creek, are not rich enough in placer gold to pay to work with a rocker, yet they will probably prove more than sufficiently rich to warrant extensive hydraulic works.

Some idea of the knowledge and experience of some of the residents of these mountains can be formed from the following description of a plant on which some $500 had been expended in a vain attempt to make it effective and profitable: Several months since a stranger who represented himself as a gold miner, from Georgia, appeared in the district, and after gaining the confidence of an eccentric farmer, proposed to erect a plant to work and treat some gold ore he discovered on the farm. A building some 40×25 ft. was erected near the creek in which were placed several hollow logs about 3 ft. high and 18 in. across, so arranged that a wooden pestle shod with iron could be worked by lever power. This was the crushing machinery. The ore was placed in these wooden mortars and crushed to about a 20-mesh; it was then shoveled into a rocker with quicksilver in the riffles. This rocker was attached to a sluice box, through which the tailings and the gold, too, as soon showed to be the case, were washed into the creek, because the graphite carried by the ore in combination with the gold prevented amalgamation by such a crude process. An examination of this district of a cursory nature recently demonstrated that for three miles following the curves and bends of Crooked Creek the placer deposits mentioned occur; but the value of the district exists in the quartz veins and deposits which outcrop on the ridges, and can be followed through the length of the district without great difficulty.

Bradford Ridge is about the center east and west of the district, and more work has been performed there than elsewhere. The formation belongs to the Talladega slates, as determined by Dr. Eugene A. Smith, the State Geologist, who visited the district recently. The work which is of a prospecting character and quite shallow, usually consisting o fincline shafts sunk on the ore bodies, exposes at several points a series of strata of gold-bearing quartz often interpolated with mineralized slate which prospects. These strata have all the characteristics of deposits, for nowhere have any well defined walls been eucountered inclosing the ore bodies. The formation dips very regularly at an angle of from 10° to 15° toward the east, with a slight variation to the south. The property known as the Goldberg mine is an extension of the Bradford Ridge toward the southwest. This property is bounded on the west and south sides by Crooked Creek, which averages about 50 ft. wide and 3 ft. deep in the channel, and on the east side it is bounded by a smaller creek. The bottoms through which these creeks run all prospect in placer gold, while there is an abundance of water for mining purposes. The ore bodies, so far as can be seen by the workings, have all the characteristics belonging to those on the Bradford property to the northeast, and tests made on average samples show the ore to yield about $10 a ton, at the depth attained to-day. While it is impossible to estimate the extent of these deposits from the quantity of ore in sight, because of the shallow workings, yet the surface area covered by these series of strata, which prospects wherever it has been sunk on, and in places shows a pay streak of from 15 to 25 ft. thick, is extensive and can be mined at low cost.

The Goldberg company is not only prospecting thoroughly to determine the extent and grade of the ore, but also testing to ascertain the most desirable process to adopt for treatment. While pan tests show that a certain proportion of the ore carries the gold free, yet the results from roasting are so much better as to prove that a portion of the gold is carried by the sulphurets, and amalgamation unless accompanied by concentration, would therefore not prove entirely satisfactory. Throughout this district I noticed several veins of hard quartz cutting the formation and going down vertically. Samples from these prospected usually richer than any others in the district. These veins have their strike nearly due north and south; they are all narrow, some about 3 in. thick at or near the surface, others 12 to 15 in. No work has been done on any of these up to the present time, but in order to determine their value a shaft will be sunk on one which prospects the most satisfactorily in free gold to a depth of at least 100 ft., unless it should pinch out before such depth is attained. To the north and east of the Bradford Ridge and its extensions as well as to the southwest, these series of strata of gold-bearing quartz occur with more or less regularity, but no work other than prospecting has been done, and, in fact, the entire district has, because of its remoteness from railroad facilities, been entirely neglected in the past; except on the Bradford and one or two other properties no prospecting had ever been done until last spring. Two small prospecting mills with light stamps were put up in the district last spring, but have not been run regularly and only by inexperienced millmen, so that it may be said with truth that the entire district is virgin ground.

On the Turner property, adjoining the Bradford and Goldberg on the east, several shallow openings have been made and pay ore exposed on a ridge parallel to the Bradford Ridge, showing an ore body which can be followed by the outcrop for about half a mile, possessing to a great extent the same characteristics and formation as the others.

The entire district prospects well, but deep mining is necessary to determine the permanence of the ore bodies, as well as whether the narrow fissure veins possess any real value as mines. The Goldberg Mining Company has the machinery for an extensive plant ordered, except that portion belonging directly to the treatment for which tests are being made to determine the most desirable to be adopted.

ALASKA.

Alaska-Treadwell Gold Mining Company.—The official report for August gives the month's work as follows: Shipment of bullion, $82,297; tons of ore milled, 20,691; tons of sulphurets treated (about) 400. Of bullion there came from sulphurets $24,759: estimated gross expenses for period have been $23,541. The estimated profit of over $58,000 is considerably larger than for any previous month in the history of the mine. The superintendent attributes the increased yield for the month partly to the fact of an increased amount of ore having been mined from the 110-ft. level, which is the deepest portion of the workings.

ARIZONA.

Graham County.

Gold Bullion Mining Company.—The work of putting in the machinery is going on, and a portion of the mill will soon be ready for use. A considerable amount of ore has been taken out and is ready for milling.

Pinal County.

Maricopa Mica Mining Company.—This company has been incorporated to work mines in this county. The office is in Chicago, and the incorporators are John Grendall, E. H. Irwin and J. J McClelland.

(From our Special Correspondent.)

Two miles south of Silver King very rich gold float was found associated with silver chloride; the ledge or pocket from which it came will average about $40 a ton in gold; this lies in a slate dike outcropping through the lime about 100 ft. from a stream of water known as Queen Creek; a good water power could be furnished by a natural dam about 3,000 ft. up stream with a fall of 100 ft. There is also a blanket ledge 15 ft. wide higher up which could be worked with the same power. Sufficient investigation has not been had to say authoritatively concerning the outeook for these properties. The gold found is solid and free, but very fine.

Box Canyon.—These mines, owned by J. Brown and others, have had work done on them and have developed enough interest to start a litigation, but it is hoped this will not interfere with continuous work.

Gold Placers.—There are several gold prospects in this vicinity to which many are now turning their attention. Pinto Creek placers have been worked and considerable coarse gold has been taken therefrom by casual operators; there have been many seeking the ledges from which the gold has been washed, but so far unsuccessfully. This creek lies north of Silver King and empties into the Salt River.

Nicholas Ranch.—These gold workings, about eight miles southwest of the King mines, have lively coarse gold in them, the lode being several feet thick and being composed of quartz and a mixed porphyry. This group is in the hands of Messrs. Lopes, Heras, Quiguis and others, Mexicans without capital. An arrastra has been built, but conditions are not very favorable for success with it as it is quite rudely constructed.

Silver King.—This mine has been shut down for some time, although there is plenty of ore and it is worked very cheaply; the uncertainty of realizing even the present price when the concentrates are offered for sale, is not very encouraging. With a steady market at present prices it would pay.

Superstition Mountain.—These mines are being prosecuted with vigor; a mill is being built, a daily stage line started and a large hotel is being built.

ARKANSAS.

Logan County.

Several oil and gas wells are now being sunk in the Petit Jean Valley. A well at Magazine has struck natural gas at a depth of 270 ft., with a strong flow and good indications of oil.

CALIFORNIA.

Calaveras County.

(From our Special Correspondent.)

Several mills about Angel's Camp had to hang up stamps on account of the scarcity of water.

Gold Hill Mine.—At this mine, on the western Mother lode belt, S. V. Ryland superintendent, a gold-bearing strata of 20 to 25 ft. width, containing a series of small and larger veins, has been struck at a depth of 80 ft., and from it assays up to $16 per ton have been obtained.

Madison Mine.—This mine is now the deepest mine at Angel's Camp, and is over 900 ft. down, with the intention of sinking 200 ft. more. This mine looks well.

Utica.—The first clean-up of 100 tons of concentrates reduced at the plant of this company by the cyanide process took place a few days ago and yielded a bar of gold worth over $5,000. The lot now in the course of reduction is from the Consolidated Eureka (formerly the Dead Horse mine), of Tuolumne County, and belonging also to Hayward & Co. A small parcel has already been fully and successfully tested from this mine, and if a 200-ton lot meets with equally good results, another cyanide plant will be erected at that mine. The sulphurets from that mine are of a more rebellious nature than those of the Utica, and were not as successfully treated by chlorination.

Nevada County.

Eureka Lake Water and Mining Company.—According to the Nevada City "Transcript," this company commenced hydraulic work at Columbia Hill, on the 12th inst.

COLORADO.

Clear Creek County.

Ore shipments from Silver Plume have been fairly large lately, says the Silver Plume "Standard," as the stocks of ore which had accumulated during the panic have been greatly reduced; but there will probably be a falling off now until more ore can be taken out. From the same source we extract the following items of Silver Plume mining news:

Burleigh.—Five cars of ore were shipped from the Burleigh tunnel last week, which, while not running high in silver, runs well in lead.

Chamberlain.—This mill, at Georgetown, is crowded with ore now. Five cars of Stevens ore were sent to the Chamberlain sampler last week.

Dives.—Barnard Robins and others are at work on the Dives lode, on the Diamond tunnel level. They are sinking a winze on the vein. Ore has been taken out clear to surface in the old workings over them.

Dunderburg.—This mine made a shipment of five cars of ore last week.

Mendota.—This mine sent out two cars of ore last week, one of which went to Denver and the other to Georgetown. The raise which is being put up to settle the dispute between the owners of the Mendota and the Smuggler will probably be finished in a week or two, and when the matter is settled the disputed ground will afford employment to a number of men who are now prevented from working.

Pelican.—A shipment of about 120 tons of ore was made from the Pelican last week which averaged about 300 oz. silver per ton. The lessees have a large streak of this ore.

Seven-Thirty.—McDonald & Ogilvie have taken a contract and lease on the eighth level of the Seven-Thirty.

The following items of Idaho Springs mining news are taken from the "News," of that camp:

The Sweet Home mill, on upper Fall River, will start up work next week.

Argyle Gold Mining Company.—Henry P. Lowe has filed suit against A. P. Finnerty, H. H. Tammen and this company for 10,000 shares of stock in that company, which is valued at $4,000. An injunction was granted by Judge Rising restraining the defendants from disposing of their stock. The petition states that Lowe transferred the stock to Finnerty, who is said to have pledged it to Tammen, as a collateral on a loan, and Lowe alleges that he cannot obtain possession of the stock.

Cumberland Gulch.—Thompson & Bohrer, operating in Cumberland Gulch, had a mill run last week which yielded a return of 7 oz. in gold to the cord.

Fall River.—The new mill just completed by L. Sternberger, on Fall River, will begin operations next week.

Lexington.—George Dory has taken a lease on the Lexington and has commenced work on it.

Mattie.—Work has ceased entirely on this mine. The pumps have been taken out. The mill keeps on running day and night, working at present on ore from the General Thomas and Decatur mines.

Valley View.—This mine, owned and operated by T. H. Slater, is looking well. A test run was made at the Alice mill last week and returned 12 oz. gold to the cord. Another test made later gave 4 oz. to the cord.

At Yankee Hill, mining operations keep on. A recent issue of the Idaho Springs "News" says:

Alice.—This mill is running night and day on ore from the Alice mine.

Crocket.—This mill is being erected near the Hall Cabin, at the foot of Cumberland Gulch, on Fall River.

Fields Mill.—Messrs. Dudley & McClelland, of Denver, have purchased the old Fields mill and are moving it to Silver Creek. They will have plenty of water at their new location. Mr. Dudley is superintending the removal.

Hawk Brothers are steadily developing their property.

Whale Mine.—Five men are working on this property. Some of the ore being taken out shows free gold in quantities.

Dolores County.

Rico-Aspen Consolidated Mining Company.—Work was resumed at this property, at Rico, last week with a small force of men. The wages of the miners have been reduced from $3 to $2.50 per day. It is said that the force will be increased as fast as the mine workings are put in suitable shape to give room to a full force of men. Since the mine closed down in July several caves have occurred which will take some days yet to clear up.

El Paso County.

The Cripple Creek "Crusher" publishes the following list of Cripple Creek properties which are producers of pay ore: Anaconda, Alsa R., Blue Flag, Black Diamond, Burns, Beacon, Buena Vista, Blue Bird, Blue Bell, Carbonate Queen, Comet, C. O. D., Dante, Dead Pine, Doctor, Elkhorn, Eclipse No. 1, Excelsior, Eclipse, Free Coinage, Favorite, Gladstone, Grace Arthur, Granite, Gold Dollar, Gold King, Great Republic, Great View, Hub, Hiawatha, Hillside, Ida May, Ingham, Independence, Ida B., Iron King, Logan, Lotta, Little May, Little May Company, Londonderry, Moose, Mary McKinney, Mattie D., Morning Glory, Mattie W., Maria A., New Zealand, Nellie V., Pharmacist, Prince Albert, Pike's Peak, Peoples, Portland, Queen of the Hills, Rosa Lee, Raven, Rhinoceros, Rattler, Summit, Smuggler, Strong, Something Good, Twin Sisters, Tornado, Trail, Victor, Wallace, Wichita, Washington, Zenobia.

Calumet Mining Company.—A special meeting of the directors of this company was held in Manitou September 11th. Maj. John Hulbert resigned as president and Mr. J. K. Miller was elected in his stead. C. S. Sauerland was elected vice-president and J. S. Hall secretary. Plans for the immediate working of this property were discussed, and with probable good results.

Requa Gold and Silver Mining Company.—A controlling interest in this property at Cripple Creek was bought September 15th by Henry P. Barbour, of Duluth, Minn. The sale was made on a basis of $50,000 for the entire property. In addition to this purchase Mr. Barbour and his associates have bought the Ben Harrison lode.

Lake County.

(From our Special Correspondent.)

The conference between the mine managers and the laborers has come to an end and on Saturday a definite arrangement was made. The performance, however, of this agreement between them will depend upon reductions received from railroads and on all supplies necessary for mining. The mine managers present and who signed the agreement were Eben Smith, representing all the Moffat combination, J. F. Campion, S. W. Mudd, A. A. Blow, P. W. Breene and P. C. Shull. The understanding is that all miners and men employed under ground are to be paid $2.50 per day for all calendar months in which the average silver quotation shall he less than 83½ cents; for all months when silver quotations shall average 83½ cents then $3 a day is to be paid. Miners working in wet shafts are to receive 50 cents a day more than the rate named above. Of course, there will not be a general revival of the mining industry, but in many cases the large producers will start up and shipments will be resumed. From present appearances there will he at least 1,000 men put on at the new schedule. The Maid of Erin, Henriette, Penrose and Grey Eagle will put about 600 men to work; the Mahala, 100; the Humboldt, 40; the Niles-Augusta, 100; the Small Hopes, 125; while other properties will start up with a few men.

Flagstaff.—Only a small force is at work and some light shipments of good grade ore are being made.

La Plata.—A few lessees are at work in this property.

Little Chief.—This is being worked by lessees through the McCrea shaft and about 20 tons of iron ore are being shipped daily to the Omaha & Grant smelter.

Mahala.—It is very probable that work will soon be commenced on the Mahala. Since the depression no ore has been shipped or any work done, excepting to handle the water flow, amounting to some 15,000 gallons per hour.

Marian Lease.—This lease of the R. A. M. property has been steadily developed for the past few months. The shaft is now 100 ft. in porphyry and has heen sunk to a depth of 700 ft. There are still 200 ft. of porphyry to go through when the contact will be reached and it is expected the ore body opened up.

Mike & Starr.—A gang of men are cleaning out the drifts and stopes of this property preparatory to resuming work with an increased force. The shipments can be brought up to 75 or 100 tons daily of very desirable copper-iron ore.

Penrose.—The timbers are being repaired in the shaft of this property preparatory to resuming work. At present about 50 tons daily of iron ore are being shipped from the Grey Eagle and Orion shafts of this consolidation.

Small Hopes.—Some 50 men are at work in this property at present. The ore, which is being raised through the Emmett shaft, is shipped to a Pueblo smelter.

Ouray County.

National Belle.—Late advices from Ouray state that the National Belle, at Red Mountain, September 14th put on 23 more miners and is now running a full force. It is a copper producer and ships to Durango.

Silver Belle.—This mine reopened last week, hut does not expect to ship much ore until prices raise. The output of the winter will be stored until spring. These two and the American Nettie (gold), the Virginius and the Gaston, are said to be practically the only mines working now in Ouray County.

Pitkin County.

The assessor's tax list contains many interesting facts about Pitkin County. It shows that there are 3,830 acres of coal land entered upon the registry books, the assessed valuation of which, as in all the figures following, is supposed to be about one-third of the real value and is placed at $37,240. The value of improvements made upon mining property is $45,670, and the value of mines, meaning properties which were non-producers during the period from December 1st, 1891, to December 31st, 1892, is $218,075. This is on non-producers only. The product during the period above mentioned, which was reported from mines classed as producers, and the results sworn to, appears on the books at $1,219,550, which is one-fifth the net product of the mines, showing that $6,097,750 as received in settlement for the ores sold.

Aspen.—In a late issue of the Denver "Republican" Mr. Jerome B. Wheeler, of New York and Aspen, president of the Aspen Mining and Smelting Company, is quoted as saying that he was on his way to Aspen to try and effect some arrangement with the miners whereby work could he at once resumed on the various properties in which he is interested. He said that if the men were willing to work for a wage that is justified hy the low price of silver, he would at once start work on his mines. He favors the certificate scheme, and will also propose that those in his employ should take a portion of their wages in the shape of hullion at its market value. He hopes to come to amicable terms and resume mining operations at once.

GEORGIA.

Bartow County.

Cartersville Iron and Manganese Company.—This company has heen organized to open mines near Cartersville. The incorporators are G. E. Aubrey, C. E. McEwen and J. W. Harris.

IDAHO.

Ada County.

It is reported that the Snake River is lined with prospectors on both sides from the canyon, above Walter's ferry, down to the junction of the Snake and Boise rivers, helow Parma. They are at work with rockers and are making from 90 cents to $2.50 a day to the man.

Boise County.

Bella Mining Company.—This company is extracting good ore from the Etna mine, which is being shipped to Banner for reduction.

Cleveland Mine.—The lessees of this mine, in the Gambrinus district, have commenced work.

Owyhee County.

De Lamar Mining Company, Limited.—During August the mill crushed 3,570 tons of ore, yielding hullion valued at $80,795; the value of ore shipped direct to smelters is estimated at $5,000; miscellaneous revenue amounted to $441; total, $86,236. The total expenses (including $1,320 for construction) were $37,340.

Shoshone County.

Bunker Hill & Sullivan Mining Company.—A force of 20 men is at work, breaking out about 10 tons of ore per day, and 15 men are to be added. These men are working under contract, "hy which method," said Mr. F. W. Bradley, superintendent of the mine, in an interview with a local paper, "they are making satisfactory wages and at the same time getting out ore cheaper than the company can." It is only high-grade ore now being mined, however. The company still offers to pay miners $3 per day, and trammers and surfacemen $2.50, but these wages have not yet heen accepted. The railroads have made reductions in freight rates on ore shipped out of the Coeur d'Alene, but smelting charges have been increased.

Coeur d'Alene Silver-Lead Mining Company.—Work was resumed in the Poorman mine September 4th, with a force of 180 men. Drifts are being driven both ways on the 800-ft. level, which has just been opened. The breasts are now 25 ft. away from the shaft on each side. The vein is 8 ft. wide at this level. The dressing works are running full time, turning out 45 to 50 tons of concentrates daily.

Granite.—Work was resumed in this mine September 4th with a force of 50 men.

KANSAS.

Crawford County.

Sheldon Coal Mining Company.—This company has been organized to work coal mines near Pittsburg. The directors are: James Putner, W. J. Gregg, John Theising, Pittsburg, Kan.; E. C. Sheldon, A. E. Sheldon, Springfield, Mass.

MASSACHUSETTS.

Berkshire County.

Richmond Iron Company.—This company has stopped work for the present at its Cove and Pomeroy iron mines. The pumps are to be kept going, however, and the mines in condition to resume work.

MICHIGAN.

Copper.

Arnold Mining Company.—At this property drifting east and west at the fourth level is going on. The drift is in about 80 ft. each way, east and west from the shaft, and has shown up some good ground, says the Houghton "Gazette."

Centennial Mining Company.—It is rumored that the company is to commence work very soon; also that the Osceola lode, at the end of the recently abandoned cross-cut, will he explored in the 33d level, and that No. 7 shaft will be sunk at a point 500 ft. north of where the rich deposit was found in No. 6 shaft.

Kearsarge Mining Company.—It is reported that during the past few weeks a better class of lode has been showing up at the Kearsarge mine, as the advance openings were pushed ahead, and the mine is now said to be looking fully up to the average.

Quincy Mining Company.—The old Quincy stamp mill buildings have at last nearly all been razed, and the work of removing the debris is being prosecuted, and rock for the new buildings is being hauled to the grounds.

Tamarack, Jr., Mining Company.—This company's mine produced 102 tons of mineral in August. When the sixth level is connected the output of the mine will probahly be 130 to 140 tons of mineral. The outstanding obligations of the mine are about $80,000.

Iron—Gogebic Range.

Sunday Lake Mine.—This mine is now completely closed down, and as the pumps were withdrawn it has become flooded. Three months' pay is due the men and the fee-holders are now trying to get possession of the property.

Iron—Marquette Range.

Swanzy Mine.—This property, owned by the Escanaba River Land and Iron Company, has been closed down.

Iron—Menominee Range.

The Norway "Current" gives the following as the shipments of the more important mines: Chapin, 70 cars per day; Appleton and Lorretto about 13 cars. There is no change of moment in the operation of the Penn Iron Company, but it is probable that shipments will close unusually early this season.

Badger Mine.—It is the intention of the management to keep about 120 men at work in two shifts of 60 each, says the Florence "Mining News."

Commonwealth Iron Company.—This company has reduced its working force to about 125 men. The output from the Badger mine this year has been about 150,000 tons, and there is still in stock at the several mines, more than 100,000 tons. Until further change, but one shaft of the Badger will be used; and the other mines, the Commonwealth and Davidson, will remain idle, as they have been for some time, says the Norway "Current." Some opening work will be done and some ore taken out where it is advisable to finish up before suspending work, hut regular stopes will he stopped at the Badger.

Waverley Iron Company.—The company has secured a lay-off from the feeowners and has pulled the pumps and allowed the shaft to fill with water, until a more convenient season.

MINNESOTA.

Duluth County.

(From our Special Correspondent.)

Iron ore shipments for the past week have been as follows: From Two Harbors, Vermilion range ore, 27,409 tons; Mesaba range, 3,220 tons; for season Vermilion range, 635,803; Mesaha range, 57,732. From Duluth: Mesaha range, 37,000 tons; for season, 180,000 tons. On the Vermilion the Zenith mine has resumed shipments and will send out a total for the season of about 15,000 tons. On the Mesaba the Canton, Franklin and Hale have resumed, the former shipping 2,225 and the latter 1,000 tons in the week. On the Mesaba shipments are steadily increasing and will he large for the rest of the season. One large vessel agency at Duluth lately refused an offer of 75 cents a ton freight for the rest of the season, though trip rates at the time were 60 cents. Rates are now 65 cents to Lake Erie. It is claimed that the Minnesota Iron Company will shortly order a resumption of mining operations on the Vermilion, but no such orders have been received here.

Coal.—Several exploring parties are at work in the northern part of this county and in Itasca County, west of it, looking for coal. Many samples of float coal have been brought to Duluth in the past year from the alluvial hasin north and west of the continental divide, along which lie the Mesaba iron deposits. None of these samples, however, so far as your correspondent can learn, have assayed well. The coal appears to be a sort of lignite. A find several feet thick is reported from the upper Mississippi village of Grand Rapids, but it is of the same quality—high in moisture and ash and low in carbon.

Gold.—Forty or more men are also out along Vermilion River, north of the Vermilion range, searching for gold, and some color has been found; not enough to be satisfactory, however.

Iron—Mesaha Range.

(From our Special Correspondent.)

Biwabik.—At this mine, where stripping by steam shovel was discontinued two weeks ago because of

tight times, contracts have been made for hand stripping, labor $1.25 a day, under which 300 men will go to work soon.

Consolidated Iron Mines.—An agreement has been made under which 300,000 tons are to be mined off the Mountain Iron, if possible, this fall. Shipments are large already. At this property last week 2,500 tons of ore were mined and loaded by one steam shovel in 9 consecutive hours. At the Missabe Mountain in 7 hours one shovel mined 1,500 tons, and at the Biwabik a better record than any other was made, 3,400 tons in 12 hours by one shovel.

Great Northern.—In fee lands of this company, in 25-57-17, what promises to be a large mine has been in part exploited. It appears likely to be a stripping proposition.

Iron King.—This property, not in the Consolidated, in 19 and 20-58-17, is reported as having not less than 1,000,000 tons of good ore in sight, according to the usual Mesaba methods of measurement—figuring the testpits and measuring between them on faith. It can be stripped and worked by steam shovel.

Iron—Vermilion Range.

(From our Special Correspondent.)

Minnesota Iron Company.—Night crews have been added to the stockpile gangs, and shipping is more active. Work in preparation for resumption of mining and in fitting the whole mine for the most economical production is actively under way.

MISSOURI.

Linn County.

Marcelline Coal Company.—This company has been incorporated to mine coal. The capital stock is $30,000; office in Kansas City.

MONTANA.

Beaverhead County.

Hecla Consolidated Mining Company.—Work has been resumed by this company because of the rise in the price of lead. It is one of the most important producers of lead in Montana.

Deer Lodge County.

Anaconda Mining Company.—The working force is to be increased at once by restoring 250 men, recently laid off, to the pay-roll.

Royal.—The new 10-stamp mill is now in operation. The ore is said to average $40 per ton in gold. Messrs. Willard and Nelson Bennett are the owners of this property.

Fergus County.

Gilt Edge Mine.—The last clean-up of the cyanide mill yielded $15,000 in gold. About 70 men are employed at the mine.

Jefferson County.

Elkhorn Mining Company, Limited.—During August the mill worked 29 days, and crushed 1,066 tons of ore, which yielded $24,130 in bullion. The smelting ore (253 tons) sold produced $13,609; total income, $37,739. The expenses were $23,970. An interim dividend of 6d. per share for the quarter ending August 31st has been declared, an estimated balance of £3,300 being carried forward.

Lewis & Clarke County.

Montana Mining Company, Limited.—The output for August was: Gold, 1,570 oz.; silver, 16,970 oz.; the estimated net value of the same was $43,400. The tonnage of ore milled was 5,152, the number of stamps dropping having been 90. The total expenses were $43,550, of which $700 were on capital account.

Silver Bow County.

Alice and Lexington.—These properties, at Butte, are completely closed so far as company work is concerned, but a few tributers are working in parts of the mines, receiving half cash for their product. On September 2d the Moulton mine was closed down but the mill is still running, and in all probability will be kept going on custom ore for a while. The lessees who are furnishing the ore are working in various places about Walkerville.

Boston & Montana Mining Company.—A year ago the Boston News Bureau made investigation of the big smelter of the Boston & Montana company, at Great Falls, Mont., and in an article reviewing the situation there said that the Great Falls smelter promised from its present work to do all that was claimed for it when it was planned—save at least more than 1 cent per pound in an output of 30,000,000 lbs. copper per annum. It now says: We think it proper to say at the present time that this claim is now being more than fulfilled. The price of copper is a little less than a year ago, so that stockholders should not expect to receive the full benefit immediately of the improvement that has been effected. It is nevertheless to-day a demonstrated fact—demonstrated now by more than one month's working—that the Great Falls smelter is saving the company nearer 2 cents than 1 cent per pound by its economies in the treating of the ore and the refining of copper. This smelter has cost $2,000,000, and has been paid for by $1,000,000 taken from the earnings of the company, $500,000 in bonds and $500,000 in stock recently subscribed for, and when the last installment has been paid upon this stock subscription the company will be free from debt outside its $1,500,000 bonds, of which $1,000,000 bonds were outstanding before the smelter was planned for.

Boston & Montana Consolidated Copper and Silver Mining Company.—At the mines of this company 30 men were added to the force during the week ending September 9th. Sinking is still in progress at the Mountain View mine. The shaft has almost reached the 1,100-ft. mark and will be sunk an additional 100 ft.

Parrott Silver and Copper Company.—The smelting works were closed down September 9th, throwing 300 men out of employment.

Sundorg.—Rich ore is said to have been struck in this mine, which is under lease and bond to F. A. Heinze.

NEVADA.

Esmeralda County.

Holmes Mining Company.—Col. D. H. Jackson has gone to Belleville, with instructions to carefully sample the tailings which have accumulated at the two mills of this company during the last 17 years. At a special meeting of the directors of the company held in San Francisco, Cal., September 11th, E. J. McCutchen was elected to fill the directorship made vacant by the death of Ramon E. Wilson, and a committee was appointed to draft resolutions of respect to the memory of the deceased, a copy of which will be sent to his family.

Eureka County.

(From our Special Correspondent.)

Eureka & Palisade Railroad, Eureka.—During the month of August this company received in transit to Salt Lake City, Utah., and the Selby Smelting and Lead Company, San Francisco, 672 tons of ore, as follows: From Eureka district, from the Hamburg mine, 228 tons; Eureka Consolidated mine, 154 tons; Richmond mine, 42 tons; Delaware mine, 31 tons, and Idaho mine, 11 tons. Total Eureka district, 466 tons. From White Pine district, White Pine County, 206 tons. Inquiry as to the values of the foregoing lots shipped elicited the information that gold and lead predominate in the Hamburg; ore and lead, iron and gold in the other lots, enabling the shippers to realize small profits. For the last nine days of July there was no ore shipped.

The complaint is very prevalent that the small profit which attends mining is very grinding. Merchants are cutting off supplies from credit customers and people are leaving Eureka and White Pine counties by every conveyance for gold mining localities. The miners who remain are hanging on as best they can, some making expenses, a few clearing a little money and others awaiting the result of the action of Congress on the silver question. If nothing favorable turns up, next spring will witness an exodus of yearly one-half of the people left in Eureka and White Pine counties.

Storey County—Comstock Lode.

A few miners are being kept at work in the Ophir, Mexican, Union Consolidated, Sierra Nevada, Best & Belcher and Gould & Curry mines. There are no changes in the condition of these mines.

Consolidated California & Virginia Mining Company.—A special meeting of the directors of this company was held last week to consider the proposition of the West Consolidated Virginia & California Mining Company to work their property through the old Consolidated Virginia shaft. It was agreed to accept the proposition, but it will take some little time to get everything in shape.

White Pine County.

Hamilton.—During the month of August the following lots of ore were shipped from this point: From Zoanni Brothers, 66 tons; Frank Paul, 36 tons; Minolitti, 10 tons; McEllin, 48 tons, and C. A. Mathewson, 46 tons; total, 206 tons. Lead predominated in these lots as usual. The low price of silver, nevertheless, cuts off considerable profit.

NEW JERSEY.

Morris County.

Hurd Mine.—The Glendon Iron Company has sold the lease of this old mine to the Mount Pleasant Mining Company. The ore from the Hurd has been known for many years for its excellent quality and low phosphorus contents. It is said that the new company intends to increase the output largely.

NEW MEXICO.

Maud S.—This mine continues to be the largest producer in Silver City. Work is going on in the 300-ft. level, and the ore now being taken out is reported to be richer than any mined heretofore. The proportion of gold to silver is steadily increasing.

Satisfactory results are now being obtained in the placers in the Burro Mountains, about 20 miles from Silver City. These placers have never been worked on an extended scale on account of the scarcity of water in the mountains.

Grant County.

Deep Down Mill.—This mill, at Mogollon, has been started up. The cyanide process is used, and a test run made resulted in a saving of 70% of the value of the ore. This is considerably less than is saved by the amalgamating and concentrating mills in the district.

Mountain Key.—The new mill which is being erected at Pinos Altos, by Walker, Climo & Fielder, to treat ore from this mine, will soon be ready for operation. A larger force of miners is at work in the mine than has been employed there since the collapse of the Mountain Key company, about three years ago. The present owners of the mine have taken out ore enough to pay for the mine and mill, and there is said to be enough high-grade gold ore in sight to warrant the erection of a mill.

Solid Silver Mining Company.—This company, says the Silver City "Sentinel," has resumed work in the Black Hawk mine, at Black Hawk. A New York company secured a lease on this property last year and commenced work on a new shaft on the mine, which was to be sunk to a depth of 1,000 ft. The company suspended operations about three months ago, forfeiting the lease, which was held on condition that the work was to continue uninterrupted until the shaft was completed. The mine has been one of the largest producers in New Mexico.

PENNSYLVANIA.

Bituminous Coal.

Beaver Coal and Coke Company.—A new opening, made by this company in the hillside, near Hoytdale, has reached an 8-ft. vein of coal, which is apparently continuous and of good quality.

Madison.—The miners at this place and Arona, in Westmoreland County, struck recently against a reduction of 10% in wages. On September 18th a compromise was made and the men went to work on a 5% reduction.

SOUTH CAROLINA.

In consequence of the severe losses from the recent storm, the phosphate mines have asked the State to make a reduction for the present in the amount of royalty they are required to pay.

SOUTH DAKOTA.

Lawrence County.

Referring to the cyanide process, the Black Hills "Times" says: The position the "Times" has taken relative to the MacArthur-Forrest company, who claim to own the sole right for the operation of the cyanide method, it still maintains. It has repeatedly stated that the process was not adapted to Black Hills ores, basing the statement on the experimental and practical mill tests made by Messrs. Frank and Darling, at the Golden Reward Chlorination Works, in this city. At the time when these tests were made the "Times" was informed that they were not successful, owing to the wooden tanks used not being watertight, thus permitting the liquid holding the gold and silver in solution to escape by leakage. The Golden Reward company thereupon ordered two iron tanks from the Colorado Iron Works for further tests. These tanks arrived in due time, but have never been used.

Iron.—The iron ore deposits of the Black Hills are quite extensive. In the vicinity of Rochford, on the line of the B. & M. Railroad, two tracts of land, one of 40 and the other 160 acres in extent, have been well developed by the owners, Messrs. Ammerman and Shepherd, by a series of cross and open cuts, aggregating between 600 and 700 ft. The ore is a limonite, carrying from 49 to 55% of iron, 10 to 11% silica and no sulphur, according to the Black Hills "Times." At several points drills have been driven into the bed for 20 ft. without going through it. The thinnest part of the bed is 4 ft. thick.

Oro-Cache Mining Company.—At a meeting of the directors of this company held September 14th, an assessment of 1½ mills per share on the capital stock was levied, date of delinquency October 21st, date of sale November 9th. The property of the company consists of three claims a short distance south of the Red Cloud mine. The claims are opened up by over 1,000 ft. of shafts and tunnels. A 130-ft. shaft shows the vein to be 6 ft. wide at that depth, while at the surface it was about 2 ft. A tunnel was driven in 105 ft., which tapped the shaft at a depth of 60 ft. At the junction of the workings a station was made. As yet the vein has only been stripped.

Passaic Mine.—Recent development work on this claim has opened up a vein of silicious ore 8 ft. wide, obtruding from a horizontal bed of porphyry. The opening is a large open cut, 48 ft. long and 31 ft. deep at the face, in which the vein of ore is exposed.

Red Cloud.—Another accidental discovery has been made at this mine. A drift, started 75 ft. down the hill from the original discovery, in a southeasterly direction, to tap the 50-ft. shaft, had proceeded but a few feet when a 3-ft. vein of high-grade ore was struck, the strike of which will miss the shaft some 30 ft., showing it to be a distinct and separate vein. The drift is now in about 50 ft. and its direction changed to following the vein along its strike or course, the floor of the drift being solid ore. The contractors who started in some time ago to sink to the 100-ft. level, have quite a quantity of ore now on the dump, its average value being $50 per ton.

Pennington County.

Rapid City Chlorination Works.—Manager Thorburn and the creditors of the Black Hills Milling and Smelting Company have finally agreed upon V. T. McGillicuddy and G. S. Clevenger for receivers, the number having been reduced to two by Judge Gardner. The receivers filed their bonds in $55,000, and have taken charge of the plant. It is not probable the mill will be run on the old tailings any longer, but will undergo a few changes

and be put in operation on ore, says the Black Hills "Times."

Silver Queen Mining Company.—At the meeting of the stockholders of this company, in Deadwood, September 13th, Messrs. Harris Franklin, C. C. Polk, S. S. Burton, Seth Bullock and Sheridan McBratney were elected directors for the ensuing year.

TENNESSEE.

Bradley County.

Divine & Boyle Lead Mine.—The shaft is now down 115 ft., and a drift at that level has struck a considerable body of lead ore.

McMinn County.

Fisher & Henderson Ore Bank.—The spur from the railroad, at Nonaburg, is now completed and the shipment of iron ore has been begun. The ore at present is all sent to the Citico furnace, at Chattanooga.

TEXAS.

Erath County.

Texas & Pacific Coal Company.—This company owns 20,000 acres of land and has five shafts down, from which over 1,000 tons of coal a day can be taken. Only a small amount is mined at present on account of lack of shipping facilities, but a branch line to connect the mines with the Texas & Pacific Railroad is now under construction.

UTAH.

Bullion-Beck Mining Company.—According to the Park City "Record," the superintendent reports that there are now employed in the Eureka camp about 175 men, 85 of whom are working at the Beck. The advance in lead will be a material aid in operating the mine and unless there is a further decline in silver the mine will be worked continuously hereafter.

Beaver County.

Horn Silver Mining Company.—A verdict for $10,000 damages has been given against this company in favor of T. McCharles, an injured workman.

Rob Roy.—The new mill has been put in operation. The mill and mine now employ 20 men.

Salt Lake County.

Dalton & Lark.—An average of two cars of ore per day is being shipped from these mines.

Petro Mining Company.—This company has increased its working force.

Salt Lake City.—The mines are pursuing a waiting attitude, says the "Tribune." They are not quite so hopeless as they were a while back at the prospect of silver purchase repeal, but the change is not great. In spite of the downcast feeling, however, they will go to work if there is the slightest prospect of profit in their operations. The shipments of ore and bullion during the first week of September showed a marked increase over the previous week. This is said to be owing partly to the scarcity of ores in Colorado and the consequent stiff demand for Utah ores, and also to the advance in the price of silver and lead, which has caused a few more Utah mines to start up and a slight increase in the forces of those that did not shut down. The shipments were 57 cars with 1,038 tons. The receipts of ore and bullion in this city for the week ending September 6th, inclusive, were to the aggregate value of $222,509, of which $160,870 was in bullion, and $61,639 was in ore. For the previous week the receipts amounted to $98,922.61, of which $57,122 was in bullion and $41,800 was in ore. The receipts of bullion and ore for the first eight months of the year have been as follows: Bullion, $2,878,484; ores, $1,845,330; total, $4,723,814. The shipments during the same time were: 12,504 tons bullion; 415 tons copper time were: 12,504 tons bullion; 415 tons copper bullion; 24,674 tons ores; total, 37,593 tons.

U. & I.—A new body of rich lead ore is reported to have been uncovered in this mine.

Summit County.

Daly West Mining Company.—Only a force of six men are employed at this mine; work is being confined to sinking a winze on the vein. No ore is being hoisted and no steam has been raised in the boilers of the Daly West plant, the old Daly No. 2 shaft being used by the men in going to and returning from work. The mbachinery is being overhauled and the timber in some parts of the mine repaired. No definite policy for the future has yet been decided on.

Ontario.—Work has not been stopped on this property, but continues steadily. Ore shipments have been resumed and several teams are hauling from the mine to the sampling mills. Some additional improvements are being made and work on the great tunnel continues. The Daly will not close down, as reported some time ago, but will continue work as usual.

Tooele County.

The Galena mine, owned by the same parties that own the Utah, is developed to a depth of 180 ft. They have five men employed and have a car of high-grade ore on the way in.

Utah Mine.—The shaft is now down 500 ft. and will not be driven deeper at present. The owners have 20 men at work on the mine and will run levels and thoroughly develop the mine down to the bottom of the shaft.

WASHINGTON.

Okanogan County.

Che-wah-wah River District.—Gold has been discovered in the locality by Messrs. Schunemann, James Hillar and John Rose. The locations are on Che-wah-wah River, about 35 miles from Leavenworth. A tunnel has been run in 50 ft., but will have to go about 20 ft. more before striking the ledge. Last year there were only four or five prospectors in that district, but this year there are from 40 to 50, and a number of excellent locations have been made.

Red Shirt.—It is said that a sale of this property, owned by a Seattle company, is now being negotiated.

WEST VIRGINIA.

Mineral County.

Manor Big Vein Coal Company.—M. P. Fahey, J. W. Fahey, Patrick Brown, Philip Brown, Edward Grant and A. P. Grant have formed this company for the purpose of prospecting for and mining coal near Elk Garden.

WYOMING.

Carbon County.

Cherokee Springs.—A shaft sunk by Mr. Dillon close to the Union Pacific track reached the coal vein at a depth of 12 ft. It is said to be 14 ft. thick and of good quality.

FOREIGN MINING NEWS.

BURMA.

Burma Ruby Mines, Limited.—The washings for the six weeks ending August 31st produced 1,490 carats, worth $2,500, from 2,495 loads of earth.

CHILI.

Nitrates.—It is now considered certain that the Chilian Congress will pass the bill providing for the sale of the government properties, comprising some 8,000 estacas (say 60,000 acres), exclusive of a large area as yet unexplored. The cost of these grounds having been £1,500,000, including interest and expenses, the government can afford to sell same at a mere fraction of the price paid by the existing English companies, producing nearly two-thirds of the total exports from Chili.

Congress has already taken action which will end the monopoly held by the Nitrate Railways Company. Not only has a concession been granted for the construction of a line from Huara to Iquique, but the Agua-Santa Company, against which the Nitrate Railways Company has long been fighting tooth and nail, has been authorized to extend its line into the Huara district, thus enabling it to carry direct to the coast at Caleta Buena the nitrate produced by a large number of oficinas, including Rosario.

FRANCE.

It having been found impossible to adjust the troubles between the coal miners and the mine-owners in the Department of Pas de Calais, work in the collieries stopped September 18th. The strike, if long extended, is certain to cause considerable embarrassment to the manufacturing industries of the department and elsewhere. The trouble is due to questions concerning wages and the treatment of men by the overseers. The mine-owners refused to listen to the complaints of the men and the strike is the result. It is believed that the strike may extend to other coal districts. The strike has begun to spread already to several other districts. About 42,000 miners in the north of France had quit work on the day named. The Pas de Calais district is the most important in France.

ENGLAND.

Coal Miners' Strike.—The result, as ascertained September 17th, of the coal miners' ballot, though decisively against accepting a reduction or arbitration, yet showed a big minority on the third question in favor of a resumption of work at the old terms. This gives promise of a settlement ere long. The opinion of the coalowners is that the men will return to work on the first Wednesday in October, which is the first pay-day for the month.

The enormous effect which the dispute has had on general trade is shown in the reduction of the traffic receipts of the railway companies. The Midland estimates its loss at $2,000,000. The losses of other companies amount to nearly $7,500,000. The basis on which these losses are calculated is not stated.

INDIA.

Mysore Gold Mining Company, Limited.—During August 3,959 tons were crushed, producing 3,724 oz. gold and 787 oz. were obtained from tailings, a total of 4,511 oz.

Nundydroog Gold Mining Company, Limited.—During August 2,200 tons crushed produced 2,206 oz. of gold; also 161 oz. were obtained from tailings.

Ooregum Gold Mining Company, Limited.—During August 3,368 tons crushed produced 5,591 oz. gold, and 3,340 tons tailings produced 921 oz. gold, a total of 6,511 oz.

MEXICO.

During the fiscal year 1892-93 the government issued 417 titles to mining grants, covering 2,661 hectares of land. Of the total issued less than 10% were in the first half of the year.

Guanajuato.

Negociacion de El Oro.—A company has been formed to take up the El Oro mine. The capital stock is $25,000 in shares of $10 each. The works so far undertaken comprise a vertical shaft which is now down 98 ft. and an adit which has been driven for a distance of 85 ft. The vein which is being explored is 6 ft. wide and appears well.

Hidalgo.

Santa Elena Almoloya y Anexa, Real del Monte.—It is now thought that it will be necessary to carry westward level No. 4 some 32 ft. farther in order to strike the rich pocket of ore that is supposed to exist in that direction, but if when it has been driven that length there are no indications of the proximity of the pocket in question, work will be started on westward level No. 5 at a depth of 475 ft. from the mouth of the shaft.

Santa Gertrudis y Anexas, Pachuca.—The vein of the Potosi mine has been struck by a drift run at a depth of 475 ft. in the San Alejo shaft. The ore assays from 80 to 100 oz. The direction of the vein is westward, and it is expected that it will extend to the San Cayetano.

Compania Explortadora de las Minas Cruz y Anexas.—This is a new company formed to work the mines mentioned. Its capital is $100,000, divided into 1,000 shares of $100 each, and its object is to carry out, in a radical manner, the drainage of the mines, which have been famous for their productiveness from a very early period. The old masonry-lined, octagonal shaft, 3·8 meters by 2·8 meters, sunk to a depth of 80 meters at the intersection of two veins, is still in a good state of preservation, and the extensive interior workings have continued untouched since 1810, when the owner of these mines, Don Antonio Vial, a Spaniard, was banished from this district.

Zacatecas.

Mesquital del Oro Manufacturing Company, Limited.—During August 50 stamps ran 25 days 12 hours, quantity of ore crushed 2,705 tons; bullion produced at clean-up, 787 oz., valued at $14,500; also copper valued at $300. Copper remitted, value about $300.

NOVA SCOTIA.

Cape Breton.

Eastern Development Company, Limited.—This company has completed the purchase of the location for the copper smelting works on Sidney Harbor, where it is proposed to erect works to smelt the output of the Coxheath copper mine and imported ore from Newfoundland and Venezuela.

ONTARIO.

Petroleum shipments from Petrolea, Ont., for August included 17,511 barrels of crude and 26,860 barrels of refined oil. For the eight months to August 31st the shipments amounted to 150,108 barrels of crude and 170,214 barrels of refined oil.

RUSSIA.

The shipments of refined oil from the port of Batoum in August were 362,745 barrels (of 51 gallons). For the eight months to August 31st the shipments amounted to 3,457,499 barrels of refined oil; an increase of 496,643 barrels, or 16·8% over the corresponding period in 1892.

SOUTH AFRICA.

Transvaal.

Information has been received of the discovery of a rich sapphire mine in the Rustenburg District and some very good specimens of cinnabar, found within six miles of Johannesburg, have been brought into that town.

Ferreira Company.—This company made a profit of £26,913 for the quarter ending June 30th.

May Consolidated Gold Mining Company.—This company made a profit of $25,000 for the six months ending May 31st.

Witwatersrand.—The output for July was 126,619 ounces, the largest monthly yield on record for this district. Some of the mines are at present temporarily closed and it is expected that when they resume the output will be further increased. Several new mills are also in course of erection, and when they start will swell the total. Before the end of this year it is anticipated that the monthly output will reach 150,000 ounces.

Wilwatersrand.

Durban Roodepoort Gold Mining Company.—An interim dividend of 15% has been declared.

Geldenhuis Estate and Gold Mining Company.—An interim dividend of 15% has been declared.

New Rietfontein Estate Gold Mining Company.—Crushed, 2,680 tons; obtained 3,394 oz. of gold during month of August. Cyanide works treated 3,255 tons, yielding 734 oz.; total, 4,128 oz. At the meeting recently held at Johannesburg to consider the appointment of Mr. Dunning as life governor, Mr. Dunning waived the emoluments set out in the notice convening the meeting and was elected life governor without emolument.

Robinson Gold Mining Company, Limited.—The output for August, officially reported, was: Mill: Stamps running, 60; ore crushed, 7,835 tons; gold smelted, 8,003 oz. Tailings—Cyanide process: Gold recovered, 1,808 oz. Concentrates—Chlorination process: Gold recovered, 808 oz.; from concentrates bought, 1,887 oz.; total gold recovered from ore mined, 10,619 oz.; total production of gold, 12,506 oz.

Zululand.

Banket reefs, similar to those of the Transvaal, are said to have been recently found in Zululand.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Sept. 22.

Statement of shipments of anthracite coal (approximated) for week ending September 16th, 1893, compared with the corresponding period last year:

	Sept. 16, 1893. Tons.	Sept. 17, 1892. Tons.	Difference.	
Wyoming region.....	436,548	501,121	Dec.	64,573
Lehigh region.....	148,146	152,394	Dec.	4,248
Schuylkill region.....	252,574	281,238	Dec.	28,664
Totals.....	837,268	934,753	Dec.	97,485
Total for year to date..	29,347,288	28,605,027	Inc.	742,261

PRODUCTION OF BITUMINOUS COAL, in tons of 2,240 lbs., for week ending September 16th and year from January 1st:

Shipped East and North:	1893. Week.	1893. Year.	1892. Year.
Phila. & Erie R. R.....	671	59,554	60,224
Cumberland, Md.....	87,938	2,895,538	2,664,007
Barclay, Pa.....	376	37,690	38,083
Broad Top, Pa.....	8,115	445,259	409,994
Clearfield, Pa.....	60,910	2,785,014	2,796,321
Allegheny, Pa.....	22,465	882,426	907,126
Beach Creek, Pa.....	46,723	2,051,789	1,718,043
Pocahontas Flat Top.....	45,103	1,939,481	1,722,724
Kanawha, W. Va.....	56,928	2,300, 26	1,724,202
Totals.....	329,229	13,397,577	12,040,724

Shipped West:	1893. Week.	1893. Year.	1892. Year.
Pittsburg, Pa.....	13,992	863,444	905,037
Westmoreland, Pa.....	24,875	1,377,082	1,201,426
Monongahela, Pa.....	10,722	489,928	457,287
Totals.....	49,589	2,730,454	2,563,750
Grand totals.....	378,818	16,128,031	14,604,474

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending September 16th, 1893, and year from January 1st, in tons of 2,000 lbs.: Week, 31,190 tons; year 3,205,443 tons; to corresponding date in 1892, 3,517,634 tons.

Anthracite.

The anthracite coal market has continued to move on the lines of improvement noted in our last week's issue. The demand has been better and prices have been fairly well maintained. That there has been some "cutting" does not necessarily imply that values have been weak. From what we can learn, this shading of prices has been done by those agents who habitually make concessions to buyers, and in many instances the quality of the coal has had a great deal to do with it.

The restriction has continued, and the beneficial effects of such a course are already apparent. We call attention to our editorial comments on the monthly statement for August.

The question of the Lehigh Valley Coal Company and the individual operators is not yet settled. The daily press published various reports, all asserting or intimating that a final definite agreement had been arrived at by the parties interested. This is not true. Several propositions were submitted, but none was accepted. One was that from October 1st, 1893, to October 1st, 1894, the Lehigh Valley Coal Company would purchase the coal mined by the individual operators at a price fixed upon a basis of 60% of the price of coal at tide, the coal to be paid for in cash on the 15th of every month. All the coal thus purchased from the operators by the Lehigh Valley Coal Company to be turned over to commission men selected by the company, and to be sold by them at a commission per ton of 15c. and 15c. instead of 15c. and 10c. as now, and the circular rate to be maintained.

The great objection to this plan came from the commission men, who did not consider it a fair proposition for various reasons. In the first place, there was some doubt as to the Lehigh Valley's ability to carry out the financial part of the plan. Again, it was urged by the commission men that the sales agent of the company would be enabled to have the pick of the coal and the cream of the trade, and they would have to be satisfied with his leavings; and, moreover, the company's agent, by going to the big consumers and offering them a commission of 15 and 10, would practically leave but a 5c. commission to the regular commission men. The latter do not think that the arrangement would be a profitable one so far as they are concerned. Thus, the entire question is as yet unsettled, although it is probable that a final decision will be reached before the end of next week. If not, then in all probability the Lehigh Valley will continue the present arrangement until November 1st.

The Bureau of Anthracite Coal Statistics issues the following statement of anthracite coal shipments and stocks for August and the eight months to August 31st:

	Aug., 1893.	Aug., 1892.	Year, 1893.	Year, 1892.
Wyoming ...	1,760,983	2,017,432	15,484,565	14,703,862
Lehigh.....	591,729	592,892	4,152,359	3,974,421
Schuylkill..	956,056	1,081,515	7,670,561	8,041,867
Totals.....	3,308,768	3,691,839	27,607,485	26,720,150

The stock of coal on hand at tidewater points, August 31st, 1893, was 860,175 tons; on July 31st, 1893, it was 733,446 tons; increase during the month 126,729 tons, or 17·3%.

For August the shipments show a decrease of 385,071 tons, or 10·4%, the falling off being nearly evenly distributed between the Wyoming and the Schuylkill regions, the Lehigh shipments being very nearly he same in both years. For the eight months there is shown an increase of 887,335 tons, or 3·3%, which was, however, not evenly distributed, the shipments from the Wyoming region showing a gain of 780,703 tons, or 5.3%, and those from the Lehigh region an increase of 477,938 tons, or 12·0%, while the Schuylkill region shows a decrease of 371,306 tons, or 4·6%. The increase in tidewater stocks is to be noted.

The Reading official circular rates, subject to the usual commissions, are as follows, f. o. b. at its New York harbor shipping ports:

	Broken.	Egg.	Stove.	Chestnut.
Hard white ash.....	$4.00	$4.25	$4.60	$4.60
Free white ash.....	3.90	4.15	4.60	4.60
Shamokin.....	....	4.50	4.80	4 60
Schuylkill red ash.....	....	4.50	4.95	4.75
Lykens Valley.....	5.00	5.80	6.20	4.45

Pea, $2.50@$2.75; No. 1 Buckwheat, $1.75@$2; No. 2 Buckwheat, $1.50.

The Reading Railroad system reports that its coal shipment (estimated) for last week, ending September 16th, was 255,000 tons, of which 15,000 tons were sent to Port Richmond and 35,000 tons were sent to New York waters.

NOTE OF THE WEEK.

A press dispatch from Pottsville, Pa., says: Affairs in the anthracite coal region are becoming brighter. The Lehigh Valley officials at this place received word September 21st that the company collieries will work five days this week. As the time is regulated by the coal sales agents, the Reading collieries will also work five days this week.

Bituminous.

There is very little change of importance to report of the bituminous market this week. The demand at present is good. Most of the mines are working on full time, and coal is being pushed forward to consumers at minimum rates of freight. New York harbor shipping ports are suffering on account of these shipments to Sound ports which are being made from the lower ports. The transportation of coal from the mines to tide-water is still poor, and at times a good deal is packed up on the lateral feeders; this is especially so on the Pennsylvania Railroad. To some extent this affects the car supply, although, comparatively speaking, the condition of the latter is good.

In the coastwise vessel market rates are firm and vessels are in demand, though not to the extent of last week, there being some large vessels in the market which are apt to grant concession in order to make charters. We quote ocean freight rates from Philadelphia as follows: To Boston, Salem and Portland, 75c.; Providence and New Bedford, 65@70c.; Wareham, 85@90c.; Lynn, 85c.@$1; Portsmouth, 75@80c.; Bath and Bangor, 75@80c.; Gardiner, 80c. and towage. From Baltimore, Newport News and Norfolk rates are 10c. higher than the figures given above.

The old Chesapeake & Ohio Canal is still open and is doing a good local trade.

Coal alongside New York ranges down from $3.30 for the best grade.

NOTES OF THE WEEK.

September 19th there appeared before the House Committee on Ways and Means a delegation composed of ex-Senator H. G. Davis, of West Virginia; W. D. Waldbridge, of Maryland; John Abbott, of Cumberland; Governor McCorkle, of West Virginia, and Col. William Lamb, of Norfolk, Va., who represented the bituminous coal interests. Ex-Senator Davis spoke of the importance of the coal industry, and said that the duty on coal was now considerably lower than that on other dutiable goods, and he believed that it should be raised rather than lowered. Col. William Lamb, of Norfolk, spoke for the coal interests of Virginia and West Virginia, especially that of the Pocahontas mines. He said that he was a merchant, and not a mineowner. His business was largely that of supplying steamers. It would be impossible to hold this business without the present tariff. E. H. McCullough, president of the Westmorelond Coal Company, of Pennsylvania, spoke of the advance being made by the handlers of Nova Scotia coal and the low rate at which it could be laid down at Boston and New York. If the duty was removed it would ruin the industry. W. L. D. Waldbridge, president of the American Coal Company, of Maryland, said that his company employed 10,000 men and sent about 2,000,000 tons of coal to the seaboard for use in New England. If the duty was removed they could not do this, as the Nova Scotia coal would be laid down so cheaply there that they could not compete with it.

Buffalo. Sept. 21.

(From our Special Correspondent.)

The business situation is improving daily, but the coal trade has not shown any marked increase as yet. The season is approaching when fuel becomes a necessity, and therefore the demand must come at last. Financial affairs have interfered with the coal trade materially for several months, dealers not caring to sell for anything but cash.

Prices for anthracite are unchanged, but bituminous quotations are nominal as concessions are made to reliable parties and for cash transactions.

Lake freights on coal continue at low figures. Charters are fairly active.

The shipments of coal westward by lake from Buffalo from September 10th to 16th, both days inclusive, aggregated 76,920 net tons, distributed as follows: 28,630 tons to Chicago, 22,250 to Milwaukee, 13,700 to Duluth, 1,000 to Superior, 3,850 to Toledo, 1,250 to Green Bay, 1,100 to Gladstone, 1,800 to Washburn, 200 to Bay City, 990 to Detroit, 350 to St. Ignace, and 1,800 to Manitowoc. The rates of freigh were 30c. to Chicago, Milwaukee, Manitowoc, Racine, and Green Bay; 20c. to Detroit, Toledo, Washburn, Duluth, Superior City, and Gladstone; 40c. to Sault Ste. Marie and 50c. to St. Ignace.

The tonnage tables of the Sault Ste. Marie Canal show the coal traffic as follows: From opening of navigation to September 1st, 1893, 1,921,803 net tons, corresponding period in 1892, 1,972,239 net tons; in 1891, 1,671,387 net tons, and in 1890, 1,390,351 net tons.

On Friday last a severe storm swept over the lakes and considerable damage resulted to vessels and cargoes; the aggregate cost of the disasters will probably reach $150,000. Included in the list was the propeller "Susan E. Peck," which with 2,200 tons of coal from Buffalo to Milwaukee, sank in deep water at the mouth of Detroit River; the vessel and her cargo will probably be recovered, as she is on a sand bottom.

Reports from important coal distributing centers say that trade is improving, and that the curtailment of production has brought the anthracite trade into better shape than it has been for a long time past.

Chicago. Sept. 21.

(From our Special Correspondent.)

The slight stimulus which the cooler weather of last week had imparted to the anthracite coal trade has eased up, and the abnormal higher temperature this week has taken the starch out of it. The waiting policy of dealers in the country continues, and though it is true that a good deal of quiet buying has been going on all summer, it has not, as yet, had any appreciable effect on the big piles of coal stocked in yards and docks. It is apparent to all close observers that a very heavy tonnage will yet be required for this market and for the territory usually supplied from here. Although, if reports to hand are to be credited, and the writer sees no reason why they should not be, the wide swath which Duluth has been cutting in territory carrying the same freight rate as from here has evidently been done at the expense of circular. Shippers at that point have extended their trade as far south as Kansas City and as the rate is the same as from Chicago, they certainly require a dose of the same kind of "medicine" to brace them up as the shippers have received. For this and other reasons the strong efforts to maintain prices mentioned in previous reports have been somewhat relaxed, though there is no general break in the line There will, undoubtedly, be a heavy demand shortly, and a week of colder weather will witness its inauguration not only from the country trade but also from the smaller domestic trade in this city.

Circular prices are at the following rates: Lehigh lump, $6.25; large egg, $5 85; small egg, range and chestnut, $6 10. Retail prices per ton are: Large egg, $6.75@$7; small egg, range and chestnut, $7@$7.25.

Bituminous coal is in moderate demand and steadily increasing in all lines, but is still very far short of the normal, accounted for by the fact that factories and mills are slow to start. Some of these have done so within the week and others will follow, and by the end of the month the majority will be in active operation. Inquiry and demand from this source have been greatly augmented and some shippers making a specialty of this class of steam trade look for considerable activity by October 1st. There is very little change in regard to railroad demand. Several have increased their orders slightly but the majority are taking minimum quantities, as per contract only. Stocking up progresses very slowly in the country and the demand when it does come will be active. The continued drouth is causing much trouble in the Wilmington coal district, as water has to be hauled from points distant from mines and they are being worked to about half capacity. Indiana block is in fair demand and prices hold steady. Hocking is in moderate demand, and circular is fairly well sustained; on the whole, when the growth of the city and country is considered, the coming demand for bituminous coal for steam purposes will be something enormous. It is this knowledge which tends to keep the market healthy, strong and vigorous. Prices of bituminous per ton of 2,000 lbs. f. o. b. Chicago are: Pittsburg, $3 35; Hocking Valley, $3.10; Youghiogheny, $3.25; Illinois lump, $2 70; Brazil block, $2.75.

Coke prospects are much brighter than they were a month ago. Numbers of the smaller foundries and factories using foundry coke are now taking fuel regularly, and some are stocking up as they believe the reduction in price is only temporary. Quotations are: $4.10 furnace; $4.35@$4 40 foundry, crushed; $4.40 Connellsville. West Virginia: $3.90 furnace; $4.10 foundry. New River: Foundry, $4.40; Waiston, $4.10 furnace, $4.35 foundry.

Pittsburg. Sept. 20.

(From our Special Correspondent.)

The coal trade has undergone no important change; the demand is entirely local. The pools and the Pittsburg harbor contain millions of bushels of coal; a large amount has been a daily bill of expense for several months and will continue to be until there is sufficient water to float it down the Ohio. We regret to say the prospect just now is not a favorable one for a rise. A majority of the operators are in no hurry to resume, the river miners especially, under these conditions. The coal business at large is suffering from the general depression also to a marked degree.

Connellsville Coke.—Trade in the coke region is steadily improving and prospects are brighter. There is a net increase of 203 cars during the week; over 325 ovens were fired up. The unfavorable weather is materially interfering with many plants, preventing them from running. With the mills starting up and furnaces going in blast the demand for coke is increasing, and the belief is becoming general that the Connellsville region will soon regain the orders that went to West Virginia fields during the big strike. The week's shipments aggregated 32,184 tons, distributed as follows: To Pittsburg, 700 cars; to points east, 540 cars; to points west, 548; total, 1,788 cars. Pittsburg shipments increased 200 cars; Western shipments decreased 87 cars; Eastern shipments increased 90 cars; total increase, 203 cars. Present rates for the various kinds are: Furnace coke, f. o b. cars at ovens, $1.35 per ton; foundry coke, f. o b. cars at ovens, $1.65 per ton; crushed coke f. o. b. cars at ovens, $1.75 per ton. Add 70c. per ton, and you have the price of coke delivered at Pittsburg.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Sept. 22, 1893.

Pig Iron Production.

Fuel used.	Week ending Sept. 22, 1892.		Week ending Sept. 22, 1893.		From Jan., '92.	From Jan.,'93.
Anthracite.	67	27,750	44	20,587	1,286,934	1,150,830
Coke.....	128	116,605	56	58,126	5,199,179	4,533,287
Charcoal...	43	9,733	28	5,570	396,644	315,066
Totals....	238	154,088	128	84,283	6,782,757	5,999,183

Pig Iron.—On the whole nothing can be said of the pig iron market this week that did not apply with equal truth to the market of last week. Dealers generally report an improved inquiry, and sales of small lots have been made more freely. Consumers who had asked that deliveries on existing contracts be deferred are now commencing to ask for what they bought many weeks and even months ago. But, in the main, business has been very quiet. Prices, it is claimed, have grown somewhat stiffer, owing to the improvement in financial affairs, and we do not hear so much of the "exceptionally low figures at which so many rumored sales have taken place of late. The production continues to show a decrease, but stocks are no less, indeed they are probably slightly greater to-day than a month ago, which shows that consumers have not exhausted their supplies and that they will purchase as they have done all along this year, namely, from hand to mouth. This policy will continue, and it is difficult to see how the marked advance in prices which many optimists predict will take place before 1894 commences is to occur.

Of the 1,800 tons of Southern charcoal iron in warrants of the American Pig Iron Storage Warrant Company, advertised for sale at auction on Wednesday, 1,500 tons were withdrawn and the balance bought in by the parties at interest. The tidewater prices of the Thomas Iron Company on the new basis are as follows: No. 1, $14.50 per ton; No. 2, $13.50; No. 3 or No. 2 plain, $12.75. For regular brands we quote as follows: Northern brands: No. 1, $14@$14.50; No. 2, $12.50; gray forge, $12. For Southern iron we quote: No. 1, $13.25@$14; No. 2 F., $12@$13; No. 1 soft F., $12@$13; gray forge, $11.75@$12—all at tidewater. Scotch irons are quoted: Coltness, $21.50@$22; Eglinton, $19.50@$20; Summerlee, $20.

Billets and Rods.—This market continues inactive and devoid of features of interest, unless it be the reports of exceedingly low offers by Pittsburg and Western works. We quote: Steel billets, tidewater, $21.50@$23.75; foreign, $27.75@$28.50; wire rods, $30@$31; foreign, $39@$40.50.

Manufactured Iron and Steel.—There is nothing of interest doing in this market. It continues very dull. We quote: Angles, 1·75@1·9c.; axles, scrap, 1·80@2·10c., delivered; steel, 1·75@2c.; bars, common, 1·45@1·60c.; refined, 1·60@1·85c. on dock; beams, up to 15 in.. 1·70@2c.; 20 in., 2·10@2·30c.; car truck channels, 2@2·10c.; channels, 1·90@2c. on dock; steel hoops, 1·8@1·9c., delivered; links and pins, 1·70@1·80c.; plates, flange, 2@2·10c.; firebox, 2·5@2·8c.; flange, 2·10@2·25c.; marine, 2·50@2·75c.; sheared, 1·85@2·10c.; shell, 1·95@2·10c.; tank, 1·75@1·90c.; universal mill, 1·75@1·90c.; tees, 1·85@2·05c., all on dock.

Merchant Steel.—The merchant steel market continues very quiet. Quotations are: Tool steel, $6.50@$6.75 and upward; tire steel, $2@$2.10; toe calk, $2.30@$2.40; Bessemer machinery, $2.10@$2.20; Bessemer bars, $1.60@$1.70; open hearth machinery, $2.25@$2.30; open hearth carriage spring, $2.10@$2.20; crucible spring, $3.75@$4.

Old Material.—We do not hear of any business in old material. Quotations are nominally as follows: Old iron rails $15@$15.40; steel rails, $12@$12.75; car wheels, $11.50@$13.50

Rail Fastenings.—The market for rail fastenings is dead. Quotations remain: Fish and angle plates, $15@$15.80 at mill; spikes, 1·80@1·90c.; bolts and square nuts, 2·45@2·50c.; hexagonal nuts, 2·55@2·60c., delivered.

Spiegeleisen and Ferromanganese.—There is absolutely nothing doing in either ferro or spiegel. Quotations are nominally as follows: 10 to 12% Spiegel, $22@$22.50; 20% $25@$25.50. Ferro, $56@$57.

Steel Rails.—Nothing new can he said of the rail market. Business is nil and the outlook is not bright. We do not hear of any business worthy of mention. Quotations are unchanged at $29 mill or tidewater. Girder rails, $31@$33.

Tubes and Pipe.—Business in tubes and pipes is very dull. Ruling discounts on carload lots are as follows: Butt, black, 57½, 10 and 5%; butt, galvanized, 50, 10 and 5%; lap, black, 67½, 10 aad 5%; lap, galvanized, 57½, 10 and 5%.

NOTES OF THE WEEK.

At the annual meeting of the Thomas Iron Company in Allentown, Pa., Samuel Thomas and James W. Fuller, of Catasauqua; Charles Stewart, William H. Hulick and F. A. Drake, of Easton; W. P. Hardenberg, of New York, and B. F. Fackenthal, Jr., of Riegelsville, were elected directors. Though the company shut down all but three blast furnaces this summer, the president's report was very encouraging, and a unanimous feeling in favor of early resumption was expressed.

A reduction of wages, to take effect October 1st, has been announced by the Crane Iron Company, Catasauqua, Pa. Furnace employees and machinists will be cut 10% and laborers 5%.

Buffalo. Sept. 21.

(Special Report of Rogers, Brown & Co.)

The market continues steady without change in prices. Those consumers whose business is of such a nature as to permit a reasonably close estimate of their future requirements are covering wants into next year. For deliveries beyond six months some furnaces are holding for an advance. The general foundry trade has not as yet felt any improvement in the situation.

We quote for cash f. o. b. cars Buffalo: No. 1X foundry strong coke iron, Lake Superior ore, $13.75; No. 2 X foundry strong coke iron, Lake Superior ore, $13.25; Ohio strong softener No. 1, $14; Ohio strong softener No. 2, $13.25; Jackson County silvery No. 1, $16.50@$17.30; Jackson County silvery No. 2, $16@$16.80; Lake Superior charcoal, $16; Tennessee charcoal, $16; Southern soft No. 1, $13.15; Alabama car wheel, $18; Hanging Rock charcoal, $20.50.

Chicago. Sept. 27.

(From our Special Correspondent.)

If there is one feature more prominent than another just now it is the tendency toward a lower range of prices, and more particularly noticeable in manufactured iron and steel. This has been brought about by the drop in the cost of labor, cheaper raw material and general economical management of mills. The reduction in prices has, to some extent, stimulated business on certain specialties—iron and soft steel bars, O. H. spring steel and other steels now in common use hy the implement trade. The slight improvement reported last week holds, and in small as well as finished iron accessions have been made during the week under review. There is a better inquiry for coke and charcoal iron from large and small concerns, and while resultant sales only show a slight increase in tonnage, it is a gain, and sellers believe that business will continue to pick np. The two largest implement factories in the West have resumed for the season, McCormick's and Deering's, and these in turn will cause other establishments to start up. The situation is decidedly more encouraging, despite the fact that all the mills and plants of the Illinois Steel Co. are now shut down.

Pig Iron.—The increased shipments to foundries are a very favorable sign, these being very largely for consumers who! for several months have been running very lightly or have had their works closed entirely. There is a distinctly better inquiry for local coke iron, and while much of the demand is still for small lots, some of it is for fair sized amounts. A number of buyers who apparently had dropped out of the market have again commenced "shopping"; and some of them have placed orders for 500 to 1,000 tons, deliveries running through the next few months. Agents of Southern furnaces report several more important deals as having been closed, hut outside of these the demand is mainly confined to small lots for quick delivery and on such very low prices are named—$6.75, or a little less at furnace—hasis on gray forge iron. There is little steadiness or firmness of price except for extended delivery. Lake Superior charcoal iron is in better inquiry, hut actual sales are small. Quotations per gross ton f. o. b. Chicago are: Lake Superior charcoal, $16.00@$16.50; Lake Superior coke, No. 1, $13.50@$13.75; No. 2, $12.75@$13.25; No. 3, $12.25@$12.50; Lake Superior Bessemer, $14.00; Lake Superior Scotch, $14@$14.50; American Scotch, $15.50@$16.00; Southern coke, foundry, No. 1, $13.50; No. 2, $12.00; No. 3, $11.50; Southern coke soft, No. 1, $12.00; No. 2, $11.50; Ohio silveries, No. 1, $16.50; No. 2, $16.00; Ohio strong softeners, No. 1, $16.25; No. 2, $15.75; Tennessee charcoal, No. 1, $16.50; No. 2, $16.00; Southern standard car wheel, $18.25@$18.75.

Structural Iron and Steel.—Some improvement is noted in the demand for beams and other architectural shapes, as well as for bridge material. Quotations, car lots, f. o. h. Chicago, are as follows: Angles, $1.70@$1.80; tees, $1.95@$2.05; universal plates, $1.70@$1.80; sheared plates, 75c.@$1.85; beams and channels, $1.75@$1.85.

Plates.—Mill and warehouse orders are more frequent and the tonnage called for shows a gratifying increase, but prices are as low as they have been. Steel sheets, 10 to 14, $2.25@$2.35; iron sheets, 10 to 14, $2.20@$2.30; tank steel, $1.90@$2; shell iron or steel, $2.50@$2.75; firebox steel, $4.25@$5.25; flange steel, $2.74@$3; boiler rivets, $4@$4.15; boiler tubes, all sizes, 65%.

Merchant Steel.—Again the tonnage of contracts hooked averages quite large, and there are yet a good many orders to be placed. The resumption of the two big concerns, previously mentioned, will stimulate buying. Tool steel is looking up. Quotations are: Tool steel, 6·50@6·75c. and upward; tire steel, 1·85@1·90c.; toe calks, 2·20@2·30c.; Bessemer machinery, 2·05@2·15c.; Bessemer bars, 1·70@1·80c.; open hearth machinery, 2·10c.; open hearth carriage spring, 2·10@2·20c.; crucible spring, 3·50@3·75c.

Galvanized Sheet Iron.—Manufacturers' agents report a better demand from warehouse; mill business also shows more activity and outlook encouraging. Discounts are unchanged at 70, 10 and 5% off on Juniata and 70, 10 and 10% off on charcoal, and jobbing quantities at 70 and 7½% off on the former and 70 and 10% off on the latter.

Black Sheet Iron.—Mill orders are inactive at 2·75c. for Chicago No. 27 common and 2.90@2·95 for steel. Jobbers note increased demand from the country merchant at 3c. for iron and 3·10@3 15c. for steel sheets.

Bar Iron.—Mills in this vicinity have so reduced the price on business offering, that Youngstown mills stand little chance of getting any of the orders going until they have filled up. To a point here carrying less than 10c. freight, a price was made of 1·40c. delivered. Car lots are filled at 1·45c. Jobbers note a fair demand for iron and steel bars at 1·65@1·75c. base.

Nails.—The lowered price of wire nails has given some impetus to business and a fair inquiry has sprung up at $1.45@$1.50 though lower figures are strongly spoken of. Johbers reported increased demand at $1.55. Steel cut nails are improving in demand from factory at $1.20 and $135 from johber in less than carloads.

Steel Rails.—Orders in quantities of several hundred tons for standard sections and weights will now he filled from stock at $30@$31, as the steel mills here are all shut down. Agents of Eastern mills report orders more frequent for car lots at $32.25 f. o. b. Chicago.

Scrap.—Dealers are encouraged at the improved inquiry for all classes of material, although much of the business is refused at the low prices offered. Prices are merely nominal. Railroad, $11.00; No. 1 forge, $11.00; No. 1 mill, $7.50; fish plates, $12.00; cast borings, $4.50; wrought turnings, $7.50; axle turnings, $7.25; machinery castings, $9; stove plates, $6.50; mixed steel, $8; coil steel, $14; leaf steel, $14; tires, $13.50.

Old Material.—Iron rails are lower; a sale of a few hundred tons to a near hy mill was made at $14. Steel rails are unchanged and dull at $9@$11.50 as to condition, etc. About 50 tons of car wheels changed hands at $14.

Philadelphia. Sept. 21.

(From our Special Correspondent.)

Pig Iron.—The long waited for improvement in demand for pig iron has not yet set in. The latest sales show that selling prices for forge are $12.75 for standard; No. 2, 13.75, and No. 1, $14.50. Makers have offered large lots of both forge and foundry iron at concessions of 25c., hut no large sales have been closed in this market. The founders are indifferent and the mill men decline to purchase until orders are secured.

Steel Billets.—Prices have declined to $21. Manufacturers expect large orders at this figure. Small lots are selling at 25c. to 50c. above this. Confidence is lacking.

Muck Bars.—Scarcely any business is being done.

Merchant Iron.—Two more mills have started up, but nowhere are there orders for a month ahead, and the outlook is even more discouraging than in August, because the fact is heing developed that there is not going to be much business.

Skelp Iron.—Several small orders have been added to the books, and manufacturers are expecting a continuous run of this kind of business at $1.50.

Sheet Iron.—Demand fell off last week, and no improvement has set in. Mill owners will probably reduce force next week, unless there are signs of improvement.

Plate and Tank.—Quite a number of small orders were booked on Monday and Tuesday; but taking it all in all, there is a lack of confidence, and nothing approaching activity. Heavy plates are $1.70. It is impossible to lower prices, and manufacturers recognize that they have nothing to do but stand and wait. No one knows how long the present condition of things is likely to last.

Structural Material.—The contract for the Bourse was given out to-day. Quite a number of small orders have been booked this week, particularly for boiler plate. Millmen see their way clear to some other large orders, and altogether there is a better feeling. While the usual quotations are given on small orders they are no guide in the case of large business.

Steel Rails.—Steel rail makers have no news whatever to give. They deny that there is any downward tendency for standard sections. Small orders are coming in every day or two.

Old Rails.—Old iron rails are declining on account of the large amount of stock seeking a market. Transactions have been closed this week at $15, the lowest price for years; but this shading has not brought out many buyers.

Scrap.—All kinds of scrap have dropped in price a little on account of the large supplies to be had. Sales of No. 1 wrought were made at $13; machinery scrap, $10.50; wrought turnings, $10.50.

Pittsburg. Sept. 20.

(From our Special Correspondent.)

Iron and Steel.—Trade continues slow in every branch of business; transactions continue to be of small dimension, and principally for early deliveries, the future being considered able to take care of itself. More mills have started up, which would indicate that manufacturers have faith in an early resumption of trade. The last quarter of the year is close at hand, and it is full time to look for an improvement, at least in certain branches. While the general features of the market for both crude and finished iron and steel products show no important change from the conditions which have prevailed for some time past, indications are not wanting of a better feeling among producers, and prospects of a heavier and more remunerative business as the season advances. Present conditions are far from satisfactory from the standpoint of the iron and steel manufacturer, however, and the basis of current orders is at prices below anything ever before known. The resumption of work in the mills throughout the country during the past few weeks has increased considerably the output of finished forms of iron and steel—although a large percentage of the works are still idle and none are running to their full capacity. It has only been by the closest kind of competition, and the naming of extremely low prices, that the rolling mills and steel works at many points have been able to hook sufficient orders to keep things moving. Production is still on the decline, as additional furnaces are blowing out. The visible supply is small as compared with what it formerly was, but it is in excess of present requirements.

Scrap Material.—The market for all kinds of old material continues extremely dull; sales few and far between. Consumers may be classed as out of the market; prices nominal.

New steel rail dull; makers still holding out for syndicate prices, $29, f. o. b. at works. This condition of affairs can't continue much longer. Railroads will soon be in the market for a supply.

Finished Materials.—There is a slight improvement in the demand for certain kinds of finished material; there is, however, plenty of room for improvement.

Wire Nails.—The demand is improving; prices, however, show no great change.

Several mills have started since our last; all are non-union. The mill men refuse to have anything to do with the Amalgamated scale.

Coke Smelted Lake and Native Ores.

Tons.	Cash.
1,000 Bessemer, Sept., Oct.	$12.30
750 Bessemer, Sept., Oct.	12.25
500 Bessemer, Sept., Oct.	12.35
400 Bessemer, Sept., Oct.	12.25
500 Bessemer, Sept., Oct.	12.40
1,000 Gray Forge, Sept., Oct.	11.65
700 Gray Forge, Sept., Oct.	11.75
500 Mill Iron	11.75
300 Gray Forge	11.75
25 Gray Forge	11.85
25 Gray Forge	12.00
250 No. 1 Foundry	13.50
150 No. 2 Foundry	12.50
50 No. 1 Foundry	13.75
25 No. 2 Foundry	12.75

Charcoal.

50 Cold Blast	26.50
50 No. 2 Foundry	18.00
50 No. 1 Foundry	18.50
25 No. 2 Foundry	18.00

Blooms, Billets and Slabs.

Tons.	Cash.
1,000 Billets, Sept., Oct., at works	$19.85
1,000 Slabs, Sept., Oct., at works	20.00
700 Billets, Sept., Oct., at works	20.00
500 Billets, Sept., at works	20.15
500 Billets, Sept., Oct., Nov., at works	19 85
250 Billets, prompt, at works	20.00

Muck Bar.

1,000 Neutral, Sept., Oct.	21.50
250 Neutral, Sept., Oct.	21.75
150 Neutral, Sept., Oct.	21.75

Skelp Iron.

1,000 Wide Grooved, 1·40	4 m
1,000 Narrow Grooved, 1·37½	4 m
780 Sheared, 1·57½	4 m

Skelp Steel.

350 Wide Grooved, delivered, 1·32½	4 m

Sheet Bars.

Tons.	Cash.
380 Sheet bars, at mill	$26. 0

METAL MARKET.

NEW YORK, Friday Evening, Sept. 22, 1893.

Prices of Silver per Ounce Troy.

Sept.	St. Ex.	London Pence.	N.Y. Cts.	Value of sil. in $1.	Sept.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in $1.
16	4·84½	34¼	74⅛	·574	20	4·84¾	34¼	74⅛	·574
18	4·84⅝	34⅜	74⅛	·577	21	4·85⅛	34	73¾	·571
19	4·84¾	34⅛	74¾	·579	22	4·85¼	33⅞	73⅛	·570

Silver has been firm, but the market closed dull in London after a sharp decline caused by large receipts from Chile. Supplies have increased somewhat, but the amounts received have all been distributed owing to lack of any disposition to speculate pending the Senate's action on the Repeal Bill.

The United States Assay Office at New York reports the total receipts of silver for the week to be 167,000 ounces.

Gold and Silver Exports and Imports at New York, Week Ending September 9th, 1893, and for Years from January 1st, 1893, 1892.

	Gold.		Silver.		Excess of Imp. or Ex.
	Exports.	Imports.	Exports.	Imports.	
Week	$628,145	$1,083,024	$821,095	$169,278	I. $196,938
1893...	69,355,316	55,977,789	23,136,279	1,805,504	E 34,708,302
1892...	58,694,073	6,530,756	16,145,144	1,788,496	E 66,519,965

The gold exported for the week went to the West Indies; the silver nearly all to London. Of the week's gold imports $240,714 came from London, $701,576 from Havre, the rest from Havana and the West Indies. The silver all came from the West Indies.

NOTES OF THE WEEK.

The financial situation is substantially unchanged since our last writing, or if anything changed somewhat for the worst. This result is due almost entirely to the delay of the Senate in acting upon the repeal of the silver purchase law, a delay which is wholly caused by the persistence of the extreme silver advocates in talking against time. From all accounts the ultimate passage of the law is reasonably well assured, and there can be no doubt that the silver men know this in spite of the loud protestations which they and their organs continue to make. Their object is evidently to weary out the advocates of the repeal and to introduce some sort of compromise. While this may appear a shrewd course to men trained in political maneuvers, there is no doubt that it is disgusting the country, and business men everywhere who are injured by the delay are asking why the Senate is obstructing the declared will of the people to which the House of Representatives responded without unreasonable delay. If the rules of the Senate permit unlimited debate, people say, then those rules should be amended at once, and it should be made possible for the Senate to do business properly.

As stated above, the effects of this delay are shown in a marked way in the money market. While there are some encouraging features in the continuance of the resumption, or partial resumption, of manufacturing, especially the disappearances of the premium on currency and the retirement of Clearing House certificates in New York and Boston, the situation is still a strained one. While money on call is generally lower than at the date of our last reports, perhaps more abundant, time money is very scarce, and, moreover, a good many extensions of commercial and manufacturing paper granted in July and early August will soon expire and under present conditions further accommodations will be granted by the banks very reluctantly. It is said also that a good many sterling loans will come due in the last days of September and unless final action is taken on the repeal bill it is very doubtful whether the parties on the other side will be willing to renew them.

On Thursday of this week the New York Clearing House Committee retired $1,430,000 in loan certificates and on Friday $700,000 more, leaving the net amount outstanding $30,000,000. The Boston Clearing House canceled $1,000,000 loan certificates on Thursday.

The strained condition of affairs is reflected in the stock market, and extreme dullness has characterized transactions of the week everywhere. Foreign purchasing is at a standstill. There is no investment demand for securities, and apparently every one is a little afraid of speculation.

Last week's statement of the New York banks was a better one than for several weeks past, being even more favorable than had been expected. It showed not only an increase in the reserve of $7,635,325, but an increase of $3,485,900 in the net deposits. There was a decrease of $4,088,400 in the loans, an increase of $4,196,000 in the specie, an increase of $4,310,800 in the legal tenders, and an increase in the circulation of $1,514,200. The banks thus have a surplus over the legal reserve of $10,061,700. The average total daily amount of cash held by the banks for the week was $104,920,100.

The United States Treasury statement on Thursday evening showed balances in excess of outstanding certificates amounting to $114,721,813. Of this amount $95,684,317 was in gold, $6,780,132 in silver, $9,174,584 in United States notes, and $3,082,780 in treasury notes, etc. The government deposits with national banks amounted to $11,935,485. The silver dollars and bullion on hand in the Treasury under the act of July 14th, 1890, amounted to $150,968,682, against which are outstanding in treasury notes $150,785,504. The gold balance in the Treasury shows a decrease of $1,993,294 during the past week.

For the week ending September 21st the reserve of the Bank of England increased £746,000, of which £270,000 were in gold imported, chiefly from Australia and Brazil. The gold holdings of the bank are £27,376,001, about £550,000 less than a year ago, but £1,700,000 more than at the corresponding date in 1891. The Bank of France reports its holdings in sterling at £67,362,870 in gold and £50,856,033 in silver, an increase of about £200,000 in gold, and a decrease of £800,000 in silver, from the corresponding date last year.

Since January 1st, the India Council has drawn bills to the amount of £5,850,800, as against £7,165,800 in the same period of 1892. Since June 26th, on which date the Indian Mint was closed to the free coinage of silver, the Council has drawn less than £200,000, as against £2,200,000 in the same time last year. From January 1st to September 7th the exports of silver to India have amounted to £4,949,452, as against £4,704,399 in the same period of 1892. Since June 29th the exports have been £814,172, against £1,057,059 in 1892. Although these figures show a decrease of some 20%, it must not be forgotten that the values given are bullion values, and that if the lower price of silver since June 29th be taken into consideration it will be found that the amount exported by weight has shown practically no diminution, a result somewhat unexpected, although it is hardly time yet to feel the full effects of the action of last June, when the actual conditions of India are taken into account.

Domestic and Foreign Coins.

The following are the latest market quotations for the leading foreign coins:

	Bid.	Asked.
Mexican dollars	$.58½	$.60
Peruvian soles and Chilian pesos	.52½	.54
Victoria sovereigns	4.84	4.88
Twenty francs	3.86	3.89
Twenty marks	4.71	4.78
Spanish 25 pesetas	4.75	4.80

Other Metals.

Copper.—The activity of the two or three weeks preceding that which is now closing has given way to a more nominal condition of affairs. The demand from the home consumers is still rather poor, as they are not willing to pay the prices asked by producers, such prices being rather above the parity of those at which the large sales for export were made. On the other hand, the demand for export continues, but as foreign buyers are not willing to pay present prices there have been very few transactions. Shipments abroad continue to be made on a quite unprecedented scale, as is likely to be the case for at least the next six weeks. All surplus stocks have been exhausted by sales already made, and now there is only the current output to be disposed of; but even for this there is not yet demand enough at home to take care of it all, and all the domestic mills complain of having to work on less than half time. How long this state of affairs is likely to continue it is impossible to foretell; but just as long as it does there is little chance of prices reaching such a level as to prove remunerative to the producers, unless production should be curtailed, and of this there are very few signs, as the lake companies, with the sole exception of a few of the smaller ones, are producing heavily; from Montana only a slight curtailment is reported, and Arizona is evidently producing almost as much as usual. The price for Lake copper is nominally 9¼@10c., bids of 9¼ having been refused. Electrolytic is held for 9¾ and casting for 9¼@9¼.

In London the G. M. B. market eased off somewhat, but closed rather steadier at £42 15s. for spot and £43 2s. 6d. for three months prompt. Refined and manufactured sorts we quote, as follows: English tough, £45,15s.@£46; best selected, £47@£47 10s.; strong sheets, £53 10s.@£54; India sheets, £51@£51 10s.; yellow metal sheets, £45 8s. There is an increase of but 400 tons to be reported in the visible supplies for the first half of the month, in spite of the tremendous shipments from here, which is evidence enough of a good consumption abroad.

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

Copper:			
Liverpool—Majestic (ad).	538 pigs	120,833 lbs.	$12,000
" "	45 casks	56,000 "	5,300
" "	845 bars	55,996 "	5,376
" Tauric	52 casks	65,000 "	7,000
" "	3,629 ingots	75,000 "	8 000
" Arizona	45 casks	56,250 "	5,625
" "	45 bbls.	56,250 "	5,225
" Lucania	45 casks	56,250 "	6 000
Hull—Galileo	90 bbls.	112,500 "	10,778
Glasgow—City of Rome.	36 casks	45,000 "	5,000
London—America	180 bbls.	225,000 "	22,500
Bordeaux—Tancarville	478 plates	55,504 "	5,263
" "	45 casks	42,300 "	4,230
Havre— "	23 pkgs.	2,210 "	210
Antwerp—Chicago	56 casks	45,000 "	5,000
Rotterdam—Edam	482 pigs	112,017 "	11,000
" "	2,260 plates	167,313 "	16,600
" "	54 casks	67,500 "	7,000
" "	264 bars	44,812 "	4,257
" Obdam	431 casks	534,750 "	56,200
" "	3,966 plates	311,435 "	30,500
" "	1,1.0 pigs	250,430 "	24,900
" "	851 bars	225,818 "	20,324
" "	199 cakes	44,921 "	4,210
St. Petersburg—Colorado	1,365 cakes	2..3,550 "	21,250
" Tancarville	894 plates	101,505 "	10,150
" Friesland	180 bbls.	233,550 "	20,375
Leghorn—Plata	90 "	116,550 "	10,688
Genoa—California	90 casks	112,500 "	12,000
Swansea—Monomoy	1,327 bars	425,622 "	39,313
" "	665 pigs	100,200 "	9,519
" Chicago City	1,072 bars	336,063 "	30,246

Copper:				
Hamburg—Suevia.....	8 casks	10,000	"	1,150
" "	740 plates	44.850	"	4,400
" "	11 cakes	1,800	"	185
" Gilbert.....	270 bbls.	337,500	"	32,400
" Amalfi.....	117 casks	126,375	"	18,500
" "	561 plates	33,628	"	3,000
" Normannia..	10 bars (bul.)	458	"	2,000
Stettin—Venetia.....	18 casks	22,40.)	"	2,050
" "	495 bars	67,200	"	6,500
Bremen—Saale.....	36 bbls.	44,800	"	4,140
Copper matte:				
Liverpool—Majestic.....	955 bags	109,626	"	4,500
" St. Pancras..	3,311 "	332,739	"	14,000
" Tauric.....	5.567 "	659,703	"	29,011
" Arizona.....	4,33? "	461.780	"	20.000
" Lucania	523 "	59,158	"	2,600
Swansea—Monomoy.....	1,306 "	114,035	"	5,000
Havre—La Gascogne.. ..	216 bbls.	(in transit)		1,400
" Champagne.....	156 "	"	"	3,468

Tin.—The market continues very strong, consumption good and deliveries larger than for some time past, while the evidence that consumers everywhere are without any stocks at all increases. Spot and September we quote at 20·90, October at 21 and November 21·15.

The foreign market first advanced and then eased up with the lowering of the silver quotations and closes at £80 for spot and £80 5s. for three months for prompt.

Lead must be reported as dull, although firm. While there is no pressure to sell, consumers, on the other hand, are acting with great caution in purchasing, and we have to quote about 3·80 New York.

The foreign market, too, is rather dull, as but little business is doing in Spanish at £9 15s.@£9 16s. 3d., and in English at 2s. 6d. more.

St Louis Lead Market.—The John Wahl Commission Company telegraph us as follows: Lead heavy on account of liberal offerings and unfavorable advices from the seaboard. At the close the metal is freely offered at 3·62½c., and only lightly salable at this figure.

Spelter is much firmer because of the better demand for consumption at home, and, as the market was relieved by recent sales for export and production has been curtailed, we have to quote the advance figures of 3·80@3·85 New York.

Abroad the market is weak at £17 2s. 6d. for good ordinaries and £17 5s. for specials.

Antimony is somewhat firmer, although the volume of business continues small, Cookson's having to be quoted at 10¼, L. X. at 10c. and Hallett's at 9¾.

Quicksilver.—There is nothing new to report of this market. Quotations are: New York, $38; London, £6 9s.@£6 10s.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Sept. 22.

Heavy Chemicals.—There is nothing new to report of the heavy chemical market. It continues quiet. The outlook among consumers is doubtless improving, and sooner or later, business in chemicals will resume its old time activity. During the past week, however, the chief feature has been a stiffening in prices due to the coal strike in England, which has affected chemical works there. We note a slightly improved all round demand, but no sales to which especial significance should attach are reported.

Quotations are unchanged nominally as follows: Caustic soda, 60%, 3·05@3·20c.; 70%, 2·80@3c.; 74%, 2·82½@3·05c.; 76%, 3@3·10c. Carbonated soda ash, 48%. 1·25@1·50c.; 58%. 1·15@1·25c. Alkali, 48%, $1.15@$1.20; 58%, $1.10@$1.20, according to package. Sal soda, English, 1·10c.; American, 1@1·10c. Bleaching powder, 2·25@2·50c.

Acids.—The acid market in general is quiet. Only a jobbing demand is reported and there is a dearth of features of interest. Prices are without marked change and we quote as follows: Acids, per 100 lbs. in New York and vicinity, in lots of 50 carboys or more: Acetic, in barrels, $1.87½; in carboys, $2.25; muriatic, 18°, 90c.@$1.10; 20°, $1@$1.25; 22°, $1.10@$1.35; nitric, 40°, $4; 42°, $4.50@$4.75; sulphuric, 75c.@$1. Mixed acids, according to mixture, oxalic, $6.30@$6.50. Blue vitriol is quoted all the way from $3.50 to $3.75; glycerine for nitro-glycerine, 11½@12¼c., according to quality and quantity.

Brimstone.—No business is reported in this market. It is as dull and featureless as it can be. Prices are unchanged from last week, and are as follows: Best unmixed seconds, $17.25; best thirds, $16.25. Spot is nominally from 50 to 75c. higher than futures.

Fertilizing Chemicals.—Some sales are reported this week, but on the whole the fertilizer market is as quiet as it was a fortnight ago. There is no special feature of interest and prices are practically unchanged from last week.

Quotations are: Sulphate of ammonia, gas liquor, $3.30@$3.35; bone, $3.05. Dried blood, $2.07½@$2.12 per unit for high grade, and $1.95@$2 for low grade; azotine, $2.15@$2.20. Concentrated phosphate (30% available phosphoric acid), 75c. per unit. Acid phosphate, 13% to 15%, av. P_2O_5 60c. per unit at seller's works in bulk. Dissolved bone-black, 17% to 18%, P_2O_5 92@95c. per unit. Acidulated fish scrap, no stocks on hand; dried scrap is quoted at $25 f. o. b. fish factory; wet scrap, $15 f. o. b. fish factory. Tankage, high grade, $24.50@$25.50; low grade, $22@$23. Bone tankage, $23@$24; bone meal, $24@$25.50.

The price of double manure salts as fixed by the syndicate is as follows: New York and Boston, $1.12; Philadelphia, $1.14½; Charleston and Savannah, $1.17 cwt., hasis 48@50%, in 50-ton lots on foreign weights and analyses. Sulphate of potash, 90%-96%, basis 90%: New York and Boston, $2.07; Philadelphia, $2.09½; Charleston and Savaunah, $2.127, sulphate of potash, 96-99%, basis 90%, is 4% higher.

Phosphates.—Owing to the late storms which disabled many of the mines that were not shut down, thus producing a curtailment in the output, prices of high grade phosphate rock have grown firmer and higher. Quotations f. o. b. Charleston are $4.75@$5. Freights are $2.25.

Muriate of Potash.—No new business is reported in this market. The prices fixed by the syndicate for 1893 are as follows: New York or Boston, $1.78; Philadelphia, $1.80½; Southern ports, $1.83. During the past week there were no arrivals.

Kainit.—Practically nothing is doing in kainit. Quotations for shipments are as follows: New York, Philadelphia and Boston, $9 for foreign, invoice weight and test, and $9.25 for actual weight; Charleston, Savannah and Wilmington, $9.75 for invoice weight and test, and $10 for actual weight.

Nitrate of Soda.—This market is again lower, due to the arrival of some cargoes. Quotations are $1.70 @$1.72½. In a recent circular the well known importing house of W. R. Grace & Co. say: With the abatement of the financial stringency, the nitrate market here is firmer. There is much less reselling by consumers, and the large arrivals of the last 30 days have nearly all gone into consumption. The visible supply is getting smaller, and as prices in Europe are much above the values here, it is not likely that new purchases for the United States will be made on the coast for the present. We quote on spot 1 75@1·80c. and to arrive 1·85@1·95c. The actual cost of importing is fully 1·92½c. Estimated quantity in store New York, 61,000 bags; discharging ex vessel New York, 7,000 bags; due to arrive in Septemher, New York, 35,000 bags; do. Boston, 8,000 bags; do. Hampton Roads, 12,000; total, 55,000 bags. Due to arrive in October, Hampton Roads, 7,000 bags; do. Savannah and Charleston, 18,000 bags; total, 25,000 bags. Due to arrive in November, New York, 52,000 bags; do. Philadelphia, 36,000 bags; total, 88,000. Visible supply to December 1st, 1893, 236,000 bags.

Liverpool. Sept. 13.

(Special Correspondence of Joseph P. Brunner & Co.)

Although the North Staffordshire collieries have arranged to go in at the old rate of wages, the other affected districts are as had (if not worse) as ever. Riots on an extensive scale have taken place in some of the colliery districts, and considerable damage has been done to plant and rolling stock. It is expected that the coal strike will probably last to the end of this month, and possibly longer. In the meantime, manufacturing industries are suffering severely owing to the fuel searcity.

So far as the chemical trade is concerned, business is slack this week.

Soda ash is dull and prices nominal. For Leblanc makes quotations are unreliable, varying according to make, quantity, market, etc., and quotations are quite nominal, as follows: Caustic ash, 48%, £4 10s.@£5 per ton; 57%, 58%, £5 10s.@£5 15s. per ton. Carbonate ash, 48%, £4 15s.@£5 per ton; 58%, £5 5s.@£5 15s. per ton, net cash.

Ammonia ash, 58%, in light request, and £4@£4 5s. per ton, less 2½%, may be called about nearest spot range.

Soda crystals are scarce and firm at £3 5s.@£3 7s. 6d. per ton, less 5%.

Caustie soda is in immediate demand, but as the stock is getting reduced, while production is practically at a standstill, prices are well maintained. Quotations vary according to export market, and spot range is about as follows: 60%, £8 10s. @£9 5s. per ton; 70%, £9 10s.@£10 5s. per ton; 74%, £10 10s.@£11 5s. per ton; 76%, £12@£12 5s. per ton, net eash. For parcels under 10 tons 5s. per ton extra is charged.

Bleaching powder is inactive, and although makers are firm at £9@£9 5s. per ton for hardwood packages, net eash, second hand parcels are offered at 5s.@7s. 6d. per ton less money.

Chlorate of potash has gone quiet again and there is little doing so far this week. We quote: Prompt, 8½d. per lb; September, 8¼d.@8¾d.; October-December, 8d.@8½d.

Bicarh. soda is in small compass and £7 per ton less 2½% is lowest priee for 1 cwt. kegs, with usual allowances for larger packages.

Sulphate of ammonia is declining and nominal spot value is about £14 15s.@£15 per ton less 2½% for good gray 24@25% in double bags f. o. b. here. In the absence of business, however, it is difficult to test values.

Nitrate of soda is quoted at £9 10s. per ton less 2½% for double hags f. o. b. here, and there is little doing.

Carb. Ammonia.—Lump 3½d. per lb.; powdered 3¾d. per lb. less 2½%.

NOTES OF THE WEEK.

The Chief of the Bureau of Statisties reports the total value of the exports of mineral oils from the United States from the month of August, and during the eight months ending August 31st, 1893, as compared with similar exports during the corresponding periods of the preeeding year, as follows: August, 1893, $4,084,255; eight months ending August 31st, 1893, $27,099,461; August, 1892, $3,707,472; eight months ending August 31st, 1892, $26,847,587.

MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Aspen, Colo.: Baltimore, Pittsburg, St. Louis, London and Paris, see pages 334, 335 and 336.]

NEW YORK, Friday Evening, Sept. 22.

It is the same old story at the Consolidated Stock and Petroleum Exchange of exceeding dullness in the mining stock market. The dilatoriness of the Senate in taking measures to infuse confidence into business circles by a prompt repeal of the purchasing clause of the Sherman Act is having a depressing effect on trading in all kinds of securities, and there is no telling when the market here will become merely nominally dull instead of abnormally so, as at present. Still, an improvement is to be noted in mining proper throughout the West, which is bound to be reflected sooner or later in the market for mining shares. During the present week the volume of business has been greater than for the week before, but there has been no special feature.

The Comstocks have been neglected. There was a sale of 100 shares of Ophir Consolidated at 95c., and 200 shares of Best & Belcher, at 50 to 60c.

Of Ontario 50 shares changed hands at $7.

The Caledonia Company last week levied an assessment of 50c. per share. The stock becomes delinquent October 16th, and will he offered for sale on November 15th.

There was a sale of 1,000 shares of Lacrosse at 4c.

Phœnix of Arizona shows a solitary transaction of 100 shares at 55c.

Trading in Brunswick Consolidated has been heavier than usual. During the week 8,300 shares were sold at 2c. Mr. W. A. Hawley, superintendent of the Brunswick Consolidated Gold Mining Company, was in this city the greater part of this week, and was interviewed by many of the stock holders.

NOTES OF THE WEEK.

Assessments ordered this week are: Amador Gold Mining Company, Cal., 5 cents per share; Bodie Tunnel and Mining Company, Cal., 10 cents; Caledonia Gold Mining Company, Cal., 50 cents; Emmett Mining Company, Cal., 2 mills; Orleans Mining Company, Cal., $2; Oro Cache Mining Company, S. Dak., 1½ mills; Potosi Mining Company, Nev., 25 cents per share.

Bullion Receipts. Salt Lake, Utah.—The receipts of ore and hullion at Salt Lake for the week ending September 16th were valued at $116,302, of which $64,082 was in hullion and $52,280 in ore. This compares with a total of $222,600 for the preceding week.

Boston & Montana Mining Company.—The smelting works at Great Falls, Mont., produced 16,000,000 lbs. of copper during the first 14 days of September.

Comstock Lode.—There are now only about 160 miners at work on the Comstock, according to the local papers. The latest weekly reports of the superintendents are as follows:

Hale & Norcross.—In this mine, on the 1,300 level, the new winze has now a total depth of 17 ft. The superintendent reports that this winze continues all in ore of very good quality. There was extracted from the winze last week 37 cars of ore, the average assay of which was $45.15 per ton.

Consolidated California & Virginia.—The ore extracted last week included 28 tons, assaying $27 per ton, from narrow streaks that are being followed 75 ft. above the sill floor of the 1,500 level, and 406 tons, assaying $34.58 per ton, from openings 52 ft. below the 1,650 ft. level. A total of 477 tons of ore, averaging $34.58 per car sample assay, was shipped to the Morgan mill. The amount of ore milled during the week was 400 tons, and the average battery assay of the same was $23.43 per ton.

Kentuck Consolidated.—East crosscut from the south drift from the joint east crosscut is in 13 ft.; face in quartz and porphyry. The west crosscut in the west ledge, started at a point 45 ft. south of the north line, is in 20 ft.; the face is in low-grade ore.

Occidental Consolidated.—We continue to extract from the west ledge above the 400 level from two to three tons of ore per day. Have started a west crosscut from No. 2 upraise at a point 75 ft. below the 300 level.

Savage.—We continue to extract ore of a fair grade on the 1,100 level. We are doing considerable prospecting between this level and the 950 level. During the week hoisted 183 cars of ore from this level. Shipped to the Nevada mill 210 tons and milled 210 tons. Car samples average $26.60; battery samples average $22.50. Bullion yield for the week, $3,241 35. Shipped to the United States Mint at Carson, September 7th, 400 lbs. of crude hullion. They are also retimbering the shaft between the 750 and 800 levels.

Potosi.—The west crosscut from the south drift 220 ft. south of the shaft, 850 level is about 26 ft.; face in porphyry; we have been making some repairs in the south drift during the week. The south drift on the 16th floor, above the 900 level, has now a total length of 36 ft.; face in ledge matter containing occasional bunches of good ore. The south drift from the east crosscut 73 ft. above the 930 level is out 30

ft.; face in porphyry and low-grade quartz. Extracted and sent to the mill last week 319 tons and 700 lbs. of ore from the 1,000 and 1,150 levels; milled during the week, 360 tons: on hand at mill, 92 tons and 1.400 lbs.; average battery assays, $23 74; aver age car sample assays $23 77. Shipped to United States Mint, Carson, 648 lbs. of crude bullion. The ore worked at the Nevada mill in the month of August was $1,600 tons. Gross proceeds in bullion, $34,170.22; cost of reducing, $9,600; net proceeds in bullion, $24.570.22; assay value per ton, $26.15; gross average per ton, $21.35; net average per ton, $15.35; mill worked up to 80%.

Boston. Sept. 21.

(From our Special Correspondent.)

There has been less activity the past week in copper stocks, and prices generally show a little lower level. Boston & Montana has come out more freely and buyers have been inclined to hold off for lower prices, but were unable to do much as the stock is strongly held at about $22, and only small lots were sold at a fraction below that figure. Butte & Boston was more active and a good deal of stock has been taken at a range of $8¾@$8¼, the lower rate prevailing to-day.

Calumet & Hecla advanced to $278 for one share, with later sales at $277. It is reported that the company has recently sold 5,000,000 lbs. of copper for export at 9c. per lb., which is a fraction below the current price.

Tamarack sold at $146 for 50 shares, delining later to $144 for a small lot.

Quincy advanced from $105 to $110 for a lot of 10 shares, on order to buy them at best price.

There was a good demand for Franklin, which advanced the price to $12, but later sales were made at $11¼.

Osceola advanced to $28½, and $29 was paid for an odd lot, with later sales at $28.

Centennial advanced from $3½ to $3¾, with a subsequent decline to $2, at which price it sold today. The reports from the mine are very conflicting and is reflected in the price of the stock from day to day.

Kearsarge declined from $7½ to $7, but the trading in it is very light.

Tamarack, Jr., advanced ½ to $18, but reacted to $17½.

Wolverine advanced from $1½ to $2, assessment paid, and Allouez from 40c. to 50c. on moderate sales.

Atlantic sold at $10, declined to $8½ and closed $8 bid. The prospects of a dividend in the near future are not very encouraging. By the company's report for 1892 the net earnings were stated as $42,-681, with copper sold at 11·9c. per lb. The surplus at the commencement of 1893 was about $295,000 this and the earnings for the present year with copper below 10c. per lb. will hardly suffice for the building of nine miles of railroad, new mill, dwellings, store, etc., and leave anything applicable for dividends.

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3 P. M.—At the afternoon board Boston & Montana advanced to $21⅝; Centennial advanced ¾ to $2¾, and Butte & Boston declined to $8.

San Francisco.

SAN FRANCISCO, Sept. 22 (*By Telegraph*).—The opening quotations to-day are as follows: Best & Belcher, 50c.; Bodie, 15c.; Belle Isle, 10c.; Bulwer, 10c.; Chollar, 20c.; Consolidated California & Virginia, $1.30; Gould & Curry, 20c.; Hale & Norcross, 45c.; Mexican, 55c.; Ophir, 80c.; Savage, 35c.; Sierra Nevada, 45c.; Union Consolidated, 30c.; Yellow Jacket, 40c.

London. Sept. 15.

(From our Special Correspondent.)

The business on the Stock Exchange still continues very restricted, and there is an almost entire absence of speculative transactions. Most of what little excitement there has been has centered round the events in British South Africa from whence conflicting reports arrive day by day. It is feared that the natives of Matabele Land will cause serious trouble, and in consequence the shares of the Chartered Company of British South Africa have been tossed about pretty wildly on contradictory reports.

Twice during the past week there has been brisk business in South African diamond shares, especially in those of the De Beers company. Considerable buying of these shares in Paris has induced business in London. There are rumors of rich syndicates buying up the produce of the mines in very large lots, but whether this is true or is a bull movement it has had an inspiriting effect on the prices of the shares.

The return of the Rand output for August at 136,-000 oz., or 10 000 oz. more than July, the best previous month, has drawn attention to the shares of the Transvaal gold mining companies. If we were living in ordinary times the continuous increase in the output would cause great excitement on 'Change and in the city month by month. As it is, however, the interest taken is only languid and the boom in the shares in comparable to the shadow of the ghost of the real thing.

The report of the African Gold Recovery Company (MacArthur Forrest patents) for the year ended June 30th last casts an interesting light on the increase in the output of the Rand. Of the output of 136,000 oz. in August, the cyanide process is responsible for 34,000 oz., or 25%. During July the total output was 126,000 oz., and of this the cyanide process obtained 29,390 oz. The company is in excellent financial circumstances, for, after placing large sums to the reserve fund and to the depreciation fund, it is able to pay a 15% dividend on the year's work, and a further bonus equal to 5%. Whatever may be the technical and legal objections to the process and the MacArthur-Forrest patents the company is a great success, and it is very highly thought of in this country.

In the American mining stock market De Lamars have attracted most attention by the excellent monthly return for August, which is given in our mining news columns, and the price of the stock has gone up a little. On the result the inquiry for shares has been fairly brisk. Elkhorns have been unsettled and have fallen 6d. Poormans and South Poormans are also weaker.

Montanas are stationary at their low level. The report of the directors on the working for August is far from reassuring.

DIVIDENDS.

Elkhorn Mining Company dividend No. 14, of twelve and one-half cents, $21,875, payable September 28th, at the office of the company, at 6 Drapers Gardens, London, E. C., England.

MEETINGS.

Elkhorn Valley Coal-Land Company, at the office of the company in New York City, October 12th, at 12 o'clock, noon.

Golden Fleece Gravel Mining Company, at the office of the company, room 310 Phelan Building, San Francisco, Cal., September 30th, at 8 P. M.

Presidio Mining Company, at the office of the company, room 33 Nevada Block. No. 309 Montgomery street, San Francisco, Cal., October 2d, at 12 o'clock, noon.

San Vicente Mining Company, at the office of the company, rooms 201-202 Crocker Building, No. 610 Market street, San Francisco, Cal., October 3d, at 1 P. M.

CURRENT PRICES.

These quotations are for wholesale lots in New York unless otherwise specified.

Acid—Acetic, chem. pure.....17@.19
Commercial, in bbls. and cbys..01¼@.02
Carbonic, liquefied, ℔ lb..... ....18@.25
Chromic, chem. pure, ℔ lb 1.00
for batteries.....40
Hydrobromic, dilute, U. S. P....25@.30
Hydrocyanic, U. S. P.....45@.50
Hydrofluoric.....20@.30
Alcohol—95%, ℔ gall.....$2.30@$2.40
Absolute.....$3.80
Ammoniated.....$2.80
Alum—Lump, ℔ cwt.....$1.75@$1.85
Ground, ℔ cwt.....$1.85@$1.90
Powdered, ℔ lb.....04½@.05
Lump ℔ ton, Liverpool.....£5
Aluminum Chloride—Pure, ℔ lb.$1.25
Amalgamating solution, ℔ lb.....80
Sulphate, ℔ cwt.. .....$1.90@$2.50
Ammonia—Sal., in bbl. lots. ℔ lb.....07½@.08
Carbonate, ℔ lb., English and German, .07½@.08
Muriate, white, in bbls., ℔ lb..... .08¼
Aqua Ammonia—(in obys) .8° ℔ lb.03@.04
20°, ℔ lb.....04@.05
26°, ℔ lb..... 04¼@.05
Antimony—Oxymur, ℔ lb..... .04@.06
Regulus, ℔ lb..... .....10@.11¼
Argols—Red, powdered, ℔ lb..... .15
Arsenic—White, powdered ℔ lb.03@.03¾
Red ℔ lb.....065@.07
Yellow.....08@.09
White at Plymouth, ℔ ton.....£12 2 6
Asbestos—Canadian, ℔ ton.....$50@$300
Italian, ℔ ton, c. i. f. L'pool....£18@£60
Ashes—Pot, 1st sorts, ℔ lb.....4.75@5
Pearl.....05¾@.06¼
Asphaltum—
Prime Cuban, ℔ lb.....04@.05
Hard Cuban, ℔ ton.... ....$28.00@$30.00
Trinidad, refined, ℔ ton...$30.00@$35.00
Egyptian and Syrian, ℔ lb.....05@.07¼
Californian, at mine, ℔ ton$12.00@$26.00
at San Francisco, ℔ ton.$15.00@$29.00
Barium—Carbonate, pure, ℔ lb..... .45
Carbonate, commercial, ℔ lb.... .05@.10
Chlorate, crystal, ℔ lb..... .75
Chloride, commercial, ℔ lb..... .05@.10
pure, ℔ lb..... .16
Iodide, ℔ oz..... .40
Nitrate, ℔ lb..... .06½@.07
Sulph., Am. prime white, ℔ ton$17.50@$19
Sulph., foreign, floated, ℔ ton.....$21@$24
Sulph., off color, ℔ ton.....$11.50@$15.00
Carb., lump, f. o. b. L'pool, ℔ ton.....£6
No. 1, Casks, Runcorn, " " .. £4 10 0
No. 2, bags, Runcorn, " " .. £3 15 0
Bauxite—℔ ton.....$10.00
Bichromate of Potash—Scotch, ℔ lb..... .....11@.12
American, ℔ lb..... .....11@.12
Bichromate of Soda—℔ lb....09½@.10
Borax—Refined, ℔ lb., in car lots.08@.09
San Francisco.....08@.08¾
Concentrated, in car lots..... .07¼@.08
Refined, Liverpool ℔ ton.... £9
Bromine—℔ lb..... .....25@.35
Cadmium Minion—℔ lb..... $2.00
Cadmium Iodide—℔ lb..... $5.50
Chalk—℔ ton..... .... $1.50@$2.25
Precipitated, ℔ lb..... .04@.06
China Clay—English, ℔ ton..$13@$18.00
Domestic, ℔ ton.....$9@$11
Chlorine Water—℔ lb..... .10
Chrome Yellow—℔ lb..... .10@.25
Chrome Iron Ore—℔ ton, San Francisco.....$10.00
Chromalum—Pure, ℔ lb.....35@.40
Commercial, ℔ lb..... .02½
Cobalt—Oxide, ℔ lb..... $1.60@$1.70
Copper—Sulph. English Wks. ton £20@£21
Vitriol (blue), ordinary, ℔ lb. 03¾@.03¾
" extra..... .04½
Nitrate, ℔ lb..... .40
Copperas—Common, ℔ 100 lbs....85@.95
Best, ℔ 100 lbs.....$1.35@$1.50
Liverpool, ℔ ton, in casks....£2@£2 10s.
Corundum—Powdered, ℔ lb.. .04½@.09
Flour, ℔ lb..... .03
Cryolite—Pow., ℔ lb., bbl. lots....07@.08
Emery—Grain, ℔ lb. (℔ kg.).... .04½@.05
Flour ℔ lb..... .02½@.04
Epsom Salt—℔ lb..... .01@.01¼
Feldspar—Ground, ℔ ton..$6.00@$10.00
Crude.....$2.00@$3.00
Fluorspar—Powdrd, No. 1, ℔ ton.$20@$30
Lump, at mine..... .....$6@$8
French Chalk—
Fuller's Earth—Lump, ℔ ton. $16@$20
Glauber's Salt—in bbls., ℔ lb...01@.01¼
Glass—Ground, ℔ lb ....09@.10
Gold—Chloride, pure, crystals, ℔ oz. $12.00
pure, 15 gr., c. v., ℔ doz. $5.40
liquid, 15 gr., g. s. v., ℔ doz..... $5.50
Chloride and sodium, ℔ oz..... $6.00
15 gr., c. v., ℔ doz. $2.75
Oxide, ℔ oz..... .....$27.25
Gypsum—Calcined, ℔ bbl... $1.25@$1.50
Land Plaster..... .....
Iodine—Resublimed, ℔ oz..... .30@ 33
Iridium—Oxide ℔ lb..... $90
Iron—Nitrate, 40°, ℔ lb ..... .01@.01¼
47°, ℔ lb..... .02@.02½
Kaolin—*See China Clay.*
Kieserite—℔ ton..... $9@$10
Lead—Red, American, ℔ lb ....06¾@.07¼
White, American, in oil, ℔ lb. .06½@.07¼
White, English, ℔ lb., in oil...08½@.08¾
Acetate, or sugar of, white.....06@.06½
Granulated.....
Nitrate..... .....09@.12
Lime Acetate—Am. Brown..... .....90@.95
" Gray..$1.75@$1.87½
Litharge—Powdered, ℔ lb.. .05½@.07¼
English flake, ℔ lb..... .06@.09½
Magnesite—Crude, ℔ ton of 1,015 kilos.....$14.75
Calcined, ℔ ton of 2,240 lbs.....$22.00
Brick, ℔ ton of 2,240 lbs.....$47.50
Manganese—Ore, per unit.....23@.28
Oxide, ground, ℔ lb..... .02½@.06½
Mercuric Chloride—(*Corrosive Sublimate*) ℔ lb..... .62@.74
Powdered, ℔ lb.. .....
Marble Dust—℔ bbl..... $1.25@$1.50
Metallic Paint—Brown ℔ ton. $20@$25
Red..... $20@$25
Mica—In sheets according to size.
1st quality, ℔ lb..... .25@$6.00
Mineral Wool—Ordinary slag... .01½
Ordinary rock..... .02½
Ground, ℔ ton.....
Naphtha—Black..... .....
Nitre Cake—℔ ton..... .....$10.00
Ochre—Rochelle, ℔ lb..... .01¼@$01¾
Washed Nat Oxf'rd, Lump, ℔ lb.06½@.06¾
Washed Nat Oxf'rd, Powder, ℔ lb.07@.07¼
Golden, ℔ lb..... .....03@.05
Domestic, ℔ ton.. .. ..$12@$20
Oils, Mineral—
Cylinder, light filtered, ℔ gal... .14@.16
Dark filtered, ℔ gal.... .10@.13
Extra cold test, ℔ gal. .20@.24
Dark steam refined, ℔ gal., .07½@.12
Phosphorus—℔ lb..... .5@.55
Precip., red, ℔ lb..... .80@.85
white, ℔ lb..... .85@.90
Platinic Chloride—Dry, ℔ oz $7
Plumbago—Ceylon, ℔ lb..... .04@.08
American, ℔ lb..... .....05@ 07
Potassium—Cyanide, ℔ lb., C. P. 67%, ℔ lb..... .52 .40
mining... .28@.30
Bromide, domestic, ℔ lb..... .28@.32
Chlorate, English, ℔ lb..... .18@.18¼
Chlorate, powdered, English, ℔ lb., .18¼@.19
Carbonate, ℔ lb., by casks, 82% .04½@.05
Caustic, ℔ lb., pure slick..... .05½@.06
Iodide, ℔ lb..... .....$2.58@$2.80
Nitrate, refined, ℔ lb..... .....06@.08
Bichromate, ℔ lb..... .....10@.11¼
Yellow Prussiate, ℔ lb..... .21½@.22½
Red Prussiate, ℔ lb..... .....39@.44
Pumice Stone—Select lumps, ℔ 03½@.12
Original cks., ℔ lb.... ..... .01½@.02
Powdered, pure, ℔ lb..... .01½@.01¾
Pyrites—Non-cupreous, p. units. 10@.11
Quartz—Ground, ℔ ton.... .$6.00@$10.00
Rotten Stone, Powdered, ℔ lb. 03¼@.03½
Lump, ℔ lb..... .....06@.07
Original cks, ℔ lb..... .04½@.05½
Rubbing stone, ℔ lb..... .03½@.04
Sal Ammoniac—lump, in bbls., ℔ lb.80½
Salt—Liverpool, ground, ℔ sack.... .70
Domestic, fine, ℔ ton..... .$7@$7.50
Common, fine, ℔ ton..... .$4.50@$5
Turk's Island, ℔ bush..... .....26@.28
Salt Cake—℔ ton.... .....$10.00@$15.00
Saltpeter—Crude, ℔ lb..... .03¼@.04
Soapstone—Ground, ℔ ton..... $6@$8
Block and slab according to size.
Sodium—Prussiate, ℔ lb..... .22@.24
Phosphate, ℔ lb.... ....04@.05
Stannate, ℔ lb.... ....06@.12
Tungstate, ℔ lb..... ....30@.35
Hyposulphite, ℔ cwt., in casks $1.70@$1.80
Strontium—Nitrate, ℔ lb.... ..08½@.09
Sulphur—Roll, ℔ lb..... .01½@.02¼
Flour, ℔ lb..... .....01¾@.02
Sylvinit, 27@35%, S. O. P., per unit, 3.75
Talc—Ground French, ℔ lb....01¼@.01¾
American No. 1, ℔ lb..... .01¼@.01¾
American No. 2..... 006
Terra Alba—French, ℔ lb..... .65@.80
English, ℔ lb..... .....65@.80
American, No. 1, ℔ lb..... .....60@.80
American, No. 2, ℔ lb..... .....40@.50
Tin—Crystals, in kegs or bbls.... .14@.15
feathered or flossed. .20
Muriate, single..... .07@.12
Double or strong, 54° B.. ..... .10@.15
Oxymur, or nitro..... .19
Vermillion—Imp. English, ℔ lb. .80
Am. quicksilver, bulk.....57 @.59
Am. quicksilver, bags.....58 @ .60
Chinese..... ....85 @$1.00
Trieste..... .....90 @ .95
American..... .....11½@ .12
Zinc White—Am., Dry, ℔ lb..04½@ .05
Antwerp, Red Seal, ℔ lb.....06¼@.07
Paris, Red Seal, ℔ lb..... .07⅜@.08
Muriate solution..... .06
Sulphate crystals, in bbls.. ℔ lb.03@.03¾

THE RARER METALS.

The prices given below are the prices at works in Germany, and are per gramme except where otherwise stated:

Arsenic (metallic), per kilo.....$0.25
Barium (ex amalgam)... ..... 2.12
" (per electrol.)..... 7.75
Bismuth (metallic), per kilo..... 6.25
Cadmium (metallic), " 2.75
Calcium (per electrol.)..... 5.25
Cerium (pulv.)..... 2.25
" (fusum in globulis)..... 5.50
Chromium (fus.)..... .40
" (cryst.)..... .75
Cobalt (metallic), per kilo.....10.00
" (pure), per kilo.....40.00
Didymium (pulv.)..... 5.50
Erbium-Yttrium (oxydat.)..... 10.00
Gallium (cryst.)..... 100.00
Germanium (fus.)..... 37.50
" (pulv.)..... 35.00
Glucinum (pulv.)..... 7.00
" (cryst)..... 10.75
Indium..... 5.00
Iridium (fusum)..... 1.25
Lanthanum (pulv.)..... 6.00
" (per electrol.)..... 11.00
Lithium (in glob.)..... 5.00
" (wire)..... 6.25
Magnesium (bars)..... .01½
" (wire)..... .02
" (pulv.)..... .01¾
Manganese (fusum)..... .25
Molybdenum (pulv.)..... .12½
Niobium (pulv.)..... 4.25
Osmium..... 1.00
Palladium (wire)..... 1.06
" (pulv.)..... 1.00
Potassium (metal), per kilo.....27.50
Rhodium..... 1.63
Ruthenium..... 2.50
Rubidium..... 6.25
Selenium (cryst.)..... .50
" (precipitates)..... .62½
Sodium..... .00¾
Strontium (per electrol.)..... 7.25
" (ex amalgam)..... 3.25
Tantalum..... 4.75
Tellurium (fusum)..... .50
" (precipitates)..... .25½
Thallium..... .03¾
Titanium..... 1.13
Tungsten (pure)..... .05
Uranium..... .00
Vanadium..... .00

NEW YORK MINING STOCK QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Sept. 16.		Sept. 18.		Sept. 19.		Sept. 20.		Sept. 21.		Sept. 22.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Adams, Colo.													
Alice, Mont.													
Amador, Cal.													
Atlantic, Mich.													
Belcher, Nev.													
Belle Isle, Nev.													
Bodie Cons., Cal.													
Bos. & Mont., Mont													
Breece, Colo.													
Bulwer, Cal.													
Caledonia, S. Dak.													
Catalpa, Colo.													
Chrysolite, Colo.													
Colorado Central, Colo.													
Commonwealth, Nev.													
Comstock T. bonds, Nev.													
" scrip., Nev.													
Cons. Cal. & Va., Nev.													
Crown Point, Nev.													
Deadwood, Dak.													
Enterprise.													
Eureka, Cons., Nev.													
Father de Smet, Dak.													
Freeland, Colo.													
Gould & Curry, Nev.													
Grand Prize, Nev.													
Hale & Norcross, Nev.													
Homestake, Dak.													
Horn Silver, Utah.													
Independence, Nev.													
Iron Hill, Dak.													
Iron Silver, Colo.													
Leadville Cons., Colo.													
Little Chief, Colo.													
Martin White, Nev.													
Moulton, Mont.													
Mt. Diablo, Nev.													
Navajo, Nev.													
N. Belle Isle, Nev.													
Ontario, Utah.			.00										50
Ophir, Nev.									.95				100
Overman, Nev.													
Plymouth, Cal.													
Quicksilver, Pref., Cal.													
" Com., Cal.													
Quincy, Mich.													
Robinson Cons., Colo.													
Savage, Nev.													
Sierra Nevada, Nev.													
Silver Cord, Colo.													
Silver King, Ariz.													
Silver Min. of L. Valley													
Small Hopes, Colo.													
Standard Cons., Cal.													
Yellow Jacket, Nev.													

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Sept. 16.		Sept. 18.		Sept. 19.		Sept. 20.		Sept. 21.		Sept. 22.		SALES
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alpha., Nev.													
Alta, Nev.													
American Flag, Colo.													
Andes, Cal.													
Astoria, Cal.													
Augusta, Ga.													
" bonds.													
Barcelona, Nev.													
Belmont, Cal.													
Best & Belcher, Nev.											.60	.50	200
Bonanza King, Cal.													
Brunswick, Cal.			.02						.02			.02	8,300
Bullion, Nev.													
Butte & Bost., Mont.													
Castle Creek, Idaho.													
Challar.													
Comstock T., Nev.													
Con. Imperial, Nev.													
Con. Pacific, Cal.													
Crescent, Colo.													
Del Monte, Nev.													
El Cristo, Rep. of Col.													
Emmett, Colo													
Exchequer, Nev.													
Independence, Nev.													
Julia, Nev.													
Justice, Nev													
King & Pembroke.													
Lacrosse, Colo.									.04				1,000
Lee Basin, Colo.													
Mexican, Nev.													
Minnesota Iron.													
Monitor, Colo.													
Monte Cristo, Rep. of C.													
Nevada Queen, Nev.													
N. Standard, Cal.													
N. Commonwealth, Nev.													
Overman, Nev.													
Oriental & Miller, Nev.													
Phœnix Lead, Colo.													
Phœnix of Ariz.			.55										100
Potosi, Nev.													
Rappahannock, Va.													
S. Sebastian, S. Sal.													
Santiago.													
Scorpion, Nev.													
Seg. Belcher, Nev.													
Shoshone, Idaho.													
Silver Hill, Nev.													
Sullivan Con., Dak.													
Sutro Tunnel, Nev.													
Syndicate, Cal.													
Tornado Con., Nev.													
Union Cons., Nev.													
Utah, Nev													

*Ex-dividend. †Dealt in at New York Stock Ex. Unlisted securities. ‡Assessment paid. §Assessment unpaid. Dividend shares sold, 150 Non-dividend shares sold, 9,600.
Total shares sold, 9,750.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	Sept. 15.		Sept. 16.		Sept. 18.		Sept. 19.		Sept. 20.		Sept. 21.		SALES.
Atlantic, Mich.	10.00						9.00	8.50					250
Bodie, Cal.													
Bonanza Development.													
Bost. & Mont., Mont.	22.25	22.00	22.50	21.88	22.00	21.50	22.00		21.75	21.63	21.63	21.25	1,065
Breece, Colo.													
Calumet & Hecla, Mich.	275		276		278	276	277						29
Catalpa, Colo.													
Central, Mich.													
Cœur d'Alene, Id.													
Con. Cal. & Va., Nev.													
Dunkin, Colo													
Eureka, Nev.													
Franklin, Mich.	12.00	11.75			11.75		11.88				11.25		255
Honorine, Utah.													
Horn Silver, Utah.													
Kearsarge, Mich.	7.50	7.00	8.00	7.00	7.00		7.00		7.00				395
Lake Superior, Iron.													
Little Pittsburg, Colo.													
Minnesota Iron, Minn.													
Napa, Cal.	4.00												20
Ontario, Utah.													
Osceola, Mich.	27.75	27.50	28.00		28.00	27.50	28.50	28.00	29.00	28.00	28.00	27.50	504
Quincy, Mich.					205½						100		10
Ridge, Mich.													
Sierra Nevada, Nev.													
Silver King, Ariz.													
Stormont, Utah.													
Tamarack, Mich.			146								144		61
Tecumseh, Mich.													

NAME OF COMPANY.	Sept. 15.		Sept. 16.		Sept. 18.		Sept. 19.		Sept. 20.		Sept. 21.		SALES.
Allouez, Mich.	.40								.45				400
Arnold, Mich.													
Astec, Mich.													
Brunswick, Cal.													
Butte & Boston, Mont.	8.50	8.25	8.50	8.38	8.50	8.25	8.75	3.25	8.38		8.38	8.00	2,025
Centennial, Mich.	3.75				3.75		3.75	3.00	3.00	2.50	2.75	2.00	2,53[illegible]
Colchis, N. Mex.													
Copper Falls, Mich.													
Crescent, Colo.													
Dana, Mich.													
Don Enrique, Mex.													
Geyser, Colo.													
Hanover, Mich.													
Humboldt, Mich.													
Hungarian, Mich.													
Huron, Mich.													
Mesnard, Mich.													
National, Mich.													
Native, Mich.													
Oriental & M., Nev.													
Phœnix, Ariz.													
Pontiac, Mich.													
Rappahannock, Va.													
Santa Fe, N. Mex.													
Shoshone, Idaho.													
South Side, Mich.													
Tamarack, Jr., Mich.					18.00		18.00		17.50			17.50	140
Washington, Mich.													
Wolverine, Mich.	1.75						1.75	1.63				2.00	1.88	400

Dividend shares sold, 2,584. Non-dividend shares sold, 5,496. Total shares sold, 8,080.

DIVIDEND-PAYING MINES.

	Name and Location of Company.	Capital Stock.	Shares. No.	Par	Assessments. Total levied.	Date and amount of last			Dividends. Total paid.	Date & amount of last.		
1	Adams, s. L. c.	Colo.	$1,500,000	150,000	$10	*			$637,500	Jan.	1892	.05
2	Alaska-Treadwell, g.	Al'ska	5,000,000	200,000	25				1,500,000	April	1893	.25
3	Alice, s.	Mont.	10,000,000	400,000	25	*			975,000	Nov.	1891	.06¼
4	Alma & Nel Wood., g	Idaho	300,000	30,000	10	*			60,000	Jan.	1889	.50
5	Amador, g.	Cal.	1,250,000	250,000	5	*			31,250	Aug.	1890	.12½
6	American, g.	Colo.	3,000,000	300,000	10	*			225,000	Mar.	1892	.05
7	American Belle, s. g. c	Colo.	2,000,000	400,000	5	*			50,000	April	1891	.12½
8	Americ'n & Nettie, g. s	Colo.		300,000					175,000	Mar.	1892	.05
9	Atlantic, c.	Mich.	1,000,000	40,000	25	280,000	April	1875	700,000	Feb.	1891	1.00
10	Argenta, s.	Nev.	10,000,000	100,000	100	335,000	July.	1889	40,000	Feb.	1890	.20
11	Argyle, g.	Colo.	1,000,000	1,000,000	1	*			20,000	Mar.	1892	.01
12	Aspen Mg. & S., s. L.	Colo.	2,000,000	200,000	10	*			780,000	June	1893	.10
13	Aurora, l.	Mich.	2,500,000	100,000	25				650,000	Feb.	1893	2.00
14	Badger, s	Ont.	250,000	50,000	5				37,500	Mar.	1890	.25
15	Bald Butte	Mont.	250,000	250,000	1	*			110,000	July.	1893	.02
16	Bates Hunter, s. g.	Colo.	1,000,000	1,000,000	1					Dec.	1891	.00¾
17	Belle Isle, s.	Nev.	10,000,000	100,000	100	220 00	Aug.	1892	900,000	Dec.	1879	.25
18	Belcher, s. g.	Nev.	10,400,000	104,000	100	3,16 000	May	1892	15,397,000	April	1876	1.00
19	Bellevue, Idaho, s. L.	Idaho	1,250,000	125,000	10	1: 000	Dec.	1889	200,000	Jan.	1890	.10
20	Best Friend	Colo.	1,000,000	1,000,000	1				90,000	Feb.	1892	.01
21	Bi-Metallic, s. g.	Mont.	5,000,000	200,000	25				2,330,000	June	1893	.10
22	Bodie Con., g. l.	Cal.	10,000,000	100,000	100	550,000	June	1890	1,602,572	April	1893	.50
23	Boston & Mont., g.	Mont.	2,500,000	250,000	10	*			520,000	June	1886	.15
24	Boston & Mont., c. s.	Mont.	3,125,000	125,000	25	*			2,075,000	Nov.	1891	1.00
25	Brooklyn Lead, L. s.	Utah.	500,000	50,000	10				127,000	July.	1887	.05
26	Brotherton, l.	Mich.	2,000,000	80,000	25	*			120,000	Mar.	1893	.50
27	Bulwer, g.	Cal.	10,000,000	100,000	10	130,000	Aug.	1889	190,000	Oct.	1892	.05½
28	Bunker Hill & S. s. L.	Idaho	3,000,000	300,000	10	*			150,000	Oct.	1888	.06
29	Caledonia, g.	Dak.	10,000,000	100,000	100	505,000	May.	1885	192,000	Oct.	1890	.08½
30	Calliope, s.	Colo.	1,000,000	4,000,000					140,000	Jan.	1891	.00
31	Calumet & Hecla c.	Mich.	2,500,000	100,000	25	1,200,000			39,850,000	Sept.	1893	5 00
32	Can-ten-i-Eureka, s. L.	Utah.	1,500,000	30,000	50				675,000	June	1893	.50
33	Central, c.	Mich.	500,000	20,000	25	100,000	Oct.	1861	1,970,000	Feb.	1891	1.00
34	Champion, g	Cali.	340,000	34,000	10				132,900	May.	1893	.10
35	Chrysolite, s. L.	Colo.	10,000,000	200,000	50	*			1,650,000	Dec.	1884	.25
36	Clay County, g.	Colo.	200,000	200,000	1				56,000	Nov.	1891	.02
37	Clinton Con, g.	Cal.	5,000,000	100,000	5				80,000	Nov.	1891	.10
38	Cœur D'Alene, s. L.	Idaho	5,000,000	500,000	10				412,000	June	1893	.03
39	Colorado Central, s. L.	Colo.	2,750,000	275,000	10	*			530,000	April	1893	.05
40	Commonwealth, s.	Nev.	10,000,000	100,000	100	190,000	Sept.	1892	20,000	Nov.	1890	.20
41	Confidence, s. L.	Nev.	2,496,000	24,960	100	1,589,550	Aug.	1892	199,680	April	1889	1.00
42	Cons. Cal. & Va., s. g	Nev.	21,600,000	216,000	100	108,000	Jan.	1885	3,682,800	Aug.	1891	.50
43	Contention, s.	ariz.	12,500,000	250,000	50				2,637,500	Aug.	1892	.20
44	Cook's Peak, s.	N. M.	2,000,000	200,000	10				114,332	Nov.	1892	.05
45	Cop. Queen Con., c.	Ariz.	2,000,000	200,000	10				1,460,000	May.	1893	.50
46	Coptis	Nev.	10,000,000	100,000	100				67,000	July.	1892	.12
47	Cortez, s.	Nev.	1,500,000	300,000	05	*			687,000	Mar.	1892	.50
48	Crescent, s. L. g.	Utah.	15,000,000	600,000	25	60,000	Oct.	1892	238,000	Oct.	1888	.03
49	Crown Point, g. s.	Nev.	10,000,000	100,000	100	2,700,000	Sept.	1892	11,898,000	Jan.	1875	2.00
50	Cumberland, L. s.	Mont.	5,000,000	500,000	10	*			15,000	Nov.	1889	.03
51	Daly, s. L.	Utah.	3,000,000	150,000	20				2,800,000	June	1893	.25
52	Deer Creek, s. g.	Idaho	1,000,000	200,000	5	*			20,000	June	1889	.05
53	Deadwood-Terra, g.	Dak.	5,000,000	200,000	25	*			1,150,000	Oct.	1892	.05
54	DeLamar, s. g.	Idaho	2,000,000	400,000	5				800,000	April	1893	.87½

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.	Capital Stock.	Shares. No.	Par	Assessments. Total levied.	Date and am't of last.		
1	Alliance, s. g.	Utah.	$100,000	100,000	$1	$120,000	Feb.	1891 .20
2	Allouez, c.	Mich.	2,000,000	80,000	25	737,000	Jan.	1890 .70
3	Alpha Con., g. s.	Nev.	3,000,000	30,000	100	209,000	Sept.	1892 .10
4	Alta, s.	Nev.	10,080,000	100,800	100	3,369,880	Jan.	1892 .10
5	American. c.	Idaho	5,000,000	500,000	100			
6	American Flag, s.	Colo.	1,250,000	125,000	1	300,000	June	1887
7	Amity, s.	Colo.	250,000	250,000	20			
8	Anchor, s. L. g.	Utah.	3,000,000	150,000	5	410,000	June	1890 .20
9	Angio-Montana, Lt.	Mont.	600,000	120,000	125			
10	Appalachian, g.	N. C.	1,750,000	1,400,000	20			
11	Arizona, c.	Ariz.	3,575,000	160,000	2			
12	Astoria, g.	Cal.	200,000	100,000	5			
13	Atlanta, g. s.	Idaho	3,250,000	650,000	25			
14	Barcelona, g.	Nev.	5,000,000	200,000	5	*		
15	Bear Creek	Idaho	20,000	100,000	1			
16	Belmont, g.	Cal.	500,000	500,000	100	*		
17	Belmont, s.	Nev.	5,000,000	50,000	100	735,000	April	1886 .10
18	Best & Belcher, s. g.	Nev.	10,080,000	100,800	10	2,405,275	Aug.	1892 .25
19	Black Oak, g.	Cal.	3,000,000	300,000	100	*		
20	Boston Con., g.	Cal.	10,000,000	100,000	1	170,000	Nov.	1883 .25
21	Brownlow, g.	Colo.	250,000	250,000	5			
22	Brunswick, g.	Cal.	2,000,000	400,000	2			
23	Buckeye, s. L.	Mont.	1,000,000	500,000	100			
24	Bullion, s. g.	Nev.	10,000,000	100,000	100	2,890,000	Aug.	1892 .25
25	Burlington, g. s.	Cal.	10,000,000	100,000				
26	Butte & Boston, c. s.	Mont.	5,000,000	200,000	10			
27	Butte Queen, g	Cal.	1,000,000	100,000	1	6,000	Jan.	1892 .04
28	Calaveras, g.	Cal.	500,000	500,000	5	*		
29	Calaveras Con., g.	Cal.	800,000	160,000	10			
30	California, g.	Cal.	1,000,000	100,000	5	9,000	Mar.	1892 .03
31	California Con. I. Q.	Cal.	2,250,000	450,000	10			
32	Camille, g	Ga	1,500,000	150,000	5	*		
33	Carisa, g.	Wy.	500,000	100,000	2	*		
34	Carupano, g. s. L. c.	Ven.	200,000	100,000	2	*		
35	Cashier, g. s.	Colo.	500,000	250,000	100	*		
36	Challenge Con., g. s.	Nev.	5,000,000	50,000	10			
37	Cherokee, g.	Cal.	1,500,000	150,000	100			
38	Chollar, s. g.	Nev.	11,200,000	112,000	2	1,820,000	May.	1892 .50
39	Cleveland, t.	Dak.	1,000,000	500,000	10	*		
40	Colchis, s. g.	N. M.	500,000	150,000	5			
41	Colorado, s.	Colo.	1,625,000	325,000	1			
42	Comstock, s.	Utah.	1,250,000	250,000	100			
43	Comstock Tun.	Nev.	10,000,000	100,000	100	35,000	Mar.	1887 .15
44	Con. Imperial, g. s	Nev.	5,000,000	50,000	50	2,062,500	Jan.	1892 .25
45	Con. New York, s. g.	Nev.	5,000,000	100,000	100	110,000	Mar.	1892 .10
46	Con. Pacific, g.	Cal.	6,000,000	60,000	10	198,000	June	1890 10
47	Con. Silver, s.	Mo.	2,500,000	250,000	5			
48	Cordova Union, g.	Cal.	1,000,000	200,000	10			
49	Crescent, s. L.	Colo.	3,000,000	300,000	100	*		
50	Crocker, s.	Ariz.	10,000,000	100,000	1	165,000	Aug.	1892 .05
51	Crowell, g.	N. C.	500,000	500,000	1			
52	Dahlonega, g.	Ga.	250,000	250,000	10	*		
53	Dandy, s.	Colo.	5,000,000	500,000				
54	Decatur s.	Colo.	1,500,000	300,000				

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	No.	Par	Assessments. Total Levied	Date and amount of last			Dividends. Total paid.	Date & amount of last.		
55	Derbee B. Grav., G.	Cal.	10,000,000	100,000	0	100,000	ept,	1892	.10	60,,000	Aug..	1891	.10
56	Dexter, g. s.	Nev..	1,000,000	100,000	10					80,000	Aug..	1892	.25
57	Dunkin, s. L.	Colo..	5,000,000	200,000	25	*				390,000	Oct..	1889	.05
58	Elkhorn, s. L.	Mont.	1,000,000	200,000	5	*				1,038,670	June	1893	37½
59	Enterprise, s.	Colo..	2,500,000	500,000	5	*				850,000	May.	1893	.05
60	Eureka Con., s. L. G.	Nev...	1,000,000	50,000	100	550,000	June	1889	.50	5,017,500	Jan..	1892	.25
61	Evening Star, s. L.	Colo..	500,000	50,000	10	*				1,450,000	Dec.	1889	.2
62	Father de Smet, G.	Dak..	10,000,000	100,000	100	200,000	Nov..	1878	1.00	1,125,000	Dec..	1885	.20
63	Franklin, C.	Mich..	1,000,000	40,000	25	220,000	June	1871		1,100,000	July	1892	2.00
64	Freeland, s. G.	Colo..	5,000,000	200,000	25	*				190,000	July.	1886	.10
65	Garfield Lt., G. s.	Nev...	500,000	100,000	5					90,000	April	1888	.12½
66	Glengarry	Mont.	1,000,000	100,000	10					10,000	June	1891	.10
67	Gold Rock	Colo..	500,000	500,000	1						Dec..	1891	.01
68	Golden Reward	S.Dak	1,250,000	250,000	5					85,000	April	1893	.02
69	Gould & Curry, s. G.	Nev...	10,800,000	108,000	100	4,591,200	June	1892	.25	3,826,800	Oct.	1870	10.00
70	Grand Prize, s.	Nev...	10,000,000	100,000	100	785,000	Jan..	1890	.30	495,000	Mar.	1884	.25
71	Granite, s. L.	Idaho	500,000	500,000	1	*				83,400	Nov..	1890	.02
72	Granite Mountain, s.	Mont.	10,000,000	400,000	25					12,120,000	July.	1892	.20
73	Great Western, L. G.	Cal...	5,000,000	50,000	100					444,861	May.	1893	.25
74	Green Mountain, G.	Cal...	1,250,000	125,000	10	*				212,000	Nov.	1881	.07½
75	Hale & Norcross, G. s.	Nev...	11,200,000	112,000	100	5,534,800	Aug.	1892	.50	1,822,000	Aug.	1888	.50
76	Hecla Con., s. G. L. C.	Mont.	1,500,000	90,000	50					1,980,000	Apr.	1893	.50
77	Hel'a Mg. & Red, s. L. G.	Mont.	3,315,000	663,000	5	*				197,970	July.	1886	.06
78	Helena & Frisco, s. L.	Idaho	2,500,000	500,000	5					170,000	July.	1891	.02
79	Helena & Victor	Mont.	1,000,000	200,000	5					80,000	May.	1892	.05
80	***Holmes, s.	Nev...	10,000,000	100,000	100	370,000	May.	1890	.25	75,000	Apr.	1886	.25
81	Homestake, G.	Dak..	12,500,000	125,000	100	200,000	July.	1878	1.00	5,003,750	June	1893	.10
82	Honorine, s. L.	Utah.	500,000	250,000	2	37,500	April	1889	.05	125,000	Sep.	1887	.05
83	Hope, s.	Mont.	1,000,000	100,000	10	*				483,252	July.	1893	.25
84	Horn-Silver, s. L.	Utah.	10,000,000	400,000	25	*				4,700,000	Mar.	1893	.12½
85	Hubert, G.	Colo..	1,000,000	1,000,000	1	*				247,000	Dec.	1889	.00½
86	Idaho, G.	Cal...	310,000	3,100	100					5,450,250	April	1893	2.50
87	Illinois, s.	N. M..	100,000	100,000	1	*				45,000	April	1889	.20
88	Iron Hill, s.	Dak..	2,500,000	250,000	10	134,000	July.	1889	.03	156,250	Nov..	1887	.07½
89	Iron Mountain, s.	Mont.	5,000,000	500,000	10	*				243,000	July.	1893	.03
90	Iron-Silver, s. L.	Colo..	10,000,000	500,000	20	*				2,500,000	April	1889	.20
91	Jack Rabbit, G.	Cal...	10,000,000	100,000	100	100,000	Sept.	1892	.10	260,000	Aug.	1891	.10
92	Jackson, G. s.	Nev..	5,000,000	50,000	100	237,500	Nov..	1880	.20	60,000	Jan.	1891	.10
93	Kearsarge, C.	Mich..	1,000,000	40,000	25	190,000	Oct..	1887	1.00	80,000	Jan.	1890	2.00
94	Kennedy	Cal...	10,000,000	100,000	100					387,000	May..	1892	.15
95	Kentuck, s. G.	Nev..	3,000,000	30,000	100	454,180	Oct..	1891	.15	1,350,000	Dec.	1886	.10
96	La Plata, s. L.	Colo..	2,000,000	200,000	10	*				610,000	Sept.	1882	.30
97	Leadville Con., s. L.	Colo..	4,000,000	400,000	10	*				316,500	Feb..	1893	.03
98	Lexington, G. s.	Mont.	4,000,000	40,000	100	*				609,000	Jan..	1890	2.00
99	Little Chief, s. L.	Colo..	10,000,000	200,000	50	*				820,000	Dec..	1890	.05
100	Little Rule, s.	Colo..	500,000	500,000	1					220,000	Dec...	1891	.02
101	Maid of Erin	Colo..	3,000,000	600,000	5					708,500	April	1893	.25
102	Mammoth, s. L. C.	Utah	10,000,000	400,000	250	110,000		1882	.25	1,040,000	Dec...	1891	.10
103	Martin White, s.	Nev.	10,000,000	100,000	100	1,275,000	Jan..	1892	.25	140,000	Dec..	1886	.25
104	Mary Murphy, s. G.	Colo.	350,000	3,500	101	*				175,000	May..	1888	5.00
105	Matchless, s. L.	Colo.	500,000	500,000	1	*				15,000	Feb...	1890	.00½
106	Maxfield	Utah	3,000,000	300,000	10					117,000	April	1892	.03
107	Mayflower, D. gravel	Cal...	1,000,000	100,000	10					160,000	July	1893	.10
108	May Mazeppa, s. L.	Colo..	1,000,000	100,000	1	*				205,000	Oct..	1891	.03¾
109	Minas Prietas, G. s.	Mex..	1,000,000	100,000	10					350,000	Dec...	1890	.50
110	Minnesota, C.	Mich..	1,000,000	40,000	25	420,000	April	1886	1.00	1,820,000	Mar..	1876	
111	Mollie Gibson, s.	Colo..	5,000,000	1,000,000	5					3,780,000	Sept.	1893	05
112	Monitor, G.	S.Dak	2,500,000	250,000	10					45,000	Oct..	1890	.03
113	Mono, G.	Cal...	5,000,000	50,000	100	760,000	Sept.	1890	.25	12,500	Mar.	1886	.25
114	Montana, Lt., G. s.	Mont.	3,300,000	660,000	5	*				2,619,075	June.	1891	12½
115	Morning Star, s. L.	Colo..	1,000,000	100,000	10					925,000	April	1891	.25
116	Morning Star Drift, G.	Cal...	240,000	2,400	100					140,600	April	1893	3.00
117	Moulton, s. G.	Mont.	2,000,000	400,000	5	*				410,000	Nov.	1892	.07½
118	Mt. Diablo, s.	Nev.	5,000,000	50,000	100	137,500	June	1880	2.00	210,000	July.	1891	.20
119	Napa, Q.	Cal...	700,000	100,000	7					580,000	July	1893	.20
120	Navajo, G. s.	Nev.	10,000,000	100,000	100	520,000	May.	1891	20	229,950	April	1889	.10
121	Newton	Cal...	10,000,000	100,000	100					10,000	May..	1891	.05
122	New California, G.	Colo..	800,000	160,000	5	*				48,800	May..	1890	.12½
123	New Guston, s.	Colo..	550,000	110,000	5					1,877,500	April	1892	.75
124	North Banner Con.	Cal...	1,000,000	100,000	10					20,000	July..	1891	.05
125	North Commonw'th	Nev..	10,000,000	100,000	10					25,000	June.	1891	.25
126	N. Hoover Hill, G. s.	N. C.	300,000	120,000	2½	*				30,000	Dec..	1885	.06¼
127	North Belle Isle, s.	Nev.	10,000,000	100,000	100	474,689	Nov.	1892	.10	230,000	May.	1888	.50
128	North Star, G.	Cal..	1,000,000	100,000	10					450,000	June	1893	.50
129	Omaha Cons., G.	Cal...	2,400,000	24,000	100					30,000	May..	1892	.15
130	Ontario, s. L.	Utah	15,000,000	150,000	100					13,175,000	Oct..	1892	.50
131	Ophir, G. s.	Nev..	10,000,000	100,000	100	4,210,640	April	1890	.50	1,595,800	Jan..	1880	1.00
132	Original, s. C.	Mont.	1,500,000	60,000	25	*				138,000	Jan..	1889	.05
133	Oro, s. L. G.	Colo..	500,000	100,000	5					95,000	July.	1890	.20
134	Osceola, C.	Mich..	1,250,000	50,000	25	480,000	April	1876	1.60	1,747,500	May.	1893	1.00
135	Pacific Coast, B.	Cal...	1,500,000	15,000	100					360,000	Dec.	1892	1.00
136	Parrot, C.	Mont.	1,800,000	180,000	10					1,748,000	April	1893	.10
137	Petro	Utah.	10,000,000	10,000	100					17,500	July	1891	.75
138	Plumas Eureka, G.	Cal..	1,406,250	140,625	10					2,669,926	April	1893	.19
139	Plymouth Con., G.	Cal...	5,000,000	100,000	50	*				2,280,000	Feb.	1888	.40
140	Poorman; G. s.	Idaho	375,000	300,000	125	*				68,260	Septl	1892	
141	Quicksilver, pref., Q.	Cal...	4,300,000	43,000	100					1,823,911	June	1891	1.25
142	" com., Q.	Cal...	5,700,000	57,000	100					643,867	July.	1882	.40
143	Quincy, C.	Mich..	1,250,000	50,000	25	200,000	Dec..	1862		6,620,000	Aug..	1893	3.00
144	Red Cloud	Idaho	1,000,000	200,000	5					153,000	Dec.	1892	.10
145	Reed National, s. G.	Colo..	500,000	500,000	1	*				50,000	Dec..	1890	.01
146	Retriever, L.	S.Dak	1,250,000	250,000	5					20,000	Aug..	1891	.03
147	Rialto, G.	Colo..	300,000	300,000	1	*				50,250	April	1892	.01½
148	Richmond, s. L.	Nev..	1,350,000	54,000	25	*				4,346,325	Aug..	1891	.25
159	Rico-Aspen	Colo..	5,000,000	1,000,000	5					25,000	May.	1893	.02½
150	Ridge, C.	Mich..	500,000	20,000	25	219,939	Mar.	1886	50	99,785	Feb..	1880	.50
151	Robinson Con., s. L.	Colo..	10,000,000	200,000	50	*				585,000	Mar.	1886	.05
152	Running Lode, G.	Colo..	1,000,000	1,000,000	1	*				36,000	May.	1892	.00 1-10
153	Savage, s.	Nev..	11,200,000	112,000	100	6,772,000	Feb..	1892	.50	4,460,000	June	1869	3.00
154	Sheridan, s. G.	Colo..	300,000	3,000	100	*				300,000	Oct..	1891	2.50
155	Shoshone, G.	Idaho	150,000	150,000	1					7,500	April	1883	.01
156	Sierra Buttes, G.	Cal..	2,225,000	122,500	10					1,544,620	April	1893	.12½
157	Sierra Nevada, s. G.	Nev..	10,000,000	100,000	100	6,411,910	June	1892	.25	102,000	Jan..	1871	1.00
158	Sierra Nevada, s. L.	Idaho	1,000,000	1,000,000	1	*				40,000	May..	1889	.02
159	Silent Friend	Colo..	500,000	500,000	1					60,000	Aug..	1891	.02½
160	Silver Cord, s. L. G.	Colo..	4,500,000	450,000	10					265,000	April	1889	.10
161	Silver King, s.	Ariz..	10,000,000	100,000	100	180,000	Nov.	1890	.30	1,950,000	July	1887	.25
162	Silver Mg. of L.V., s. L.	N. M..	500,009	500,000	1					300,000	Dec..	1891	4.05
153	Slide	Colo..	500,000	5,000	100					20,000	Nov..	1891	4.00
164	Small Hopes Con., s.	Colo..	5,000,000	250,000	20	*				32,00,000	Nov..	1892	.15
165	Spring Valley, G.	Cal...	200,000	200,000	1	50,000	Oct.	1886	.25	50,000	Jan..	1881	.25
166	Standard, G. s.	Cal..	10,000,000	100,000	100	100,000	June	1890	.50	3,665,000	July.	1893	.10
167	Stormont, s.	Utah.	500,000	500,000	1	*				155,000	Nov.	1881	.05
178	St. Joseph, L.	Mo..	1,500,000	150,000	10	*				1,974,000	Dec..	1890	.02
169	Swansea, g. s.	Colo..	600,000	60,000	10					27,000	Mar.	1893	.10
170	Tamarack, C.	Mich..	1,250,000	50,000	25	520,000	April	1885	3.00	3,160,000	Oct..	1892	.00
171	Teal & Poe	N. M..	150,000	150,000	1					9,000	Nov.	1891	.01½
172	Tombstone, G. s. L.	Ariz..	12,500,000	500,000	25	*				1,250,000	April	1882	.10
173	Trinity Riv'r Hydr., G.	Colo..	500,000	500,000	1	*				10,000	May.	1893	.00½
174	United Verde, C.	Ariz..	3,000,000	300,000	10	*				207,500	Jan..	1892	.10
175	Victor, G.	Colo..	1,000,000	200,000	5					40,000	June	1893	.05
176	Viola Lt., s. L.	Idaho	750,000	150,000	5					337,500	Nov.	1888	.37½
177	Ward Con., s.	Colo.	2,000,000	200,000	10					20,000	Dec.	1889	.05
178	Woodside, s. L.	Utah	100,000	100,000	10					25,000	Oct..	1889	.25
179	W. Y. O. D.	Cal..	30,000	15,000	2	22,500	May..	1891	.10	58,500	July.	1893	.10
180	Yankee Girl, s.	Colo.	1,300,000	260,000	5					1,405,000	April	1891	1.50
181	Yellow Jacket, G. s.	Nev.	12,000,000	120,000	100	5,808,000	Sept.	1892	.25	2,184,000	Aug.	1871	1.50
182	Yosemite No. 2	Utah.	1,000,000	100,000	10					25,000	Oct..	1891	.05
183	Young America, G.	Cal...								175,000	Jan..	1889	1.00

NON DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total levied.	Date and am't of last.		
55	Denver City s.	Colo..	5,000,000	500,000	11	*			
56	Denver Gold, G.	Colo..	300,000	60,000	5				
57	Dickens-Custer, s.	Idaho	2,100,000	420,000	5				
58	Durango, G.	Colo..	500,000	500,000	1	*			
59	Eastern Dev. Co., Lt	N. S..	1,500,000	150,000	10	990,000	Mar.	188[illegible]	1.00
60	El Dorado, G.	Cal..	1,000,000	250,000	4	*			
61	El Talento, G.	U.S.C.	1,000,000	500,000	2				
62	Emma, s	Utah.	625,000	500,000	125				
63	Emmons, s. L.	Colo..	2,000,000	2,000,000	1				
64	Empire, s.	Utah.	10,000,000	100,000	100				
65	Eureka Tunnel, s. L.	Nev...	10,000,000	100,000	100	*			
66	Exchequer, s. G.	Nev...	10,000,000	100,000	100	940,000	Jan..	1892	.25
67	Found Treasure, G. s.	Nev...	10,000,000	100,000	100	130,500	Jan..	1892	.50
68	Gogebic I. Syn., I.	Wis..	5,600,000	200,000	25				
69	Gold Bank, g. s.	Colo.	250,000	250,000	1	*			
70	Gold Cup, s.	Colo..	500,000	500,000	1	*			
71	Golden Era, s.	Mont.	2,000,000	200,000	10	*			
72	Gold Flat, G.	Cal...	1,000,000	100,000	10	5,000	Mar.,	1892	.05
73	Gold King, g.	Colo..	1,650,000	350,000	5				
74	Gold Rock, G.	Cal...	1,000,000	500,000	2				
75	Golden Feather Co., g	Cal...	900,000	180,000	5				
76	Goodshaw, G.	Cal...	10,000,000	100,000	100	*			
77	Goodyear G. s. L	Mont.	1,000,000	200,000	5	13,000	Feb..	1892	01
78	Grand Belt, C	Tex..	12,000,000	120,000	100				
79	Grand Canyon, s.	Ariz..	375,000	75,000	5				
80	Grand Duke, s.	Colo.	800,000	80,000	10				
81	Gregory Con., G.	Mont.	3,000,000	300,000	10				
82	Harlem M. & M. Co., G.	Cal...	1,000,000	200,000	5				
83	Hartery Con., G.	Cal...	1,000,000	100,000	10	22,000	Oct..	1890	.05
84	Hartshorn, g s. l.	S.Dak	1,250,000	250,000	5	8 750	Sept.	1891	.00½
85	Head Cent. & Tr., s. G	Ariz..	10,000,000	100,000	100	16,981	Mar..	1892	.08
86	Hector, G.	Cal...	1,500,000	300,000	5	45,000	Jan..	1889	.15
87	Highland, C.	Mich..	500,000	25,000	20				
88	Himalaya, g. s l.	Utah.	1,800,000	80,000	10	12,800	Oct..	1892	.00½
89	Holywood	Cal...	200,000	100,000	2				
90	Hortense, s.	Colo..	2,000,000	200,000	10				
91	Huron, C.	Mich..	,000,000	40,000	25	280,000	May.	1887	3.00
92	Idaho, g. s	Idaho	1,250,000	250,000	5				
93	Inez, s. L	Idaho	1,000,000	1,000,000	1				
94	Ingalls, g	Colo..	100,000	20,000	5				
95	Ironton, I.	Wis..	1,000,000	40,000	25				
96	Iroquois, C.	Mich..	1,250,000	50,000	25				
97	Kentuck Con.	Nev..	10,500,000	105,000	00	57,750	July.	1892	.10
98	J. D. Reymert, s.	Ariz..	10,000,000	100,000	100				
99	Julia Con., G. s	Nev...	11,000,000	110,000	100	1,463,000	Jan..	1889	.10
100	Justice, g. s. c	Colo.	500,000	500,000	1	*			
101	Lacrosse, G.	Colo..	1,000,000	100,000	10	*			
102	La Cumbre, g. s.	Mex..	150,000	3,000	50	*			
103	Lee Basin, s.	Colo..	5,000,000	500,000	10	*			
104	Little Josephine, s.	Colo..	250,000	50,000	5				
105	Lone Star Cons., G.	Cal...	500,000	500,000	1	10,000	April	1892	.00½
106	Lynx Creek, g.	Ariz..	237,500	147,500	5				
107	Madeleine, G. s. L.	Colo..	750,000	50,000	1	4,500	Feb.	1892	.00½
108	Mammoth Gold, G.	Ariz..	2,500,000	500,000	5	*			
109	Mayflower Gravel, G.	Cal...	1,000,000	100,000	10	*			
110	Medora, G.	Dak..	250,000	250,000	1	585,000	Mar.	1890	.56
111	Merrimac Con., G. s.	Colo..	5,000,000	500,000	10				
112	Mexican, G. s.	Nev...	10,000,000	100,000	100	2,917,560	ct.	1892	.50
113	Michigan, g s	Mich..	2,500,000	100,000	25	40,000	Mar..	1892	
114	Middle Bar, G.	Cal...	400,000	200,000	2	*			
115	Mike & Starr, s. C.	Colo..	1,000,000	200,000	5	*			
116	Milwaukee, s.	Mont.	500,000	500,000	1	*			
117	Minah Cons.	Mont.	1,250,000	250,000	5				
118	Modoc Chief, l. s. g.	Idaho	1,000,000	200,000	5	5,000	Jan..	1892	.00½
119	Monitor, G.	Colo..	100,000	100,000	1	12,500	May.	1891	.01
120	Montreal, G. s. L.	Utah.	750,000	150,000	5	4,500	Feb..	1892	.00½
121	Mountain Ledge, g.	Cal...	500,000	100,000	5				
122	Mount McClellan	Colo..	1,500,000	300,000	5				
123	Mutual Mg. & Sm.	W'sh.	100,000	100,000	1	*			
124	Native, C.	Mich..	1,000,000	40,000	25				
125	Neath, G.	Colo..	1,000,000	100,000	10				
126	Nelson	Cal...	50,000	10,000	5				
127	Nevada Queen, s.	Nev...	10,000,000	100,000	100	200,000	Oct..	1889	.25
128	New Germany, G.	N. S..	100,000	100,000	1	*			
129	New Gold Hill	N. C..	1,750,000	350,000	5				
130	New Pittsburg, s. L.	Colo..	2,000,000	200,000	10	*			
131	New Queen Gold, s.	Colo..	800,000	160,000	5				
132	North Standard, G.	Cal...	10,000,000	100,000	100	20,000	Nov.		
133	Occidental Con., g. s		10,000,000	100,000	100	245,000	April	1892	.25
134	Oneida Chief, G.	Cal...	500,000	125,000	100	*			
135	Oriental & Miller, s.	Nev...	10,000,000	400,000	100				
136	Original Keystone, s.	Nev.	10,000,000	100,000	100	250,000	Mar..	1892	.10
137	Osceola, G.	Nev...	5,000,000	500,000	10	*			
138	Overman, G. s.	Nev...	11,520,000	115,200	100	4,001,840	May.	1892	.10
139	Park, s.	Utah.	2,000,000	200,000	10				
140	Parker, g.	N. C..	750,000	180,000					
141	Pay Rock, s.	Colo..	1,000,000	200,000	5				
142	Peer, s.	Ariz..	10,000,000	100,000	100	190,000	Feb..	1892	.10
143	Peerless, s.	Ariz..	10,000,000	100,000	100	405,000	Oct...	1890	.15
144	Pennsylva'a Cons., G	Cal...	5,150,000	515,000	10	36,050	Feb..	1892	.10
145	Phœnix, g.	Ariz..	500,000	500,000	1	*			
146	Phœnix Lead, s. L.	Colo..	100,000	100,000	1	*			
147	Pilgrim, G	Cal...	600,000	300,000	2	*			
148	**Pioche M.&R., s. G. L.	Utah.	20,000,000	2,000,000	10				
149	Poorman, Ltd., s. L.	Idaho	250,000	50,000	5				
150	Potosi, s.	Nev...	11,200,000	112,000	100	1,573,000	Mar..	1890	.50
151	Proustite, s.	Idaho	250,000	250,000	1	*			
152	Puritan, s. G	Colo..	1,500,000	150,000	10	*			
153	Quincy, C	Colo..	3,000,000	300,000	10				
154	Rainbow, g.	S.Dak	1,250,000	250,000	5	4,250	July.	1892	.00½
155	Rappahannock, G. s.	Va..	250,000	250,000	1	*			
156	Red Elephant, s.	Colo..	500,000	500,000	1	*			
157	Red Mountain, s.	Colo..	300,000	60,000	5				
158	Ropes, G. s.	Mich..	2,000,000	80,000	25	167,200	Feb.	1891	.50
159	Ruby & Dun., s. L. G.	Nev..	25,300	506	50	*			
160	Russell, G.	N. C..	1,500,000	300,000	5				
161	Sampson, G. s. L.	Utah.	10,000,000	100,000	100	288,15[illegible]	July.	1888	1.08
162	Seal of Nevada, g. s.	Nev..	5,000,000	100,000	50				
163	Silver Age, s. l. g.	Colo..	2,000,000	200,000	10	*			
164	Silver Bell, s.	Ariz..	850,000	170,000	5				
165	Silver King, s.	Cal	2,000,000	400,000	5				
166	Silver Queen, C.	Ariz..	5,000,000	200,000	25	*			
167	Silverton, s.	Colo..	300,000	60,000	5				
168	Siskiyou Con., L.	Cal...	2,000,000	200,000	10	13,000	May..	1892	.01½
169	South Bulwer, G	Cal..	10,000,000	100,000	100	100,000	May.	1881	.25
170	South Hite, g.	Cal..	10,000,000	100,000	100	195,000	Jan..	1883	.05
171	South Pacific, g.	Cal..	500,000	100,000	5				
172	Stanislaus, G.	Cal..	2,000,000	200,000	10				
173	St. Kevin, s. G.	Colo.	100,000	100,000	1	*			
174	St. Louis & Mex., s.	Mex..	,000,000	500,000	10	*			
175	St. Louis & St. Elmo.	Colo..	000,000	200,000	10				
176	St. L. & St. Felipe, G. s.	Mex..	00,000	150,000	10				
177	St. L. & Sonora, G. s.	Ariz..	3,000,000	300,000	10	*			
178	Stemwinder, l. s.	Idaho	500,000	500,000	1				
179	Sunday Lake, I.	Mich..	1,250,000	50,000	25				
180	Sullivan Con., G.	Dak..	600,000	200,000	3	*			
181	Sylvanite, s.	Colo..	5,000,000	500,000	10	*			
182	Taylor-Plumas, G.	Cal...	325,000	65,000	5	3,575	Mar..	1892	.01½
183	Telegraph, g. s.	Cal...	325,000	65,000	5	3,575	Mar.	1892	.01½
184	Telegraph, G. s.	Mex..	100,000	100,000	1	70,000	Feb..	1892	.10
185	Teresa, G. s.	Cal.	1,000,000	200,000	5	10,000	Feb..	1888	.10
186	Tioga Con., G.	Nev...	10,000,000	100,000	10	295,000	May.	1888	.25
187	Tornado Con., G. s.	Nev...	100,000	100,000	1	*			
188	Tuscarora, s.	Nev...	10,000,000	500,000	20	385,000	Jan..	1892	.25
189	Union Con., G. s.	Nev...	10,000,000	100,000	100	370,000	June	1892	.25
190	Utah, s.	Nev..	10,000,000	100,000	100	245,000	Aug..	1890	.25
191	Ute & Ulay, s. L.	Colo..	1,000,000	500,000	2	1,500	Mar..	1892	.0018
192	Valley, g.	Cal...	575,000	460,000	125				
193	Wall Street, G. s. L.	Colo..	500,000	500,000	1				
194	Washington, C.	Mich..	1,000,000	40,000	5				
195	West Argentine, s.	Colo..	750,000	150,000	5				
196	West Granite Mt., s.	Mont.	500,000	100,000	5	*			
197	Whale, s.	Mont.	5,000,000	500,000	10	*			
198	Wood River, g.	Idaho	2,000,000	200,000	10	3,000	Aug.	1891	.00½
199	Yuma, C. s. G	Ariz..	10,000,000	400,000	2				
200	Zelaya, G. s.	C. A..	600,000						

G., Gold. S., Silver. L., Lead. C., Copper. B., Borax. * Non-assessable. † This company, as the Western, up to December 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 August, 1884, the California has paid $31,320,000 in dividends, and the Cons. Virginia $42,390,000. ** Previous to the consolidation of the Copper Queen with the Atlanta, August, 1885, the Copper Queen had paid $1,350,000 in dividends. ¶ This company paid $190,000 before the reorganization in 1880. ** This company acquired the property of the Raymond & Ely Company which had paid $3,075,000 in dividends. *** Previous to this company's acquiring Northern Belle, that mine declared $2,400,000 in dividends against $425 000 in assessment

COAL AND COAL RAILROAD STOCKS.

Names of Stocks.	Sept. 16. H.	Sept. 16. L.	Sept. 18. H.	Sept. 18. L.	Sept. 19. H.	Sept. 19. L.	Sept. 20. H.	Sept. 20. L.	Sept. 21. H.	Sept. 21. L.	Sept. 22. H.	Sept. 22. L.	Sales
Am. Coal													
Balt. & Ohio	71				70	69	70½		71				315
do pref													
Buff., R. & P.	24		25		26		26				27	25¾	1,000
do. pref													
Cambria Iron													
Ches. & Ohio	16⅝	16½	16½	16⅜	17	16⅞	17		16⅞		16⅞		1,275
do. 1st pref													
Col. C. & I.	11		10						8¾				170
Col. Coal													
Colorado Fuel	25½		25	24					25	23¾			690
do. pref													
Col., H V.& Tol.			19⅝	19⅛	21	19	21	20	19¾	19	20	19	5,310
do. pfd													
Col. & H. Coal	10		9¾		9⅞		10	9¼	9¼	8¾	9¼		1,360
do. pfd													
Cons. Coal													
Del. & Hud. C.			120	119	120		119⅝		121	120¼	121½	120¼	1,337
Del., L. & West.	141⅛		140¾	140⅝	141½	141	143¼	140¾	143½	142½	143¼	143	6,512
Hunt. & B.Top.									35½				100
do. pref													
Lake Erie&Wes	16		16¼	16	16	15½			16				820
do. pref.					69	67½	67¼				69		230
Lehigh C. & N.			49		50	49	50	49					27
Lehigh Valley	31⅜	31¼	31¾	31½	32½	31⅝	32⅝	32⅜	33	32½			1,501
Maryland Coal													
do. pref													
Morris & Essex													
New Cent. Coal													
N. J. Central	109		108		108				108				970
N. Y., L. & W.													
N. Y., L. E.& W	16	15½	15⅝	15⅛	15	14¾	15¼	15⅛	15¼	14⅞	15½	14	11,230
do. pref					32¾				33¾				150
N.Y., Susq. & W	14		14	13½	13½		13¾		13⅝		13⅛		1,635
do. pref.							44						100
do. pref., new			45		45				44				305
N. & West.													
do. pref													
Penn. Coal													
Penn. R. R.	51¼	51⅛	50⅛	50¼	50½	50⅜	50⅜	50¼	50½	50¼			1,099
Phil. & Reading	18¾	18⅜	18¾	18⅜	18⅝	18¼	19½	18⅝	19⅞	18⅞	19⅞	19⅛	21,790
Tenn. C. & I.			15¼	14¾					15⅛		15½	15	505
do. pref	61												10
Wheel. & L. E.	13½				13¼	13					13⅛		440
do. pref	45½				45½		45						375

Total shares sold, 59,256.

INDUSTRIAL AND TRUST STOCKS.

Name of Stocks.	Sept. 16. H.	Sept. 16. L.	Sept. 18. H.	Sept. 18. L.	Sept. 19. H.	Sept. 19. L.	Sept. 20. H.	Sept. 20. L.	Sept. 21. H.	Sept. 21. L.	Sept. 22. H.	Sept. 22. L.	Sales.
Adams Express					140	138							80
Am. Cotton Oil.	34¼	34⅛	33¾	33⅝	33½		35	34⅝	34⅞	34	34⅛	33	4,165
do. pref.	69⅝	69⅜	68⅞	68½	69		69	68½	68¾	68½	68¼	68	1,090
Am. Dist. Tel.													
Am. Express							109¼		110				150
Am. Sugar Ref.	88	85¾	87	85⅜	88	84¾	88¼	86½	87⅞	86⅛	87⅛	86⅝	141,540
do. pref.	87		86⅛		85½	85	86	85¾	85¼				1,772
Edison E. Ill. Co.	99	98	97		96½		94¼	94	94				640
Edison Gen. El.	48¼	47	47¼	46¾	47½	45½	48	46½	48¼	46⅞	47⅜	45¾	25,159
Nat. Cord. Co.	26	25¼	26½	24	26⅛	25½	26⅜	26	25½		25⅜	24	5,973
do. pref.											60		100
Nat. Lead Co.	29½	28½	28¾	28¼	29¼	28¾	29¾	29¼	29½	29	28⅞	25½	33,588
do. pref.	71		70½		70½		71¼	71⅛	71	70½	71¼	68⅝	3,628
Nat. Linseed Oil.			18										100
U. S. Express	50				55	50½							135
U. S. Rubber			35		33						33		290
do. pref.					77								20
Wells, Fargo Ex													
Western Union.	82⅞	82⅜	82⅞	82⅛	83½	82⅜	83⅜	81⅝	82½	81¾	82⅜	81⅞	30,001

Total sales, 248,431.

CALIFORNIA.

San Francisco.

Names of Stocks.	Closing Quotations. Sept. 15.	Sept. 16.	Sept. 28.	Sept. 19.	Sept. 20.	Sept. 21.
Alpha						
Alta		.15	.10	.10	.10	.10
Belcher						
Belle Isle	.10					
B. & Belch	.50	.60	.50	.50	.50	.35
Bodie	.15	.15	.20	.15		.15
Bulwer		.15	.15	.15	.15	.15
Chollar	.20	.25	.25	.25	.15	.25
Com'w'lth					.50	
Con.C.&V.	1.25	1.45	1.30	1.35	1.25	
Con. Pac.						
Crown Pt.		.25	.25	.20	.25	.20
Del Monte						
E'rekaCon					.20	
G'ld & C'y	.20	.30	.25	.25	.20	.25
Hale & N.	.45	.50	.45	.45		.50
M. White					.50	
Mexican	.50	.65	.55	.60		.60
Mono	.10				.65	
Mt. Diablo						
Navajo						
Nev. Qu'n.						
N.B'lleIsle						
N. Co'w'th						
Ophir	.80	.90	.80	.85	.90	.85
Potosi		.40	.30	.35		
Savage	.30	.40	.35	.35	.35	.40
Sierra Nev	.40	.50	.40	.50	.40	.35
Uni'n Con	.30	.35	.30	.35	.50	.45
Utah			.10	.10	.10	.10
Yel. Jack.	.45	.45	.40	.45	.35	

COLORADO.

Aspen.

	Bid.	Asked
Argentum Juniata	....	....
Aspen Contact	....	....
Aspen Deep Mining	....	....
Best Friend	....	....
Bi-Metallic	....	....
Bushwacker	....	....
Delia S.	....	....
Gold Valley Placer	....	....
Little Annie	....	....
Mollie Gibson	....	....
Pontiac	....	....
Smuggler	....	....
St. Joe & Mineral Farm	....	....
U. S Paymaster	....	....

Colorado Springs. Sept. 16.

	Bid.	Asked.
Anaconda Gold	$12¼	$15
Anchoria Lel'd	...	.04
Antlers P. K. Reg	...	.10
Calumet	.01⅞	....
Cleopatra	.02	.03
C. O. D.	.02¼	....
Cook's Peak	...	.40
Del Monte	...	.03½
Enterprise	...	.04
Fanny Rawlins	...	.05⅝
Golden Dale	...	.01
Isabella	.08	.09
Jeff Davis	.01	....
Lemhi	...	.60
Mollie Gibson	2.12½	2.20
Mount Rosa	.01¼	....
Pharmacist	.18½	.20
Summit M. & M.	.14	.15½
Union	.03¼	.05
Work	.02⅝	.02⅞
World	...	.01

MARYLAND.

Baltimore. Sept. 21.

Company.	Bid.	Asked.
Balt. & N. C.	....	$0.04
Conrad Hill	....	.10
Cons. Coal	....	33
Diamond Tunnel	....	.15
George's Creek Coal	....	105@106
Howard C. & C.	1.15	....
Lake Chrome	.01@.02	....
Silver Valley	.10	.35

MONTANA.

Helena.

Prices for the week ending Sept. 12:

	Bid.	Asked.
Bald Butte (Mont.)	$2.50	$2.75
Benton Group (Neihart), Mont.	...	.15
Combination(Phillipsb'g),Mont	...	.75
Cumberland (Castle), Mont.	...	....
Elizabeth (Phillipsb'g), Mont.	...	.20
Florence (Neihart)	...	....
Helena & Victor, Mont.	...	....
Iron Mountain(Missoula),Mont	.40	.50
Piegan (Marysville), Mont.	...	1.00
Poorman (Cœur d'Alene),Idaho	...	.50
Whitlach Union & MacIntyre.	.35	.40
Yellowstone	...	....

MINNESOTA.

Duluth. Sept. 15.

LISTED STOCKS.

	Par.	Bid.	Asked.
Biwabik M. Iron Co.	100	$18.50	$20.00
Cincinnati Iron Co.	25	.25	.32
Clark Iron Co.	100	....	.60
Cosmopolitan Iron Co.	...	....	....
Great Northern Min. Co.	100	3.50	5.00
Kanawha Iron Co.	100	.20	.40
Keystone Iron Co.	...	....	.40
Lake Superior Iron Co.	25	2.00	3.00
Lincoln Iron Co.	..	....	.50
Little Mesaba Iron Co.	100	....	....
Mesaba Moun. Iron Co.	100	11.00	15.50
Minneapolis Iron Co.	100	.02	.15
Mountain Iron Co.	100	45.00	55.00
Shaw Iron Co.	100	2.75	3.25
Security Land & Exp. Co.	10	10.00	16.00
Washington Iron Co.	100	....	....

UNLISTED STOCKS.

	Par.	Bid.	Asked.
Adams Iron Co.	..	$8.00	$9.00
Agate Copper Mining Co.	..	....	1.00
Allegheny Iron Co.	10	....	....
Aurora Iron Co.	..	....	....
Buckeye Iron Co.	100	....	2.50
Buffalo Land & Exp. Co.	..	...	.50
Camden Iron Co	..	....	.25
Chandler Iron Co	..	....	0.00
Charleston Iron Co.	100	.25	.30
Champion Iron Co.	100	.10	.40
Chicago Iron Co.	100	.15	.30
Cleveland Iron Co.	..	....	....
Columbia Iron Co.	100	....	....
Commodore Mining Co.	..	....	....
Comstock Iron Co.	100	....	....
Dayton Iron Co.	100	....	....
Detroit Iron Co.	25	.01	.02½
Elmira Land & Iron Co.	..	.10	.25
Great Western Mining Co.	100	2.10	2.75
Hall Iron Co.	..	....	....
Homestead Iron Co.	25	.00½	.04
Horton Mining Co.	10	....	....
Imp. Iron Mt. Mining Co.	..	....	....
Internat'l Development	..	....	22.50
Kakina Iron Co.	25	....	....
Kentucky Iron Co.	100	....	....
Lackawanna Iron Co.	100	.25	.45
Macomber Mining Co.	..	....	....
McCaskill Mining Co.	..	.01	.05
McKinley Iron Co.	100	....	24.50
Mesaba C., L. & Ex. Co.	10	....	6.00
Mesaba Chief Iron Co.	100	1.80	2.10
Mesaba Iron Co.	..	....	.20
Mesaba Mineral Co.	..	....	....
Minnesota Iron Co.	..	42.00	55.00
Myrna Iron Co.	10	....	....
Northern Light Iron Co.	100	....	.25
New England Iron Co.	100	....	...
Ohio Mining Co.	100	....	6.00
Oneota Iron Co.	100	....	....
Ophir, gold	..	1.00	2.00
Pennsylvania I. & S. Co.	100	.04	.10
Pioneer	..	....	1.00
Putnam	..	....	.80
Rouchleau Iron Co.	100	.35	.50
Republic Iron Co.	25	....	.50
Red Hematite Iron Co.	100	....	.15
Sheridan Iron Co.	..	....	.20
Standard Ore Co.	25	.25	.50
Stowell Iron Co.	10	....	....
Towanda Iron Co.	100	1.50	2.00
Ver. & Mesaba Iron Co.	..	....	1.00
Zenith Iron Co.	25	.30	.40

MISSOURI.

St. Louis. Sept. 20.

Closing quotations:

	Bid.	Asked.
Adams	$0.40	....
American & Nettie, Colo.	.25	$0.30
Bi-Metallic, Mont.	....	4.00
Elizabeth, Mont.	.15	.20
Granite Mountain, Mont.	1.90	2.25
Hope	....	2.50
Leo	.01½	.02
Pat Murphy	....	....
Small Hopes	....	.50

PENNSYLVANIA.

Philadelphia. Sept. 21.

	Bid.	Asked.
Bloomington C. & C.	....	....
Buck Mountain C.	...	....
Cambria	$0.64	....
Connellsville Gas Co.	...	....
Edison E. Light Co.	....	$1.20
Excelsior B. & S.	....	....
Locust Mt. C. & I.	....	....
Penn. Salt	...	100
Penn. Steel	....	.52
Penn. Gas Coal	.47	....
Royal Gas	....	....
Westmoreland C.	.52¾	....

Pittsburg. Sept. 20.

	Bid.	Asked.
Bridgewater Gas Co.	$35.00	....
Chartiers Val. Gas	8.00	$8.13
Con. Gas	48.00	52.00
Enterprise Mining Co.	....	1.50
Hidalgo Mining Co.	1.00	....
La Noria Mining Co.	7.75	8.38
Luster Mining Co.	6.63	7.25
Manufacturers' Gas	....	25.00
N. Y. & Clev. G. C.	....	51.00
Ohio Valley Gas	....	30.00
Pennsylvania Gas	8.00	....
People's N. G. & P. Co.	....	15.00
Philadelphia Co.	19.38	19.50
South Side Gas	....	25.00
Tuna Oil	....	....
Wheeling Gas Co.	....	19.00
W'house Air Brake Co.	117.00	118.00

London Quotations.

Sept. 14, 1893.

	Buyer £	s.	d.	Seller £	s.	d.
Alaska Treadwell, Alaska Ter.	1	17	6	2	2	6
Almada & Tirito, Mex.			4½			7½
American Belle, Colo.		1	0		1	6
Big Creek, Nev.		2	6		5	0
Bonanza Gold, Cal.		5	0		6	0
De Lamar, Idaho		15	0		16	0
Elkhorn, Mont.		9	0		10	0
Emma, Utah			6			9
Flagstaff, Utah			6			9
Golden Feather, Cal.		8	6		9	0
Golden Gate, Cal.		2	6		3	0
Golden Leaf, Mont. & N. M			3			9
Harquahala, Ariz.		16	3		17	6
Holcomb Valley, Cal.			10½		1	1½
Jackson Gold Fields			9		1	0
Jay Hawk & Lone Pine, Mont.		5	9		6	3
Maid of Erin, Colo.		1	3		3	9
Mammoth Gold, Ariz.			6		0	9
Mesquital del Oro, Mex., P.	3	0	0	4	0	0
Mesquital del Oro, Mex., D.		15	0	1	5	0
New Guston, Colo.		6	0		7	0
New Montana, Mont.		2	3		2	9
Palmarejo, Mex.			4½			7½
Pinos Altos, Mex.		1	0		1	6
Poorman, Idaho		4	6		5	0
Rajah Gold, Can.		3	9		6	3
Richmond Con., Nev.		6	3		8	9
Seven Stars, Ariz.		15	0	1	0	0
Sierra Buttes, Cal.		7	0		9	0
South Poorman, Idaho	1	5	0	1	0	0
Springdale Gold, Colo.		3	3		3	9
United Mexican, Mex.		2	0		3	0

Paris. Aug. 31.

	Francs.
Belmez, Spain	665.00
Golden River, Cal	130.00
" " parts	30.00
Laurium, Greece	565.00
Lexington, Mont	59.00
" parts	1.30
Nickel, New Caledonia	655.00
Rio Tinto, Spain	327.50
" " oblig	507.50
" " " 2d	501.20
Tharsis, Spain	112.50
Vieille-Montagne, Belgium	455.00

New York Mining Stocks.

(Latest quotations.) Sept. 22.

	Bid.	Asked.
Alice	0.15	....
Alta	0.10	...
Best & Belcher	0.40	0.70
Bodie	0.15	....
Breece	0.15	0.25
Brunswick	0.02	0.04
Bulwer	0.10	....
Caledonia, B. H.	....	0.65
Cal. & Hecla Copper	....	0.60
Chollar	0.20	....
Chrysolite	0.14	0.19
Colo. Cent. Consol.	..	1.00
Comstock Tunnel	0.06	0.08
Con. C. & Va.	1.20	....
Crown Point	0.20	..
Deadwood	0.90	....
El Cristo	....	0.25
Enterprise	....	1.50
Father De Smet	0.15	0.20
Gould & Curry	0.25	....
Hale & Nor	0.40	...
Holyoke	0.02	0.04
Horn Silver	2.45	....
Iron Silver	....	0.25
Kingston & Pem	0.15	0.25
La Crosse	0.03	0.05
Leadville	0.12	....
Little Chief	0.13	....
Mexican	0.50	....
North Star	0.70	....
Phœnix of Ariz.	.06	....
Phœnix Trust Co.	0.42	0.48
Plymouth Con.	....	0.90
Potosi	0.25	....
Savage	0.30	....
Sierra Nevada	0.40	....
Sutro Tunnel	...	0.03
Union Cons	0.25	....
Utah	0.10	....
Yellow Jacket	0.35	....

ASSESSMENTS.

Company.	No.	Dlnqt. in office.	Day of sale.	Amt. per sh're.
Alpha, Nev	60	Sept. 4	Sept. 25	.25
Amador, Cal.	1	Oct. 12	Nov. 7	.05
Anchor, Utah	19	Aug. 23	Oct. 19	.20
Bay State, Cal.	16	Sept. 28	Oct. 25	.02
Belcher, Nev	46	Sept. 4	Sept. 25	.25
Bodie Con., Cal.	16	Aug. 28	Sept. 25	.15
Bodie T., Cal.	17	Oct. 7	Oct. 24	.10
B. Camas, Utah	....	Sept. 9	Oct. 9	.02½
Br'nsw. Cn., Cal.	6	Oct. 6	Oct. 24	.02
Caledonio, Cal.	17	Oct. 16	Nov. 15	.50
Chollar, Nev.	35	Sept. 5	Sept. 26	.10
Clinton, Cal.	2	Sept. 16	Oct. 2	.15
C'nfidence, Nev	23	Sept. 11	Oct. 2	.25
Dalton, Utah	....	Sept. 1	Sept. 30	.00¾
Dora Gold, Cal.	1	Sept. 25	Oct. 25	.05
Eclipse	5	Sept. 4	Sept. 25	.02
Emmett, S. Dak	....	Oct. 19	Nov. 8	.002
Evening Star, Cal.	10	Sept. 12	Sept. 30	.01
Grey Eagle, Cal.	33	Sept. 6	Oct. 4	.03
Herold, Cal.	6	Sept. 16	Oct. 3	.01½
J'ck Rabbit, Cal	4	Sept. 15	Oct. 6	.05
Justice, Nev.	55	Sept. 5	Sept. 25	.10
Martin White, Nev.	29	Oct. 26	Dec. 14	.25
Ophir, Nev.	60	Sept. 4	Sept. 25	.25
Orleans, Cal.	13	Oct. 9	Oct. 31	2.00
Overman, Nev.	68	Oct. 5	Oct. 26	.05
Potosi, Nev.	39	Oct. 16	Nov. 7	.25
Sierra Nevada, Nev.	105	Sept. 6	Sept. 25	.20
Siskiyou Con. Q'cksilv., Cal.	7	Oct. 5	Oct. 27	.01
So. Eureka, Cal.	5	Sept. 4	Sept. 29	.01½
Tcirakoff, Cal.	10	Sept. 28	Oct. 19	.01
Teresa, Mex.	11	Sept. 11	Sept. 27	.10
Utah Con., Nev	19	Oct. 4	Oct. 25	.05
Waterloo, Cal.	1	Sept. 6	Sept. 25	.15
Yellow Jacket, Nev.	55	Sept. 5	Oct. 9	.25

ALPHABETICAL INDEX TO ADVERTISERS.

— Indicates every other week or monthly advertisements.—

See Page 35.

CLASSIFIED LIST OF ADVERTISERS.

Adders and Calculators
Smith, R. C.

Air Compressors and Rock Drills
American Diamond Rock Boring Co.
Bullock, M. C., Mfg. Co.
Burleigh Rock Drill Co.
Clayton Air Compressor Works.
Hasenzahl, W.
Ingersoll-Sergeant Rock Drill Co.
Morris County Machine & Iron Co.
Norwalk Iron Works Co.
Penn Diamond Drill & Mfg. Co.
Rand Drill Co. (See Diamond Drills.)

Aluminum
Cowles Electric, S. & A., Co.

Amalgamators
Bucyrus Steam Shovel & Dredge Co.
Denver Separator & Amalgamator.
Gates Iron Works.

Architects and Builders
Berlin Iron Bridge Co.
Pencoyd Bridge & Const. Co.
Pennsylvania Steel Co.
Pollock, Wm. B. & Co.
Scaife, Wm. B. & Son.

Arms and Ammunition
Hartley & Graham.

Assayers' and Chemists' Supplies
Ainsworth, Wm. | Queen & Co.
Baker & Adamson. | Richards & Co.
Baker & Co. | Roessler & Hasslacher Chemical Co.
Berge, J. & H. | Sargent, A. H., & Co.
Bullock & Crenshaw. | Snelson, W. H., Assay. & Engineering Co.
Denver Fire Clay Co. | Solvay Process Co.
Henry Heil Chem. Co. | Taylor, John, & Co.
Hoskins, Wm. | Troemner, Henry.
Overbrook Chem. Co. | Voland & Van Zelm.
Penn Sm. & Ref. Wks.
Penna. Salt Mfg. Co.

Bankers and Brokers
Bandell, E. H. | Hyde, Geo. A.
Bieber & Sohne. | Nevin Commission Co.
Billings, Robt. & Co. | Pacific Mining Agency & Trust Co.
Chisolm, A. R., & Co. | Peabody & Kolff.
Cochran, A. M. | Pullman, J. W.
Gelder, Bailey & Co. | Smith, C. H.
Grant, E. R. | Trenholm, Paul C.
Handy & Harman.

Belting
Hendrie & Bolthoff Mfg. Co.
Jeffery Mfg. Co.
Link Belt Machinery Co.
New York Belting & Packing Co., Ltd.

Blasting Caps and Fuse
Lau, J. H., & Co.
Macoeth, James, & Co.
Metallic Cap Mfg. Co.

Blowers
Foos Mfg. Co.
Sturtevant, B. F. Co.

Boiler Compound
American Fluoride Co.

Boilers
Babcock & Wilcox Co. | Scaife, Wm. B. & Sons.
Heine Safety Boiler Co. | Star Boiler & Sheet Iron Works.
Lidgerwood Mfg. Co. | Stirling Co.
Orr & Sembower, Inc.
Pollock, Wm. B., & Co.
(See Machinery.)

Brake Shoes
Sargent Co.

Brick Machinery
Freese, E. M., & Co.

Bridges
Berlin Bridge Co. | Scaife, W. B., & Sons.
Pencoyd Br. Con. Co.

Buckets
Scaife, Wm. B. & Sons.
(See Machinery.

Calculators
Smith, R. C.

Carbons
Bishop, Victor, & Co.

Car Wheels
Whitney, A. & Co.

Chain and Link Belting (See Belting.)

Chemicals
Baker & Adamson. | Penn. Salt Mfg. Co.
Bullock & Crenshaw. | Roessler & Hasslacher Chemical Co.
Henry Heil Chem. Co. | Solvay Process Co.
Overbrook Chem. Co. | Vandenbergh Lab'tory

Coal
Berwind-White Coal Mg. Co. | Maryland Coal Co.
Castner & Curran | Meeker & Co.
Consolidation Coal Co. | Potts, F. A., & Co.
Coxe Bros. & Co. | Stickney, Conyngham & Co.
Haddock, Shonk & Co. | Ward & Olyphant.

Coal Cutters
Ingersoll-Sergeant Drill Co.
Jeffrey Mfg. Co. (See Machinery.)

Coke
Rainey, W. J.

Concentrators, Crushers, Pulverizers, Separators, Etc.
Allis, Ed. P. & Co.
American Mining & Milling Machinery Co.
American Ore Machinery Co.
Beckett Foundry & Machine Co.
Blake, Theo. A.
Bradley Fertilizer Co.
Colorado Iron Works.
Copeland & Bacon.
Denver Separator & Amalgamator.
Dimon & Adams.
Fraser & Chalmers.
Frisbee-Lucop Mill Co.
Frue Vanner Concentrator.
Gates Iron Works.
Hendrie & Bolthoff Mfg. Co.
Krom, S. R.
Mechanical Gold Extractor Co.
Pierce & Miller Engineering Co.
Stnrtevant Mill Co.
Totten & Hogg Fouudry Co.
Walburn-Swenson Mfg. Co.
(See Machinery.)

Copper Dealers and Producers
Abbott, Wheelock & Co. | Detroit Copper Mg. Co.
American Metal Co. | Lewisohn Bros.
Atlantic Mining Co. | Orford Copper Co.
Balbach S. & Ref. Co. | Osceola Con. Mg. Co.
Baltimore Cop. Wks. | Penn. Salt Co.
Boston & Col. S. Co. | Phelps, Dodge & Co.
Boston & Mont. M'f'g Co. | Quebrada R. R., L. & C. Co.
Canadian Copper Co. | Tamarack Mg. Co.
Central Mining Co.
Copper Queen Mg. Co.

Contractors' and Miners' Supplies
Bucyrus Steam Shovel and Dredge Co.
Carpenter, Geo. B., & Co.
Lidgerwood Mfg. Co.
Pollock, Wm. B., & Co.
Pratt & Whitney Co. (See Machinery.)

Corrugated Iron
Berlin Iron Bridge Co. | Scaife, W. B. & Sons.

Desks, Chairs, Etc.
Andrews, A. H. & Co.

Diamonds
Bishop, Victor, & Co.

Diamond Drills
American Diamond Rock Boring Co.
Bishop, Victor, & Co.
Bullock Mfg. Co., M. C.
Hasenzahl, W.
Penn. Diamond Drill & Mfg. Co.
Sullivan Machinery Co.
(See Air Compressors and Rock Drills.)

Drawing Materials
Alteneder, Theo. & Son. | Keuffel & Esser Co.
Heller, Chas. S. | Queen & Co.
| Schwenke, Kirk & Co.

Dredges
Bucyrus Steam Shovel & Dredge Co.
Souther & Co.

Dump Cars
Hunt Co., C. W.
Thacher Car & Con. Co.

Educational Institutions
Corcoran Scientific School.
Correspondence School of Mines
Harvard Univ. (Lawrence Scientific School)
Michigan Mining School.
Pennsylvania Military College.
Woodside Seminary.

Electrical Machinery and Supplies
General Electric Co.
Jeffrey Mfg. Co.
Okonite Co., Limited.
Thomson-Houston International Co.

Elevators, Conveyors and Hoisting Machines
Brown Hoisting and Convey. Mach. Co.
California Wire Works.
Cooper, Hewitt & Co.
Davis, F. M., Iron Works.
Hunt, C. W., Co.
Jeffrey Manufactnring Co.
Lidgerwood Mfg. Co.
Link Belt Machinery Co.
Orr & Sembower, Inc.
Scaife, Wm. B. & Sons.
Union Wire Rope Tramway Co.
Vulcan Iron W'ks.
(See Wire Rope Tramway and Machinery.)

Emery Wheels
New York Belting & Packing Co., Ltd.

Emery Mill Stones
Sturtevant Mill Co.

Employment Bureaus
Engineering Employment Bureau.

Engineers, Chemists, Metallurgists
Adams, J. N. | Kendall, E. Dwight.
Adams, W. H. | Kennedy, Julian.
Argall, Philip. | Kent, William.
Askew & Russell. | Kerr, Mark B.
Baker & Co. | Keyes, W. S.
Blandy, John F. | Kirby, E. B.
Blauvelt, Harrington. | Lammers, T. L.
Boggs, W. R., Jr. | Languth, Werner.
Boss, Clarence M. | Lavagnino, G.
Boss, M. P. | Ledoux & Co.
Brodie, Walter M. | Leggett, Thomas H.
Burfeind, J. H. | Loring, Frank C.
Burlingame, E. E | MacTeague, J. J.
Butters, Charles. | Mariner & Hoskins.
Campbell-Preston R.C. | Maynard, George W.
Carpenter, Franklin R. | McCulloch, E. A.
Cary, J. Stockly | McDermott & Dufheld.
Cazin, Franz. | Modjeski & Nickerson
Chandler, W. H. | Moore, Gideon E.
Channing, J. Parke. | Newberry, W. E.
Chanute, O. | Nicholson, Frank.
Chatard, Thomas M. | Olcott, Eben E.
Clark, C. H. | Osgood, J. O.
Clark, Ellis. | Page, Wm. Byrd.
Clement, Victor M. | Penrose & Barringer.
Collins, J. H. & Sons. | Peters, Edward D.
Cramer, Stuart W. | Phillips, W. B.
Darling, L. B. | Platt, Joseph C.
De la Bouglise, Geo. | Poole, Robt., & Son Co.
Dewey, Frederic P. | Porter, J. A.
Dickerman, Alton L. | Potter, William B.
Dickinson, H. P. | Price, Thomas & Son.
Donald, J. T | Radford, Wm. H.
Emmens, Stephen H. | Randolph, John, C. F.
Everette, Dr. W. E. | Raymond, Rossiter W.
Farish, John B. | Raymond, R. M.
Farish, Wm. A. | Rickard, T. A.
Fearn, Percy L | Ricketts & Banks.
Fisk, W. W. | Robinson, G. H.
Freeland, Francis T. | Rothwell, John E.
Froehling, Dr. Henry. | Rothwell, Richard P.
Fulton, Henry. | Saunders, W. L.
Furlonge, W. H. | Schwarz, Theodore E.
Furman, H. Van F. | Shapleigh, W.
Genth, F. A., Jr. | Shaw, Thomas.
Godfrey, W. S. | Skewes, Edward.
Goudie, James H. | Smith, F. H.
Hahn, O. H. | Smith, R. C.
Hall Bros. | Squire, Jos.
Hammond, John Hays | Stolber, E. G.
Hampton, W. Huntley | Taylor & Brunton.
Hardman, John E. | Thies, A.
Hastings, John B. | Vaudenbergh Lab'tory
Hedburg E. | Van Slooten, Wm.
Herndon, J. H. | Vermeule, C. C.
Hofman, Ottokar. | Vezin, H. A.
Hollbaugh, J. R. | Wannemaker, J. F.
Hollis, H. L. & Co. | Wills, J. Laluson
Hooker & Lawrence. | Wilson, J. Howard.
Hunt & Robertson. | Woodman, Durand.
Hunt, F. W. | Wyatt & Saarbach.
Jennings, E. P. | Young & Park.
Jones & Jones.

Engineers' Instruments
Alteneder, T. & Son. | Gurley, W. & L. E.
Brandis' Sons. | Heller, Chas. S.
Bullock & Crenshaw. | Keuffel & Esser Co.
Everhardt, J. M. | Queen & Co.

Engines
Barr Pump. Eng. Co. | Morris Co. Mach. & Iron Works.
Buckeye Engine Co. | Orr & Sembower, Inc.
Bullock, M.C., Mfg. Co. | Union Iron Works.
Lidgerwood Mfg. Co. | (See Machinery.)

Excavators
Bucyrus Steam Shovel & Dredge Co.
Souther & Co.

Fire-Brick and Clay
Chur, A. T.
Denver Fire-Clay Co.

Forges
Foos Mfg. Co.

Furnaces
Hoskins, Wm. | Moore, S. L., & Son Co.
| Pollock, W. B. & Co.
(See Machinery.)

Furniture Desks, Etc.
Andrews, A. H. & Co.

Gas Works
Pollock, Wm., B. & Co. | Wood, R. D. & Co.

Gauges, Recording, Etc.
Bristol Mfg. Co. | Everhardt, J. M.

Grease, Graphite, Etc.
Dixon, Jos., Crucible Co.

Hose, Rubber
New York Belting & Packing Co., Ltd.

Hotels
The Cochran. | Owen House.

Inspection and Tests
Hunt, The Robert W. Co.

Insulated Wires and Cables
Crescent Insulated Wire & Cable Co.
Okonite Co., Ltd.

Insurance Companies
Hartford Steam Boiler Inspect'n and Ins. Co.
Mutual Life Insurance Co.

Lamps, Miners'
Everhardt, J. M.

Locomotives
Hunt, C. W. Co. | Porter, H. K., & Co.
Thomson-Houston International Co.

Lubricants
Dixon, Jos., Crucible Co.

Manganese Steel
Taylor Iron & Steel Co.

Mats, Rubber
New York Belting and Packing Co., Ltd.

Machinery.

Dealers in Mining, Milling, ing and Other Machinery
Allentown Foundry & Machine Co.
Allis, Edw. P., & Co.
American Mining & Milling Machinery Co.
American Ore Machinery Co.
Beckett Foundry & Machine Co
Bullock, M. C., Mfg. Co.
Carbon Steel Co.
Chicago Iron Works.
Colorado Iron Works.
Copeland & Bacon.
Davis, F. M., Iron Works Co.
Dimon & Adams.
Fraser & Chalmers.
Fulton Iron Works.
Griffith & Wedge Co.
Hendrie & Bolthoff Mfg. Co.
Jeffrey Mfg. Co.
Lidgerwood Mfg. Co.
Mechanical Gold Extractor Co.
Mecklenburg Iron Works.
Moore, Samuel L., & Son.
Morris County Mach. & I. Co.
Oil Well Supply Co.
Orr & Sembower, Incorp.
Penn Diamond Drill & Mfg. Co.
Pierce & Miller Engineering Co.
Pollock, Wm. B., & Co.
Poole, Robt., Son & Co.
Scaife, W. B., & Sons.
Sullivan Machinery Co.
Thomson-Houston International Co.
Totten & Hogg Foundry Co.
Trenton Iron Co.
Union Iron Works.
Vulcan Iron Works.
Walburn-Swenson Mfg. Co.
Webster, Camp & Lane Machine Co.

Metal Dealers
Abbott, Wheelock & Co. | Johnson, Matthey & Co.
American Metal Co. | Lewisohn Bros.
Am. Zinc-Lead Co. | Mathison Sm'lting Co.
Baker & Co. | Orford Copper Co.
Cowles Elec. S. & Aluminum Co. | Phelps, Dodge & Co.
Eureka Co. | Picher Lead Co.
| Pullman, J. W.

Metallurgical Works and Ore Purchasers' Processes
American Zinc Lead Co.
Baker & Co.
Balbach Smelting & Refining Co.
Baltimore Copper Works.
Boston & Colorado Smelting Co.
Canadian Copper Co.
Cowles Elect. Smelt. & Aluminum Co.
Kansas City S. & Ref. Co.
Ledoux & Co.
Mechanical Gold Extractor Co.
Orford Copper Co.
Pennsylvania Salt Mfg. Co.
Ricketts & Banks.
Russell Process Co.
St. Louis Sampling & Testing Works
Walburn-Swenson Mfg. Co.

Mining and Land Companies
Atlantic Mg. Co. | Mollie Gibson Con. Mg. & M. Co.
Boston & Mont. Mg. Co. | Osceola Con. Mg. Co.
Central Mg. Co. | Quebrada R. R. L. & C. Co.
Copper Queen Mg. Co. | Tamarack Mg. Co.
Detroit Copper Mg. Co.
Eureka Co.

Nickel
Canadian Copper Co.

Nuts, Lock
Young Lock Nut Co.

Ore Cars
Star Boiler & Sheet Iron Works.

Ore Sacks
Morrison, T. J.

Ore Testing Works
Hunt & Robertson. | Ricketts & Banks.
Ledoux & Co.
Snelson, W. H., Assaying & Engineering Co.

Packing and Pipe Coverings
Brandt, Randolph. | New York Belting & Packing Co., Ltd.
Jenkins Bros. | Wyckoff & Son, A.
Keasby, Robt.

Patents
Catlin, Benj. R. | Atkins, J. L.

Perforated Metals
Clinton Wire Cloth Co.
Harrington & King Perforating Co.
Mundt & Sons.

Periodicals
Arms and Explosives. | Financial Times.
El Minero Mexicano. | Iron & Coal Trades Review.
Electrical Plant & Electrical Industry. | Indian Engineering.

Phosphates
Trenholm, Paul C.

Phosphor-Brouze
Phosphor-Bronse Smelting Co.

Picks, Miners'
Collins & Co.

Pile Drivers
Lidgerwood Mfg. Co.
Bucyrus Steam Shovel and Dredge Co.

Pipes
Pollock, Wm. B., & Co. | Wyckoff & Sons, A.

Platinum
Baker & Co.

Powder
Ætna Powder Co. | Ladin & Rand P. Co.
Atlantic Dynamite Co. | Macbeth, J., & Co.

Pumps
Barr Pump. Eng. Co. | McGowan, John H., & Co.
Blake, Geo. F., Mfg. Co | Menge, J.
Cameron, A. S., Steam Pump Works. | Morris Co. Mach. & Co.
Jeanesville Iron Wks. | Pulsometer Steam Pump Co.
Knowles Steam Pump Works. | Worthington, Henry
Maslin & Son, John.

Publications
Allison Coupon Co | Electrical Plant & Electrical Industry
Arms & Explosives. | Financial Times
Colliery Engineer Co. | Ir'n & Coal Trades Rev.

Pyrites
Adams W. H.

Quarrying Machines
American Diamond Rock Boring Co.
Ingersoll-Sergeant Rock Drill Co
Rand Drill Co.
Steam Stone Cutter Co.
Sullivan Machinery Co.
Union Wire Rope Tramway Co.

Quicksilver
Eureka Co

Railroad Supplies and Equipment
Carpenter, Geo. B., & Co. | Robinson & Orr.
Hunt, C. W., Co. | Young Lock Nut Co.
Porter, H. K., & Co
(See Machinery.)

Refrigerating Machines
De la Vergne Ref. Machine Co.

Regulators, Damper, Heat, Etc.
Eddy Valve Co. | Mason Regulator Co.
Lunkenheimer Co. | Powell, Wm., & Co.

Rock Drills. (See Air Compressor.)

Roofing
Berlin Iron Bridge Co. | Phelps, Dodge & Co.
Lee Composite Co. | Scaife, Wm B., & Sons.
Pencoyd Bridge and Const. Co.

Rubber Goods
New York Belting & Packing Co., Ltd.

Sacks, Ore
Morrison, T. J.

Screens
Clinton Wire Cloth Co.
Harrington & King Perforating Co.
Mundt & Sons.
Tyler W. S., Wire Works Co.
(See Machinery.)

Screen Plates
Harrington & King Perforating Co.

Separators
Harrison Safety Boiler Works.

Shaft Sinking
Poetsch-Sooysmith Freezing Co.

Shoes and Dies
Chrome Steel Works. | Reliance Steel Co.
Crescent Steel Co. | Sargent Co.
Pratt & Letchworth.

Shovels (Steam)
Bucyrus Steam Shovel & Dredge Co.
Souther & Co.

Smelting and Refining Works
Balbach S. & Ref. Co. | Penn Lead Co.
Baltimore Copp'r Wks. | Penna. Salt Mfg. Co.
Bos. & Colo. Smelt. Co. | Penn Smelting and Refining Works.
Cowles Smelt. & Alu. Co. | Phosphor-Bronze Smelt. Co.
Kansas City S. & Ref Co.
Mathison Smelting Co.
Orford Copper Co.

Steel Rails, Castings, Drill Steel
Abbott, Wheelock & Co. | Moore, S. L., & Son Co.
Allentown Fdy. & Mach. Co. | Pennsylvania Steel Co.
| Pratt & Letchworth.
Bethlehem Iron Co. | Reliance Steel Co.
Billings & Spencer Co. | Roberts, A. & P., & Co.
Carbon Steel Co. | Robinson & Orr.
Chester Steel Cast. Co. | Sargent Co.
Chrome Steel Works. | Whitney, A., & Sons.
Crescent Steel Co. | (See Metal Dealers)

Surgical Instruments
Sargent, A. H. & Co.

Tanks
Pollock, Wm B. & Co.
Scaife, Wm. B. & Sons.
Star Boiler & Sheet Iron Works.
Williams Mfg. Co.

Telegraph Wires and Cables
Crescent Insulated Wire & Cable Co.
Okonite Co. The, Ltd.

Tents, Wagons, Etc.
Morrison, T. J.

Tools
Billings & Spencer Co.
Pratt & Whitney Co.

Tubes
Oil Well Supply Co. | Pollock, Wm. B., & Co.
| Williams Bros.

Tubing-Rubber
New York Belting and Packing Co., Ltd.

Turbines
Allentown Foundry & Machine Co.
James Leffel & Co., The.
Poole, Robt. & Son Co

Valves
Drummond, M. J. | Lunkenheimer Co.
Eddy Valve Co. | Mason Regulator Co.
Jenkins Bros. | Sturtevant & Co., B. F.

Ventilators
Bullock, M. C., Mfg. Co.

Vulcanite Emery Wheels
New York Belting and Packing Co., Ltd.

Washers
Milton Mfg. Co.

Well Drilling Machinery
American Diamond Rock Boring Co.
Oil Well Supply Co., Limited.
Penn Diamond Drill & Mfg. Co.
Williams Bros.

Wire Cloth
Clinton Wire Cloth Co.
Harrington & King Perforating Co.
Tyler, W. S., Wire Works.

Wire Rope and Wire
Abbott, Jere & Co.
California Wire Works.
Cooper, Hewitt & Co.
Crescent Insulated Wire & Cable Co.
Hunt, C. W., Co.
Phelps, Dodge & Co.
Roebling, J. A., Sons & Co.
Ropeways Syndicate, Ltd.
Trenton Iron Co.
Washburn & Moen Mfg. Co

Wire Rope Tramway
Brown Hoist. & Convey. Machine Co.
California Wire Works.
Colorado Iron Works.
Cooper, Hewitt & Co
Hunt, C. W., Co.
Lidgerwood Mfg Co.
Roebling, J. A., Sons & Co.
Trenton Iron Co.
Vulcan Iron Works.

FREE ADVERTISING.

Inquiries from employers in want of Superintendents Engineers. Metallurgists, Chemists, Mine or Furnace Foreman, or other assistance of this character, will be inserted in this column WITHOUT CHARGE, whether subscribers or not.

The labor and expense involved in ascertaining what positions are open, in gratuitously advertising them and in attending to the correspondence of applicants, are incurred in the interest and for the *exclusive* benefit of *subscribers* to the ENGINEERING AND MINING JOURNAL.

☞ **Applicants should inclose the necessary postage to insure the forwarding of their letters.**

Positions Vacant.

1260 WANTED—A COMPETENT MINING Superintendent to take charge of a developed mine in the Middle States, must be familiar with stall and shaft timbering, stoping and open cut work, and concentration on jigs. A good chance for a permanent position and advancement for the right man. Address, stating experience and salary expected, etc., GALENA, ENGINEERING AND MINING JOURNAL.

1263—WANTED—FIRST CLASS EXPERIenced Manager for an Eastern steel hardware stamping works. Salary about $2,500. Send references, etc. STEEL, Care ENGINEERING AND MINING JOURNAL

1264 A PRACTICAL MAN WHO CAN control some trade in foundry and machine business to take an interest in an established business in Brooklyn, N. Y., which is well equipped to manufacture any line of iron or wood working specialties. Address PROGRESS, ENGINEERING AND MINING JOURNAL.

1265 WANTED—AN ACTIVE, EXPERIenced foreman for machine shop making specialty of stationary engines, boilers and sawmill machinery. Only first-class men who can furnish A1 reference need apply. Address STATIONARY, ENGINEERING AND MINING JOURNAL.

1267 WANTED—A COMPETENT AND reliable person to take charge of ahydraulic mining property in Idaho. Address, stating experience, reference and salary expected, HYRAULIC MINING, ENGINEERING AND MINING JOURNAL.

1268 WANTED—A FIRST-CLASS foundry foreman; one thoroughly acquainted with malleable ironwork. Address, giving references, MALLEABLE IRON, ENGINEERING AND MINING JOURNAL.

1269 WANTED—A MINING ENGINEER to take charge of mines of a Western copper mining company; must be able to smelt ores and will be expected to perform the chemical work necessary in working out the proposition. Address, stating terms expected, references and past experience. COPPER, ENGINEERING AND MINING JOURNAL.

1270 WANTED—DRAUGHTSMAN, COMpetent in both electrical and mechanical work. Address CENTRAL, ENGINEERING AND MINING JOURNAL.

1271 WANTED—A COMPETENT FOREman molder, well up in casting rolls and general mill and machinery castings, columns, etc., ingot molds; none need apply unless having held a foreman's position (about ten molders employed); send copy of testimonials, with age and wages expected, to "MOLDS," ENGINEERING AND MINING JOURNAL.

1272 WANTED—COMPETENT FOREman, in wrought iron and wire factory; must be experienced in all its branches; give references and salary expected. Address "WIRE WORKER," ENGINEERING AND MINING JOURNAL.

1273 WANTED—A YOUNG MAN, GRADuate of Scientific school preferred, familiar with working of steel and having good knowledge of machinery. Moderate salary, with good chance of increase. Address, giving experience, references and salary expected, STEEL WORKS, ENGINEERING AND MINING JOURNAL.

Situations Wanted.

Advertisements under this heading will be charged only 10 cents a line.

CHEMIST AND ASSAYER—A YOUNG MAN with university training in analytical chemistry, assaying, mineralogy, etc., desires position as assayer or assistant chemist. References given. Address E. S., Box 526, Butte, Montana. No. 15165, Sept. 30.

GRADUATE OF UNIVERSITY OF VIRginia in chemistry, mineralogy and geology, with over a year's experience as chemist at blast furnace, desires a position to teach these branches, or in a laboratory. Al references. Address "FERRUM," ENGINEERING AND MINING JOURNAL. No. 15052, Sept. 30.

OFFICE MANAGER AND ACCOUNTANT —A thoroughly qualified business man desires permanent position with a good house or corporation. Has had wide experience and good connections in this city. Reasonable terms to satisfactory parties. Address F. X., ENGINEERING AND MINING JOURNAL. 15180, Sept. 30.

TO ENGINEERS AND CONTRACTORS.— Draughtsman with wide experience in Europe and the States, technical education, wants situation. Used to hydraulic plant and general machinery. Address I. X. L., ENGINEERING AND MINING JOURNAL. No. 15323, Sept. 30.

PRACTICAL CIVIL AND MINING ENGIneer, with 16 years' experience in ore and coal mining and colliery management, desires a position. Will go anywhere. Good references. Address ENERGETIC, ENGINEERING AND MINING JOURNAL. 15293—Sept. 30.

MINING AND MECHANICAL ENGINEER. graduate of Rose Polytechnic Institute and Columbia School of Mines, desires position with mining or metallurgical company. Best of references. Address P. B., ENGINEERING AND MINING JOURNAL. No. 15292, Sept. 30.

SCHOOL OF MINES GRADUATE, TWO years' experience teaching analytical chemistry and assaying, experienced in all kinds of analytical work, desires position as chemist assayer or assistant. Best of references. Address C. & A., ENGINEERING AND MINING JOURNAL. No. 15306, Sept. 30.

THOROUGH EXPERIENCED METALLURgist and analyst desires appointment in some such capacity in smelting works. High salary not expected. Special experince in iron, steel and manganese. Address METALLURGY, Box 64, Revelstoke, B. C. No. 15290, Sept. 30.

EUROPEAN GRADUATE CIVIL ENGIneer, with several years' experience, and who has already been employed in this country, is anxious for work. Is a reliable draughtsman and surveyor, and has a fair experience in construction works. Late manager of a copper mine in Spain. Can furnish samples of draughting. References from all his previous employers sent upon application. Address "ANXIOUS," ENGINEERING AND MINING JOURNAL. 15296, Sept. 30.

PRACTICAL MINING ENGINEER WHO has had many years' experience in Germany, Hungaria, Spain and Portugal, desires a responsible position. Is well up in air compressing machinery and rock drills. Speaks English. First-class testimonials. Address PRACTICAL, ENGINEERING AND MINING JOURNAL. No. 15297, Sept. 30.

ASSAYER (GERMAN), THOROUGHLY competent, desires position. Is familiar also with amalgamation and concentration; good surveyor and draughtsman. Speaks English. First-class testimonials. Address THOROUGH, ENGINEERING AND MINING JOURNAL. No. 15298, Sept. 30.

MECHANICAL ENGINEER, WITH PRACtical experience in steel works and rolling mills, desires a position. Experienced in designing, erecting and repairing all kinds of machinery, furnaces and buildings, and managing of men. Address ENGINEER. ENGINEERING AND MINING JOURNAL. No. 15300, Sept. 30.

PRACTICAL COPPER SMELTER DESIRES a position; several years' experience in matte smelting, bar smelting and refining; good assayer; also understands the erecting and working of furnaces; speaks Spanish and English; good references. Address REGULUS, ENGINEERING AND MINING JOURNAL. 15305 Sept. 30.

A PRACTICAL CONCENTRATOR FOREman, who thoroughly understands putting up and operating concentrating machinery, desires a position. Is a mechanical engineer and assayer. Speaks Spanish. Will go anywhere. First-class references. Address, CONCENTRATOR. ENGINEERING AND MINING JOURNAL. No. 15299, Oct. 7.

CHEMIST — UNIVERSITY GRADUATE, with two years' practical experience, desires position as chemist or assistant. References from past employers given. Address A. J., ENGINEERING AND MINING JOURNAL. No. 15291, Oct. 7.

ENGINEER, GRADUATE, WITH THREE years' laboratory and office experience in mining, milling and smelting gold, silver and copper ores, wishes a position. Address MONTANA, ENGINEERING AND MINING JOURNAL. No. 15317, Oct. 7.

CHEMIST, THOROUGHLY EXPERIENCED in the manufacture of modern high explosives, desires situation. Address NITRO, ENGINEERING AND MINING JOURNAL. No. 15319, Oct. 7.

CYANIDE.—A MINING ENGINEER AND chemist who has had charge of a cyanide leaching plant the past year would like a position with some company intending to adopt the process; large experience in testing ores with regard to the applicability of the cyanide process. Address CYANIDE, ENGINEERING AND MINING JOURNAL. No. 15316, Oct. 7.

TECHNICAL CHEMIST. — FIRST-CLASS scientific education. Many years' practical experience as superintendent in best European and American works in the manufacture of acids (sulphuric, nitric, hydrochloric), alkali ny Leblanc and ammonia process, ammonia, fertilizers, alumina products, copper extraction, etc. Address A. Z., ENGINEERING AND MINING JOURNAL. 15302, Oct. 21.

MACHINERY. — THOROUGHLY COMPEtent man, energetic and reliable, desires engagement as salesman, manager or agent. Extensive experience in all kinds of mining machinery, also steam power, electrical and passenger elevator plants. Address OMNIBUS, ENGINEERING AND MINING JOURNAL. No. 15057 Oct. 21.

RESPONSIBLE POSITION WANTED BY A graduated chemist and engineer; superintendency or assistant superintendency in steel works or blast furnaces preferred; is a metallurgist and can burden furnace; is well up in modern engineering practice; thoroughly understands machinery and the economies of production; can design and build mills or furnace plants. Address "MODERN ENGINEERING," ENGINEERING AND MINING JOURNAL. tf

Contracts Open.

CABLE.—U. S. Engineer Office, Willets Point, N. Y.—Sealed proposals in duplicate will be received at this office until the 2d day of October, 1893, and opened immediately thereafter in presence of bidders, for about $33,000 worth of submarine insulated cable, single and multiple. Specifications, instructions to bidders, and blank forms will be furnished on application to this office. W. R. KING, Lieutenant-Colonel, Corps of Engineers, U. S. A.

PROPOSALS FOR COAL FOR THE NAVAL Stations, Key West, Fla.—Sealed proposals, indorsed "Proposals for Coal for the Naval Station, Key West, Fla.," to be opened Oct. 10, 1893, will be received at the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., until October 10th, 1893, and publicly opened immediately thereafter, to furnish at the Naval Station, Key West, Fla., 1,000 tons anthracite coal. The coal must conform to the navy standard and pass the usual naval inspection. Blank proposals will be furnished upon application to the Navy Pay Office, New York, or to the Naval Station, Key West, Fla. The attention of manufacturers and dealers is invited. Tie bids, all other things being equal, decided by lot. The department reserves the right to waive defects or to reject any or all bids not deemed advantageous to the Government. EDWIN STEWART, Paymaster General, U. S. N.

METAL WORK.—OFFICE OF THE LIGHT House Engineer, Seventh District, New Orleans, La.—Sealed proposals will be received at this office until the 24th day of October, 1893, for furnishing materials and labor of all kinds necessary for the completion and delivery of the metal work for the beacons for Tampa Bay, Fla. Plans, specifications, forms of proposal and other information may be obtained on application to this office. The right is reserved to reject any or all bids and to waive any defects. JAMES B. QUINN, Major of Engineers, U. S. Army, Light House Engineer, Seventh District.

HEATING APPARATUS--OFFICE SUPERvising Architect, Washington, D. C.—Sealed proposals will be received at this office until October 20th, 1893, and opened immediately thereafter for all the labor and materials required for the steam heating apparatus and pipe tunnel at the U. S. Marine Hospital, San Francisco, in accordance with drawings and specification, copies of which may be had at this office or the office of the surgeon at Marine Hospital, San Francisco. Each bid must be accompanied by a certified check for a sum not less than two per cent. of the amount of the proposal. The right is reserved to reject any and all bids or to waive any defect or any informality in any bid should it be deemed in the interest of the Government to do so. Proposals must be inclosed in envelopes, sealed and marked "Proposals for Steam Heating Apparatus and Pipe Tunnel at the U. S. Marine Hospital, San Francisco, Cal.," and addressed to JEREMIAH O'ROURKE, Supervising Architect.

TREASURY DEPARTMENT, OFFICE SUPERvising Architect, Washington, D. C.—Sealed proposals will be received at this office until the 12th day of October, 1893, and opened immediately thereafter, for all the labor and materials required for roof sheathing, slate and copper work of roof, down and drain pipes, etc., for the U. S. Custom House and Post Office building at Newark, New Jersey, in accordance with the drawings and specification, copies of which may be had at this office, or the office of the Superintendent at Newark, New Jersey. Each bid must be accompanied by a certified check for a sum not less than 2 per cent. of the amount of the proposal. The right is reserved to reject any or all bids and to waive any defect or informality in any bid should it be deemed in the interest of the Government to do so. Proposals must be enclosed in envelopes, sealed and marked, "Proposal for Roof Sheathing, Slate and Copper Work of Roof, Down and Drain Pipes, Etc., for the U. S. Custom House and Post Office, at Newark, New Jersey," and addressed to JEREMIAH O'ROURKE, Supervising Architect.

UNITED STATES ENGINEER OFFICE, MOhile, Ala.—Sealed proposals in duplicate for removal of sunken dry dock in Mobile River, Ala., will be received at this office until October 14th, 1893. Full information furnished upon application to this office. A. N. DAMRELL, Major of Engineers, U. S. A.

HOTELS.

OWEN HOUSE.

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THE COCHRAN,

14th & K Sts. N. W., Washington, D. C.

AMERICAN SYSTEM.

F. J. HART.

MEETING.

OFFICE EUREKA CONSOLIDATED MINING COMPANY,
134 and 136 Market Street,
San Francisco, Cal.

The annual meeting of stockholders of this company will be held at this office on October 16th, 1893, at 11 o'clock A. M.

(Signed)
H. T. BUSH.
Secretary.

DIVIDENDS.

MOLLIE GIBSON CONSOLIDATED MINING AND MILLING COMPANY.
COLORADO SPRINGS, Colo., July 25th, 1893.
DIVIDEND NO. 65.

A dividend of five cents per share ($50,000) has been declared, payable September 15th, 1893, to stockholders of record on September 8th. Transfer books close September 8th, and reopen September 16th, 1893.
PERCY HAGERMAN, Sec'y-Treas.

MINING and CORPORATION ATTORNEYS

SALT LAKE CITY, Utah Territory, U. S. A.

General attorneys for these leading corporations, viz.: The Ontario Silver Mining Co.; Daly Mining Co; Eureka Hill Mining Co.; Centennial Eureka Mining Co.; Mammoth Mining Co.; Gemini (Keystone) Mining Co.; Old Jordan & Galena Mining Co.; Pleasant Valley Coal Co.; Cormne Mill, Canal & Stock Co.; Utah Title Ins. & Trust Co. and others, and attorneys (in and for Utah Territory) for the Rio Grande Western Ry. Co., Rio Grande Construction Co., the Emma Co (Ltd.) of London and others.

C. W. BENNETT, JOHN A. MARSHALL & W. M. BRADLEY

Successors to BENNETT, HARKNESS & KIRKPATRICK.

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Gold and Silver Properties, Nickel, Asbestos, Iron and Galena.
Timber Lands, Water Power, Quarries, etc., for sale.
Safe properties for large investments.
Dr. T. W. Williams,
Milwaukee, Wis.

A LEASE ON COAL LAND FOR SALE, or will sell one-third or one-half or sub-lease. Particulars on application.
W. P. WILLIAMS,
109 South Church street, Carbondale, Pa.

FOR SALE.

CANNEL COAL MINE

well located, excellent quality; good, well established business throughout the U. S. and Canada.

Very similar in appearance, but of better quality than English Cannel. Address

OTIS E. YOUNG, Cleveland, Ohio.

FOR SALE.

A developed copper mine. Extensive deposit of oxidized copper ore. Address ROBERT, ENGINEERING AND MINING JOURNAL.

NEVIN COMMISSION COMPANY,

BROKERS,

Room I, Patterson & Thomas Block,
DENVER, COLO.

Purchase and Sale of Mines and Mining Stocks a Specialty.
Correspondence Solicited.

ASSESSMENTS.

ASSESSMENT NOTICE.

AMADOR GOLD MINE.

Location of principal place of business, San Francisco, Cal. Location of works, Jackson Mining District, Amador County, Cal.

Notice is hereby given that at a meeting of the Board of Directors, held on the seventh day of September, 1893, an assessment (No. 1) of five cents (5c.) per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the company, 330 Pine street. Room 5, San Francisco, Cal.; or to H. R. Lounsbery, Treasurer, 57 Broadway, Room 8, New York City, New York.

Any stock upon which this assessment shall remain unpaid on the twelfth day of October, 1893, will be delinquent and advertised for sale at public auction, and, unless payment is made before, will be sold on Tuesday, the seventh day of November, 1893, to pay delinquent assessment, together with costs of advertising and expenses of sale.

By order of the Board of Directors
F. E. LUTY, Secretary.

P. S.—All certificates of stock must be sent to the Treasurer, to be stamped assessment paid.

OFFICE OF BULWER CONSOLIDATED MINING COMPANY,
117 LIBERTY STREET, NEW YORK.

Delinquent Stockholders of Bulwer Consolidated Mining Company.—Sale of delinquent stock on assessment No. 8 has been postponed from September 22d to Monday, October 9th, 1893.

By order of the Board of Directors,
L. OSBORN, Secretary.

Office, Room No. 22 Nevada Block, 309 Montgomery Street, San Francisco, Cal.

OFFICE OF THE CALEDONIA GOLD MINING COMPANY.
SAN FRANCISCO, Cal., Sept. 13th, 1893.

Resolved and Ordered, That an assessment of fifty (50) cents per share upon the capital stock of this corporation be and the same is hereby levied, payable immediately to the Treasurer, at the office of the company, in the Mills Building, on the northeast corner of Bush and Montgomery streets, in the city and county of San Francisco, California.

That Monday, the 16th day of October, 1893, be and the same is hereby fixed as the day upon which all unpaid assessments upon said stock shall be delinquent, and that Wednesday, the 15th day of November, 1893, be and the same is hereby fixed as the day for the sale of all delinquent stock.

This assessment will be received and payment stamped upon certificates by Lounsbery & Co., transfer agents, 15 Broad street, New York City, until October 16th, 1893, without extra charge.

WANTED.—YOUNG CIVIL AND MINING engineer, graduate of technical college, with ten thousand dollars, to take charge of Western branch of an old established business. Address with references, etc., REDWOOD, ENGINEERING AND MINING JOURNAL.

MACHINERY AND SUPPLIES FOR SALE.

NOTICE.

This column is particularly devoted to machinery and goods for sale. If you have anything in this line to dispose of, it will pay you to insert a card here. For advertising rates write to the

ENGINEERING AND MINING JOURNAL.

We would also advise those who need machinery or goods to consult this column weekly.

FOR SALE CHEAP

A Good Instrument for a German Engineer.

1 German Mining Theodolite, with extra level for short level work.
1 Eccentric Telescope.
1 Metric Sliding Leveling Rod.
1 Lantern for same (in case).
1 box with metre reel and 6 screws for sprelzenaufleitung of theodolite, and set plate for theodolite on tripod.
Manufactured by LINGKE, of Freiberg, Germany.

Address Theodolite,
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We own, and offer for sale cheap, about 150 tons of second-hand 52-lb. Steel Rails, all carefully selected for re-laying, and practically as good as new. Write or wire at our expense.

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ONE FOUR-INCH DIAMOND DRILL ENGINE.

Complete, with 200 ft. drill rod, core barrels, a large amount of 6-in., 5-in, and 4½-in. casing, casing shoes, X bits, and all the usual tools and supplies.

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One 500 ton Coal Distintegrater that has been used only a short time, in good condition, and made by N. Stedman, Aurora, Ind.

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The Standard Coal Company

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Torrington, Conn.