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THE HEADQUARTERS OF THE MINING INDUSTRY.

Visitors find here files of a great number of papers from the mining districts of this and other countries, and books of reference which can be consulted for information on any question in which they may be interested. They can have their letters addressed in care of "The Engineering and Mining Journal," P. O. Box 1833, New York, and will find in the headquarters every convenience for correspondence.

The Willson Aluminum Company, which has been making calcium carbide, as described several times in these pages, has taken out a license under the Cowles patents. By this arrangement it now gets the control of all the the patents relating to the manufacture of calcium carbide in the electric furnace.

The long drought which has weighed so heavily upon the coal trade of the Pittsburg district, and which threatened to interfere seriously with the production of coke in the Connellsville region, has been at least partially broken by the severe storm of October 30th and 31st. At least a partial supply of water for the mines is now assured, and shipments of coal down the Ohio will be possible for the first time in over half a year. Moreover, at this season there is every reason to expect that the storm will be followed by others and water enough supplied to meet the requirements of river navigation fully until it is stopped by ice. The drought of 1895 has been unexampled for 23 years and will long be remembered.

Attention has often been called to the increase in the demand for copper, caused by the extension of electrical work in various directions. An instance of a new demand for the metal which had hitherto been hardly suspected is found in the recently issued annual report of the Western Union Telegraph Company. We find there that the company, during the year ending with June last, added to its wire lines a net length of 11,859 miles, and that over 10,000 miles of the new wire are of copper. The report states, moreover, that the company has adopted the policy of replacing all defective iron wires on its line with copper, the intention being to use that metal alone on all the principal lines hereafter. The advantages of saving in weight, increased capacity for electrical transmission, and diminish liability to interruption from atmospheric conditions are sufficient to make the copper wires more economical in the end, notwithstanding their greater first cost. The decision has been assisted also by the fact that the improvements in processes for drawing copper wire have enabled makers to furnish material well adapted for telegraphic use. The renewals and additions made by the Western Union Company last year do not represent more than an average year's work. The size of copper used for telegraph wires is generally No. 9 or 10 B. & S., weighing about 1.9 lbs. to the mile. This would require for 10,000 miles about 760 long tons of copper; an amount not so important in itself, but as indicating a tendency to increased demand.

Notwithstanding the great and almost absorbing interest the South African gold mines have had for London speculators, some American mining properties are making their appearance on the foreign markets. Our London correspondent informs us that some Cripple Creek claims have been bought and capitalized, while some others have lately been examined and bought by Mr. Hamilton Smith for London parties. These mines are not floated by irresponsible promoters, but are brought out by the Exploration Company, a strong and well-known concern. The same company has also in hand a new Alaska mining property, which is reported to have something of the character which has made the Alaska-Treadwell a successful operation. We have also lately noted the sale of several California mines to foreign buyers.

While these transactions are all of comparatively small amount, they are of interest as showing that the attention of foreign investors is once more being directed to this country. They are, we believe, only the beginning of a movement which, when once started, will have a tendency to increase rapidly. We have often called attention to the fact that no better opportunities for the profitable use of capital can be found anywhere, and if European capitalists realize this it will be both for their advantage and our own.

The main point is that this movement should be kept in good hands. The public abroad is not always able to discriminate between good and bad properties. As long as the movement is under the control of responsible parties it will be beneficial; but anything approaching an American boom, which will bring the activity of the promoter into play, is to be deprecated. There is room here for the use of all the capital which our abundant resources may attract, but every "wild cat" worked off on foreigners inflicts a lasting injury on the country. The "Engineering and Mining Journal," now as always in the past, will do its best to warn investors away from dangerous points.

THE PRODUCTION OF PIG IRON IN OCTOBER.

While the returns from the blast furnaces of their condition on November 1st are not yet at hand, the increase over the October returns was certainly not very great, since, as we have heretofore pointed out, the number of furnaces available for addition to the active list was not very large. In the Western Pennsylvania and Ohio districts nearly every furnace in condition to work was running a month ago, and the report for the Eastern anthracite furnaces was almost equally good. What the comparative position has been at the opening of the present year, at the end of its first half and in the month just closed is shown by the following table, giving the number of furnaces in blast and their weekly capacity at the periods mentioned:

	Jan. 1.		July 1.		October.	
	F'ces.	Tons.	F'ces.	Tons.	F'ces.	Tons.
Anthracite.....	38	21,632	37	21,501	56	34,250
Coke.....	124	145,125	133	142,804	150	172,450
Charcoal.....	23	9,140	17	3,731	22	4,530
Totals.....	185	171,895	187	168,036	228	211,530

If we compare the condition in October with that in October, 1894, we find this year an increase of 56 in the number of active furnaces, and of 52,382 tons in the weekly capacity, a very substantial gain.

Our pig iron production during October was at the rate of 11,000,000 tons yearly, a higher figure than has ever before been reached in this country. The total actual production this year up to date has been a little over 7,500,000 tons. It is somewhat difficult to estimate closely in a year of many changes, like the present; but even if we assume that there will be no further increase in activity between this and the close of the year, the total output for 1895 will reach 9,200,000 tons. At these figures it will be fully equal to the production of 1890 and 1892, heretofore the years of the largest output; it will exceed that of 1894 by 2,542,000 tons, and of 1893 by 2,076,000 tons.

As there is no evidence of any slackening in demand and as stocks have decreased in spite of the large production, there is every reason to expect that the second half of 1895 and at least the first half of 1896 will show the highest production in the history of our iron trade.

THE SOUTH AFRICAN CRISIS.

The brief cable reports of the excitement in South African mining shares in London hardly conveyed a full idea of the extent of the reaction, and the mail advices now at hand give a more striking account of the fall. While it did not by any means become a crash, the reduction in nominal values was quite sufficient to shake the speculators severely, and to force many of the weaker ones out of the market, while some of the leaders, like "Barney" Barnato, who have risen into prominence on the "boom," are reported to have spent very large sums in their efforts to support prices. The extent of the loss can best be judged from a few figures based on the Stock Exchange quotations.

If we take the stocks of 30 of the leading companies we find according to the quotations of the London "Economist," which are always considered reliable, that their total nominal or selling value on September 30th was \$496,805,000; on October 17th, a little over two weeks later, the total had shrunk to \$413,872,250, showing a loss of \$82,932,750, or 16.7 per cent. In spite of this loss, however, there is still an enormous inflation, as is shown by the statement that a year ago, on September 30th, 1894, the selling price of these same stocks amounted in all to \$153,870,000, showing an increase, even after the reaction, of \$260,072,250, or 169 per cent. Evidently there is still plenty of room for a fall before values reach their true level. This statement, moreover, is comparatively a favorable one, since it includes several of the older and better known dividend-payers—such as the Robinson, the Langlaagte Estate, and the City & Suburban—in which the fall was but slight, partly because they have an established reputation, and partly because they are largely held by parties strong enough to support them.

To take another class of South African corporations, the diamond and land exploration companies, we find a heavy fall. In five of the best known of these—De Beers diamonds, Jagersfontein diamonds, Bechuana-land Exploration, Johannesburg Consolidated and British South African (the "Chartered Company")—the total nominal value fell from \$269,875,000 on September 30th, to \$225,762,500 on October 17th; a loss of \$44,112,500, or 16.4 per cent. This is nearly the same proportion as the gold mining companies. The curious point in this case is that De Beers, which is apparently in a better and stronger condition than ever, should have shared in the fall to an extent almost as great as the other companies.

The greatest reduction, as might have been expected, was in the shares of the so-called "banks," or investment companies. The three more prominent stocks—Robinson Bank, Barnato Bank and Barnato Consols—showed a fall in total values in the two weeks from \$118,120,000 to \$90,155,000, the loss being \$27,965,000, or 23.7 per cent.

We have shown here a loss on the shares of 38 typical companies, amounting to \$154,947,550 in half a month, and this amount could be enormously increased were there time and space to go through the ex-

change lists and take in all the newer and weaker companies, whose values are almost entirely speculative. The amount is quite sufficient to frighten speculators and to break the weaker ones. The present danger is that the alarm caused by the losses already undergone may at any moment become a panic, the end of which no one can foresee. The situation just now depends very much upon the action of the French investors, who have bought so largely of South African shares. Very many of these bought to hold, taking the shares outright and not on margins. If they should take the alarm and begin any general movement to sell the panic would be inevitable.

GAS ENGINES FOR MINING WORK.

When a mining property of any description passes beyond the stage of a claim or a prospect and the work of development begins, one of the first, and often one of the most important, questions to be considered is that of power. Even in small mines there is need of some power for hoisting, pumping and other purposes. Though the exploitation may be on so limited a scale that the application of manual power may be the most economical for the time for underground work, an engine of some kind is usually one of the first requisites, while, as the workings extend, the demand for power increases in various directions.

In some cases the way is clearly pointed out by local circumstances. Where a sufficient water-power exists, of course, there is no further question; and the radius of application of a water-power has been so much extended by modern improvements in methods of transmission, that water can now be used in many places where the location of the supply formerly prevented its successful utilization. We are not here, however, discussing the manner of transmitting and applying force, which is a very extensive subject by itself, but rather the source of the power and the manner of generating it. There are many mining operations where the margin of profit is so narrow that the selection of a motor may determine the question of success or failure; and in any case the choice of an engine not economical in its working, or not adapted to local conditions, may be a serious drawback to the possible returns.

Until recently the only possible choice, where no water-power existed, was some form of boiler and engine. The selection has now, however, been very much widened by the introduction of the impulse engine, or the gas engine, as it is generally called, employing the explosive force of gas or of the lighter mineral oils directly in the cylinder, and not requiring the use of the boiler to make steam by the combustion of the fuel. First practically introduced on a large scale abroad, the gas engine is rapidly making its way in this country as is shown by the constant introduction of new forms of the engine on the market, the amount of sales reported by makers and the numerous patents issued for new forms and improvements in details. We do not believe, with some enthusiasts, that the gas engine is going to supersede the steam engine entirely; there will always be many places where a well designed steam plant will have superior advantages. Nevertheless, it is certain that the gas engine even in its present form utilizes a higher percentage of the possible power to be developed from a given quantity of fuel than the best designed steam plants. Possibly the question of economy between the two may not be settled before both are superseded by the discovery of some method for the generation of electricity directly by combustion.

There can be no question as to the advantages presented by the gas engine for mining work. In many places where mining operations are carried on, fuel adapted for economical use in a steam boiler is scarce and costly. But the use of some of the different forms of gas producers permits us to employ almost any kind of fuel—coal of inferior quality, lignite, wood, saw-mill refuse, sage-brush and the like—which would give but a poor return in the boiler-furnace. Moreover, the use of water is required only for cooling the working cylinders, and the quality of the supply is of little moment. Mine water so impure that it could not be used in a boiler will answer all purposes with a gas engine; and where the quantity available is limited it can be economized by using it over and over again.

The gas engine as now constructed is usually a compact machine, requiring less adjustment and less care in its setting up and foundations than the average steam engine; points that may be of moment in a rough mining country. Moreover, there is not the same marked difference in economy between large and small engines as there is in a steam plant; and a small installation may be gradually enlarged as required by the addition of small units at a time, and still be economical in practice. Where it is convenient to distribute power at various points, it is entirely practicable to use several smaller engines and supply them with gas from a conveniently located producer.

There are other considerations that might be brought forward in favor of the gas engine, but enough has been said to show that it has substantial claims to favor. How much weight these have with practical men is proved by the fact that several of the largest engine builders in the country either have already added some form of gas engine to their lists, or are arranging to do so; appreciating, as they show by this action,

the future importance of the motor. The habit here has been rather to look on the gas engine as of use chiefly where small power is needed; but in Europe engines of 300 and 350 horse power are in daily use, and larger ones are being introduced. Mills of the largest size are run by these engines coupled, and in most cases with notable economy in fuel consumption. There are no more limitations as to size, in fact, than those of convenience of construction and strength of materials, as in the steam engine, and they can be coupled and thus furnish any desired power with individual engines of moderate size.

NEW PUBLICATIONS.

VITRIFIED PAVING BRICK. By H. A. Wheeler, Indianapolis, Ind.; T. B. Randall & Co. Pages 84. Price \$1.

This little book is a timely publication in view of the discussion which is now going on on the improvement of roads and pavements, and in view also of the very rapid increase of the use of brick for paving purposes. Vitrified brick for pavements have made their appearance in this country on a commercial scale within the past 10 years, for although the author cites in this book one case where such a pavement was laid 25 years ago, it was an isolated case and very few similar ones could be found.

The growth of the business, which has chiefly occurred in the past five years, is shown by the statement that such brick are now being used in about 400 cities and towns in the United States, including some of large size. Under these circumstances a knowledge of the proper methods of making paving brick and of the best materials for the purpose will be of value to many engineers and others who are concerned with the construction and maintenance of roads. As might be expected, many mistakes were made in their manufacture at first, either in the choice of clays not well suited or in the burning of the brick, which is the most important point in making them.

The book goes well into details of the manufacture of paving brick, their physical qualities and the best methods of testing, and also makes a comparison with other standard paving materials.

A point that is made by the writer is that where vitrified bricks are used for both streets and sewers, it will be practicable to employ the hydraulic system of cleaning the streets, which is by far the cheapest method where the grades are suitable.

A very convenient feature in the printing of this manual is the use of a wide margin with side reference, which enables one to turn very quickly to the sections relating to any especial point. Some valuable details of tests are also given.

IOWA GEOLOGICAL SURVEY, VOLUME IV. THIRD ANNUAL REPORT WITH ACCOMPANYING PAPERS. Dr. Samuel Calvin, State Geologist. Des Moines, Iowa; Printed for the Survey. Pages, 468; with maps, plates and illustrations.

This fourth volume issued by the Iowa Geological Survey maintains the high character which the previous publications of the present Survey have uniformly shown. The annual reports are brief, showing the general character of the work done during the year. Much of this is, of course, preliminary, owing to the comparatively short time which has so far been allowed. Field work is going on in several different directions, and in some of the counties has been almost completed, and much time has been given to investigations of the deposits of special commercial importance. Included in this special work are investigations into soils of different parts of the State, analyses and tests of coal, examinations of the clays, studies of the limes, cements and other building materials, and further examinations of the zinc and lead deposits of the northeastern part of the State. Besides all this, the chief work done has been on the geological examinations of the different counties on which a systematic beginning has been made.

Aside from the general reports which, as already noted, are comparatively brief, the special papers in the present volume include the Geology of Allamakee County, by Samuel Calvin; of Linn County, by W. H. Norton; of Van Buren County, by C. H. Gordon; of Keokuk and of Mahaska counties, by H. Foster Bain, and of Montgomery County, by E. H. Lonsdale. Each of the papers is accompanied by a geological map of the county in question, and all the articles are very fully illustrated by local maps, geological sections and other views.

A special feature which characterizes this report, as it has the previous volumes issued by the Survey, is the excellence of the maps and other illustrations which are of the very best kind. In fact, the mechanical execution of the book throughout deserves great praise, as well as the work done by the Survey in the preparation of the different papers.

BOOKS RECEIVED.

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

The Year Book of the Society of Engineers: May, 1895. Minneapolis, Minn.; University of Minnesota. Pages, 140; illustrated.

Statistical Abstract for the United Kingdom in each of the last Fifteen Years from 1880 to 1894. London, England; H. M. Printing Office. Pages, 251.

Seventh Annual Report of the Rhode Island Agricultural Experiment Station; 1894. Providence, R. I.; State Printers. Pages, XIII., 224; illustrated.

Rope-Driving. By John J. Flather. New York; John Wiley & Sons, and London, England; Chapman & Hall, Limited. Pages, VII., 230; illustrated. Price, \$2.

Map of Cripple Creek Mining District, Colo. Compiled from the records of the U. S. Surveyor General and other authentic sources, by E. A. Byler and W. B. Shepherd.

Minerals, and How to Study Them. By Edward Salisbury Dana. New York; John Wiley & Sons, and London, England; Chapman & Hall, Limited. Pages, VI., 380; illustrated. Price, \$1.50.

A Glossary of Terms Used in Mining Geology. By F. Danvers Power. Adelaide, South Australia; Published by the Australasian Institute of Mining Engineers. Pamphlet. Pages 69. Price, 3s.

Missouri Geological Survey: The Crystalline Rocks of Missouri. By Erasmus Haworth, Assistant Geologist. Jefferson City, Mo.; State Printers. Pages, 222; with map, plates and illustrations.

Modern Examinations of Steam Engineers, or Practical Theory Explained and Illustrated. By W. H. Wakeman. Bridgeport, Conn.; American Industrial Publishing Company. Pages 272; illustrated. Price, \$2.

Department of the Interior. Census Office. Report on Manufacturing Industries in the United States at the Eleventh Census, 1870. Part III. Selected Industries. Washington, D. C.; Government Printing Office. Pages 725.

The Electrical Transmission of Energy. By Arthur Vaughan Abbott. New York; D. Van Nostrand Company. London; Sampson Low, Marston & Co., Limited. Pages 586, with nine folding plates, diagrams and illustrations. Price, \$4 50.

Annual Report of the Bureau of Industries for the Province of Ontario, 1894. Part IV., Loan and Investment Companies; Part V., Chattel Mortgages; Part VI., Municipal Statistics. Toronto, Ont.; Published by the Ontario Department of Agriculture. Pamphlets.

Eighth Special Report of the Commissioner of Labor. The Housing of the Working People. Prepared under the direction of Carroll D. Wright, Commissioner of Labor, by E. R. L. Gould. Washington; Government Printing Office. Pages 461; with diagrams and illustrations.

Geological Survey of Canada. Maps (364 to 372) of the Principal Auriferous Creeks in the Cariboo Mining District, British Columbia. By Amos Bowman. Maps (379 to 551) of Nova Scotia. Sheet No. 11 S. W. Nova Scotia. Eastern Townships Map, North-East Quarter Sheet, Quebec. Rainy River Sheet, Ontario. Ottawa; Printed for the Survey.

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. Letters should be addressed to the MANAGING EDITOR.

We do not hold ourselves responsible for the opinions expressed by correspondents.

Mineralogical Specimens.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: I recently examined some property in the southern part of Lancaster County, Pa., and found there quite a deposit of asbestos, talc and white chalcidony, the three running side by side in well-developed and broad veins. In the talc I found a number of the most perfect crystals of magnetite containing nickel (?) oxide that I have yet seen anywhere in America. If you have any mineralogical friends who would like to do a little prospecting on their own account and would like to gather a few of these crystals they can readily do so by going to Oxford, Chester County, Pa., and taking a train on the narrow-gauge road westward a few miles to White Rock. These crystals are found on what is known there as the Alexander Farm and are quite plentiful in the talc, especially at an abandoned shaft less than a quarter of a mile southwest of the White Rock station.

H. C. DEMMING.

HARRISBURG, Pa., Oct. 24, 1895.

The Boston & Montana Company.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: Your "Journal" invariably ignores circular market letters emanating from brokers, speculators or stock-gamblers, and rightly so. The most nonsensical market letter which I have read for some time is one issued by Lawson Weidenfeld, Boston, dated October 31st. It recommends to the dear public to sell Montana, but it gives no reasons; only vague phrases, calling for floods, fire, strikes and for bears to manipulate the prices of Montana copper stock and assist investors in buying cheap. This should probably read, "assist the bears to cover their shorts cheap."

With great emphasis this market letter exclaims: "When philanthropists visit the street, men of sense close their check-books." This advice we will follow by closing not alone our check-books, but also by keeping a hand on our pockets, if such philanthropists as the authors of this market letter visit the street and advise us to sell short or to sell out on their "unbiased opinions" and on their general "calamity howl." S. E. R.

NEW YORK, October 31, 1895.

The Stamp Mill and the Cyanide Process.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: Mr. T. A. Rickard, in his admirable series of papers, on "Variations in the Milling of Gold Ores," which has just been concluded, speaks on page 371 of the "Journal," for October 19th, "of chlorination, cyanidation and other leaching processes as actually competing for the mill stuff which might otherwise go to the battery, yet it will generally be found that the reversion to other reduction works of ores suitable for stamp-milling is comparatively slight and confined to such as are essentially unadapted for amalgamation." On page 397, again, "One feature of the stamp-mill stands out clearly when instituting a comparison between it and other pulverizers, namely, it is a crushing and amalgamating, a reducing and extracting machine combined." . . . "This feature has enabled it to hold its own against other newer inventions for pulverizing ore, and to meet the fierce competition of so many more complete and more complicated amalgamating machines."

Now, as far as stamp mill pulverization is concerned, it is as necessary for chlorination and cyanidation as for amalgamation, as he doubtless well knows, but does not say. For chlorination and cyaniding, crushing must take place before the leaching process, and his remarks on the stamp mill will prove as effective as for amalgamation. These two processes, as a rule, have followed previous amalgamation, and it is in connection with amalgamation that they have proved so effective and economical, for they have extracted considerable percentages of the precious metals which stamp mill amalgamation was unable to secure. We can only conceive of one condition where stamp mill amalgamation (for he apparently considers the stamp mill better for that purpose than as a crusher) would not be better for previous work in connection with chlorination and cyaniding, and that condition is where the ore is so refractory and wastes mercury so freely that it would be impracticable to employ

it; but even under these circumstances the stamp mill as a crusher has not lost its utility compared with the more recent forms, for it gives a better and more uniform product for treatment. Ball crushers and centrifugal pulverizers have their uses, but their action tends to round the grains, as microscopical examination will show, while stamps fracture the particles, thus leaving rough edges, so that for amalgamation or leaching processes they are in better structural condition for attack. This point is fully illustrated by the smoothing of castings in rotating barrels, in connection with rough pieces of iron or other substances.

Under such conditions as exist the stamp mill holds its own as a crusher; even rolls which give a fairly uniform product, with endless screening and elevating, are not to be considered with the stamp mill for economy and continued uniform results, for we can imagine the surface of the rolls must be always new and smooth, a condition not likely to exist after one week's work. Whenever cyaniding comes in competition with amalgamation it will not be in the stamp battery mortar, for the use of cyanide in that situation is impracticable. Cyanide of potassium dissolves gold grains of any appreciable size only with the consumption of much time; while on the other hand mercury absorbs the gold readily, consequently its use in the battery mortar would be simply for the sake of catching the fine gold, and this can better be accomplished when percolation takes place. There are other objections to the use of cyanide in the mortar, such as the large amount of solution necessary to carry on wet stamping; the returning of the solution by pumps back to the mortar, and the consequent loss of cyanide in the solution by oxidization. All of these objections would indicate that the proper place for cyanide solution is in the leaching vats.

When we consider the Hannay and Pelatan-Clerici electrical-cyanide process, the advantages of steam and heavy stamp mill work become of moment, since there the amalgamation and cyanide leaching take place together in one vat at one time, and the quantity of stamp mill product cannot under any circumstances be too large. In this connection it is immaterial whether cyanide readily dissolves the coarse particles of metal, as the mercury in the vat will amalgamate them as readily and more so than in the stamp mill mortar. With the electrical system in vogue the stamp mill has yet to find its equal as a crusher, even should it lose its identity as an amalgamating machine.

These remarks are not intended as criticisms on Mr. Rickard's valuable articles; they are simply additions to the subject.

There is another remark which he makes which is worth consideration. He applies his remark to chlorination, while we apply it to electrical precipitation of precious metals: "It is by the gradual improvement of established methods rather than by sudden application of new and untried processes that success is soonest attained and longest maintained." The record of the electro-cyanide process extends back to 1840, when Dr. Wright, of Birmingham, England, used it for electroplating; since which time it has been gradually improved, but for various reasons has not been applied. In 1867 Mr. Rae, of Syracuse, obtained a patent which was never pushed; he was followed by Mr. Simpson, of Newark, in 1885, and so we have received them down to the present time, all based on the principle Hagen mentioned in 1804, that gold was soluble on a solution of potassium cyanide.

E. B. WILSON.

SALEM, Va., Oct. 28, 1895.

THE ATLANTA EXPOSITION.

Written for the Engineering and Mining Journal by our Special Correspondent.

The exhibit of the Geological Survey of Alabama has been installed by Dr. Eugene A. Smith, State Geologist, and Wm. M. Brewer, his assistant. It is a very complete and comprehensive display of the woods, soils, phosphates, marls, ores and minerals of the State. Besides these, Dr. Smith shows a large case containing a very complete collection of shells belonging to the Eocene tertiary formation and a few belonging to the Cretaceous. Among the minerals and ores are included the bauxites of Cherokee County, red hematite of Jefferson and Blount counties, limonite of Cherokee and Calhoun counties, gold ore of Clay and Cleburne counties, manganese from Cherokee County, galena from Calhoun County, corundum from Tallapoosa County, beryl from Coosa County, baryta from Calhoun County, kaolin from Cherokee and Randolph counties, potters' clay from Talladega County, mica from Randolph County and halloysite from Cherokee County. The building stones, exhibited by hand specimens, represent the granite of Coosa County, white marble from Talladega County and variegated marble from Calhoun County. The forestry exhibit embraces over 100 different species of timber found in the State, and collected by Dr. Cas. Mohr, botanist, of Mobile. These specimens are cut in slabs to represent volumes, with the botanical names engraved on the back. These are arranged in a bookcase, and resemble a library, because of their shape, etc. The soils from the various sections of the State, as well as the phosphates and marls from the Southern portion, are arranged on terraced tables in glass jars. This is the only collection of soils displayed in the Exposition. A series of maps have been arranged around the walls enclosing the space occupied by the exhibit, which illustrate the geology of the State as an entirety, with explanatory chart: the Coosa coal field; the Cahaba and Warrior coal-field; and another which illustrates the various sections, in which the soils displayed occur.

The Jury of Awards have been examining the different exhibits prior to awarding the medals which the Exposition Company propose to issue.

Professor Yeates, State Geologist of Georgia, has about completed the installation of his exhibit in both the Georgia State Building and the Mining and Forestry buildings. This display was described at length in the "Engineering and Mining Journal" of September 28th and October 5th. Since its installation, your correspondent finds that there have been several additions made to the collection of specimens, among which were many large nuggets of native gold, specimens of quartz, showing native gold imbedded and auriferous quartz from Lumpkin, White and Rabun counties; also specimens of corundum from Towns, Union and White counties. The display of Georgia building stones is arranged in cubes, with 10-in. square faces, one face of each cube being polished and the others cut. This includes the marbles of Pickens, Gilmer, Whitfield, Floyd and Facon counties, as well as the granites and serpentines of Carroll, Merriweather, Oglethorpe, Fulton, Heard, Troup and Cobb counties. The im-

mense slab of marble, weighing 40,000 lbs., from the quarries of the Georgia Marble Company, has been cut and set in place on the east side of the Georgia State Building, on the ground floor; resting on it has been placed an immense globe, about 4 ft. in diameter, of polished white marble, from the same quarries. The 68,000-lb. slab of granite from Stone Mountain has been installed on the outside near the south wall of the Mining and Forestry Building.

Professor Holmes, State Geologist of North Carolina, has been in attendance in person, during the past week, completing the installation of the exhibit from that State, to which he has added a very complete exhibit of the various mineral waters found in the State.

The phosphates of South Carolina are exhibited in the Agricultural Building, near the display made by the Seaboard Air Line Railroad, and associated with it is a very complete exhibit of kainit and other salts, in crude rock, from Germany.

Besides the exhibit made by the State of Arkansas in the Mining and Forestry Building, the town of Hot Springs has installed an independent exhibit in the Agricultural Building, consisting of quartz crystal, calcites, gems and other rare minerals found in the vicinity of the Springs. An interesting feature of this exhibit is the diamond cutting machine, which is being operated on the Arkansas quartz.

The phosphates of Florida are exhibited by the Plant System Railway in their own building, east of the Government Building. This building has been erected in the shape of a pyramid, of low grade phosphate ore, and within its walls has been arranged a very complete comprehensive and instructive display of the resources of Florida, special attention having been given to its mineral resources.

THE DANVILLE ASBESTOS MINE, CANADA.

Written for the Engineering and Mining Journal by Matthew Penhale.

This mine was formerly the Jeffery asbestos mine, the product of which was known both in Europe and America for its whiteness and peculiar silk like quality. Mr. Jeffery, the former proprietor, died some time ago, and the mine has since passed into the hands of a new company with abundant capital, the managers of which realized that a change in the methods of working was necessary in order to secure a larger output, which they believed the property was able to furnish. After testing and examining the mine by blasting in various parts of it and treating the resulting rock they came to the conclusion that the mine could produce a larger amount than any other of the kind in Canada, the test showing from 25% up to as high as 90% of true asbestos fiber in the rock. The company's next step was to secure markets for the product and it is understood that they have made contracts to furnish an amount as high as 5,000 tons a year. To supply this it has been necessary to put up large reduction works, which are now almost completed.

The main factory building is 160 x 70 ft. and five stories in height, solidly built of the best material, the posts being 12 x 12 in. set 10 ft. apart, and everything in proportion, while the whole building is excellently lighted. The roof is flat and is covered with asbestos, and in building more attention has been paid to outside appearance and ornament than is customary in mine buildings. A second building is now being erected adjoining the first, 100 x 70 ft. in size.

On the first floor of the larger building there are six rock crushers, two of 35 tons each with double jaws, and the other four of smaller size, the least being 7 tons. Next to the crushers are sets of Cornish rolls, and a revolving picking table of great length. In addition to this machinery there will be in the factory 12 cyclone pulverizers, a number of fan and exhaust blowers, revolving screens of all kinds, shaker screens and jiggers, all driven from the shafting. The main driving shaft is 5 in. in diameter. The whole plant will be driven by an engine of 500 H. P. which is placed in a separate house at one side of the main building with a battery of four large boilers which are of sufficient capacity to furnish more power if needed. The engine stands on a granite foundation and the smoke from the boilers will be carried off by a stack over 100 ft. high. To furnish water supply a pumping station has been placed on a creek nearby, the water being pumped into a tank set in the sand and made of heavy timber.

The company has established an office at Danville in charge of Mr. B. Marcuse, who is general manager in charge of all the work at the mines and who is also in charge of a slate quarry near by, which is owned by the same company.

In the mine also the company is spending a considerable amount of money, making many improvements with the object of taking out mineral on a large scale. The whole plant will be the largest ever erected in the Province of Quebec. Part of the machinery was furnished by Montreal houses, and part of it by Earl C. Bacon, of New York.

Aluminum in Railroad Cars.—The French State railroads are about to build several passenger cars in which the parts usually of iron and copper will be made of aluminum. The axles, wheels and running gear, however, will still be made of steel. Plans prepared by the engineers for these cars show an economy in weight of about 1,500 kg. per car. If the experiment is successful a large number of cars will be built upon the same plan.

Illuminating Gas from Wood.—The town of Deseronto, in Canada, where there are several large lumber mills, is partially lighted by gas made from sawdust. The sawdust is charged in retorts which are heated by a wood fire, the gas from the retorts passing into a series of coils and thence into the purifiers which are similar to those used for coal gas. Lime is the principal purifying agent employed. When it passes out of the retorts the gas possesses an odor much less disagreeable than that of ordinary lighting gas, and resembles somewhat that of the smoke from a fire of green wood or leaves. The works in use are small, turning out daily 540 cu. meters of gas, for the production of which about two tons of sawdust are required. A man and boy furnish all the labor needed at the works. The gas in an ordinary burner gives an illumination of about 18 c. p. The best quality comes from resinous woods. A quantity of 100 kg. of sawdust leaves a residue of 20 kg. of charcoal.

PLANT FOR THE EXTRACTION OF GOLD BY THE CYANIDE PROCESS.*

By Charles Butters and Edgar Smart.

The process of extracting gold from ores and tailings by solutions of cyanide of potassium, now so largely used on the Witwatersrand gold-fields, need be but briefly described, as the object of this paper is to deal with the process in its mechanical rather than its chemical aspects. The treatment is chiefly applied to tailings—that is to say, to crushed ore that has already been passed over the ordinary amalgamating tables. These tailings are placed in suitable vats, and are subjected to the action of solutions of cyanide of potassium of strengths varying between 40 lbs. and 20 lbs. of cyanide to 1,000 gals. of water, or between 0.4% and 0.2%. These dissolve the gold, and are leached from the tailings and passed through boxes in which the gold is precipitated, either by means of zinc shavings or by electricity. The solutions are made up to their former strengths and applied again to fresh tailings. When these are old and contain a quantity of partially decomposed pyrites, their acidity requires to be neutralized by an alkaline wash, caustic lime and caustic soda being usually employed; so that in many cases provision has to be made in the works for circulating and storing three separate solutions—strong cyanide, weak cyanide and the alkali wash, as well as for the water supply sometimes required for preliminary or final washing. The various plans

simpler, safer and more convenient than working alternatively on the two materials with the same boxes. In ordinary cases two zinc boxes would be sufficient to precipitate 270 tons of solution per day. The leaching vats do not require to be duplicated, as the small amount of solution remaining in them after each charge of tailings may be disregarded. The section of the tunnel under the vat, 4 ft. wide at the bottom, 5 ft. wide at the top and 6 ft. deep, is the smallest in which it is convenient to work, with the side-tipping trucks generally in use, especially with mule traction. The dump line is parallel to the tunnel line, and is connected to it by curves at each end, as shown in the plan, so that a continuous train of trucks passes under the vats out at one end of the tunnel, round the dump, and back again to the other end of the tunnel. A down gradient of 1 in 100 is given in each direction from the center of the tanks to the ends, which provides for drainage and reduces the pull on the mules when starting loaded trucks. The lines for filling are also arranged for continuous work, whether the material arrives from east or west.

The details of construction were determined in part by the limited selection of timber obtainable in Johannesburg. The staves of the vats are 4½ in. wide and 3 in. thick, and are planed to a level by machine and are afterward hand-dressed on the abutting edges. They are checked ¼ in. to fit on the bottom with a chime 6 in. below the check. The bottom is made of 9 in. × 3 in. planks planed by machine and grooved ¼ in. by ¼ in., and is also hand-dressed on the edges. Clear-pine tongues 1 in. × ¾ in. fill the grooves. The joists across the tunnel consist of 9 in. × 3 in. planks, bolted together in pairs, laid 2 ft. 3 in. from center to center.

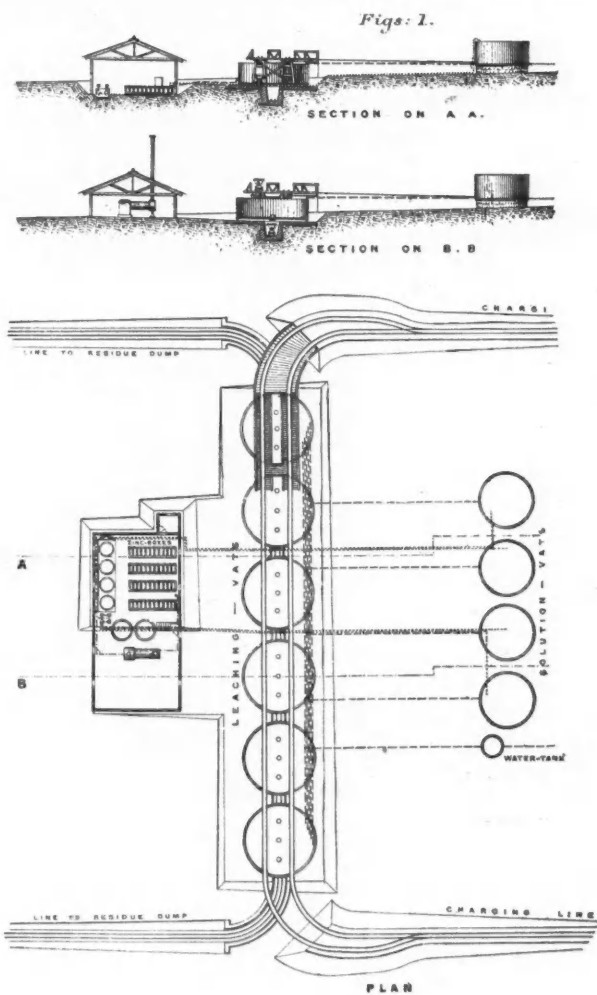
These joists are first placed in position, then the bottom is laid down, cramped up, and the circle struck out. It is sawn to the circle, beveled all round, and is then ready for the staves, which are driven up as tightly as possible. The six hoops are of round iron, the top pair 1 in., the middle pair 1½ in., and the lowest pair of 1½ in. diameter, with 1½ in. screwed ends. Each is made in three sections, rolled to the required curve, and connected by castings of the form shown in Fig. 10. The screwed ends of the sections pass through the boxes, and while each hoop is being drawn up it is hammered with a heavy sledge-hammer. Two carpenters practiced at the work can dress the material for one such vat 23 ft. × 8 ft. in about five days, and erect it in about four years.

The filter frame is formed of slats, 3 in. × 1 in. placed on edge 6 in. apart, their ends being kept 1 in. from the side of the vat; strips 1 in. sq and 1 in. apart are nailed across on the top of these, to form a support for a filter-cloth of cocoa matting. The wooden filter is cut into quadrants for convenience in lifting. The gangway over the vats is carried on 9-in. × 3-in. deals placed on edge, the number varying according to the length of the span. Across the bearers and at right angles to them are nailed wooden strips, 3 in. × 2½ in. × 6 ft. with 2½ in. spaces between them, thus forming a gridiron platform having sufficient width for working trucks with safety and at the same time allowing tailings to fall through it into the vats. The construction of a zinc box is shown in Fig. 8. The sides and ends are of 1½-in. plank, grooved and tongued, with 3-in. square pieces along the top and bottom to stiffen it and to receive the upright bolts along the sides, and also the bolts under the bottom. The partitions are of 1-in. clear pine, the joints being made water-tight by fillets in the angles. The ends of the box are let into grooves in the sides and bottom.

The sizes of piping used are, between the solution and the leaching vats 3 in., for leaching 1½ in., and for throwing back the solutions 2½ in. An 8-H. P. portable boiler provides all the steam required; but about 4 H. P. is sufficient for ordinary work.

The Princess Works, Figs. 2, were designed by the authors, in conjunction with Mr. Frank Spencer and Mr. A. A. Bradley, of the Princess Gold Mining Company, and have a capacity of 3 000 tons per month. They are interesting as showing the use of collecting vats where the favorable site allowed of a very compact plant. The fall of the ground averages 4.2 in 100, and as tailings flow readily in a launder with an inclination of 3 in 100, the distance of 750 ft. from the battery brings the launder 9 ft. above the ground level at the works. Two collecting vats, 20 ft. in diameter with 7 ft. staves, are placed on a level with the surface over a tunnel lined with masonry. A small excavation suffices to place the leaching vats low enough to give a level run from this tunnel to the gangway over them. The tunnel under the leaching vats runs out to the ground level in 120 ft., and consequently the filling and emptying is effected very economically, while the dumping ground for residues is practically unlimited. The three leaching vats are 20 ft. in diameter with 10-ft. staves; the three solution vats are 16 ft. in diameter with 9-ft. staves; and the two zinc boxes are the same as those in use at the Main Reef works. There being a considerable quantity of argillaceous material among the crushed ore, the products of the collecting-vats contain an exceptionally large amount of slime, and some difficulty was experienced at first in draining it; but by introducing during filling an additional supply of clear water at the bottom of the tank and percolating upward through the filter, together with the use of a 1-in. suction-pipe with a fall of 20 ft., attached to the outlet below the filter during drainage, this difficulty has been successfully overcome. A second filter cloth of jute above the cocoa matting is used to prevent the solid material being drawn by suction through the coarse mesh of the latter material.

The Simmer & Jack works, of a capacity of 15,000 tons per month, form an illustration of a large plant on a bad site, the ground being nearly flat, the spaces for residues being limited, and the tailings to be treated being scattered about, a part amounting to 40,000 tons being cut off from the works by the Netherlands Railway track. There is a small culvert under the railway, which was formerly used to run the tailings from the Simmer battery to the dams, and which is now utilized for feeding the collecting vats from the battery. As no fall was available it was necessary to lift the tailings or the residues, and rock being struck within a foot of the surface, it was decided to place the leaching vats on a line of stone miers with the solution vats and shed alongside, as shown in Figs. 3. A double gangway runs over the vats for filling with inclined platforms carried on trestles at each end. The bulk of the material originally purchased lay at the south end of the works, and that incline was built first while a hauling engine was placed at the north end. A downward slope from north to south was given to the gangway over the vats to facilitate the return of the empty trucks. The inclines at the north



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adopted for using this process can perhaps best be understood by taking up the description of different plants.

The Main Reef Works, built in April, 1893, were designed to treat 7,000 tons per month of tailings purchased from several companies in the neighborhood, some of the material being carried over two miles. As will be seen from Figs. 1, there are six leaching vats, each 26 ft. inside diameter, with 8-ft. staves, and holding 135 tons, estimated at 26 cu. ft. per ton. There are also four solution vats, 20 ft. in diameter with 9-ft. 6-in. staves, each holding 105 tons, and four zinc boxes for precipitation, each 18 ft. long and 2 ft. 6 in. wide by 2 ft. 3 in. deep. The amount of solution passing through each box per hour is about 5½ tons. The section on A.A., Figs. 1, shows the excavation necessary to give the relative levels arranged so that the solutions gravitate to the leaching vats, and through the zinc boxes into small sumps sunk below the floor. From these sumps, two 5-in. steam pumps and two 4-in. donkey pumps lift them back to the solution tanks, thus completing the cycle of operations.

This plant treats material under two separate contracts—hence the necessity for four solution tanks, in order to keep two strong solutions and two weak solutions quite separate; and hence also the necessity for four zinc boxes, in order to keep the precipitated gold separate, this being

* Abstract of paper in "Proceedings" of the British Institution of Civil Engineers.

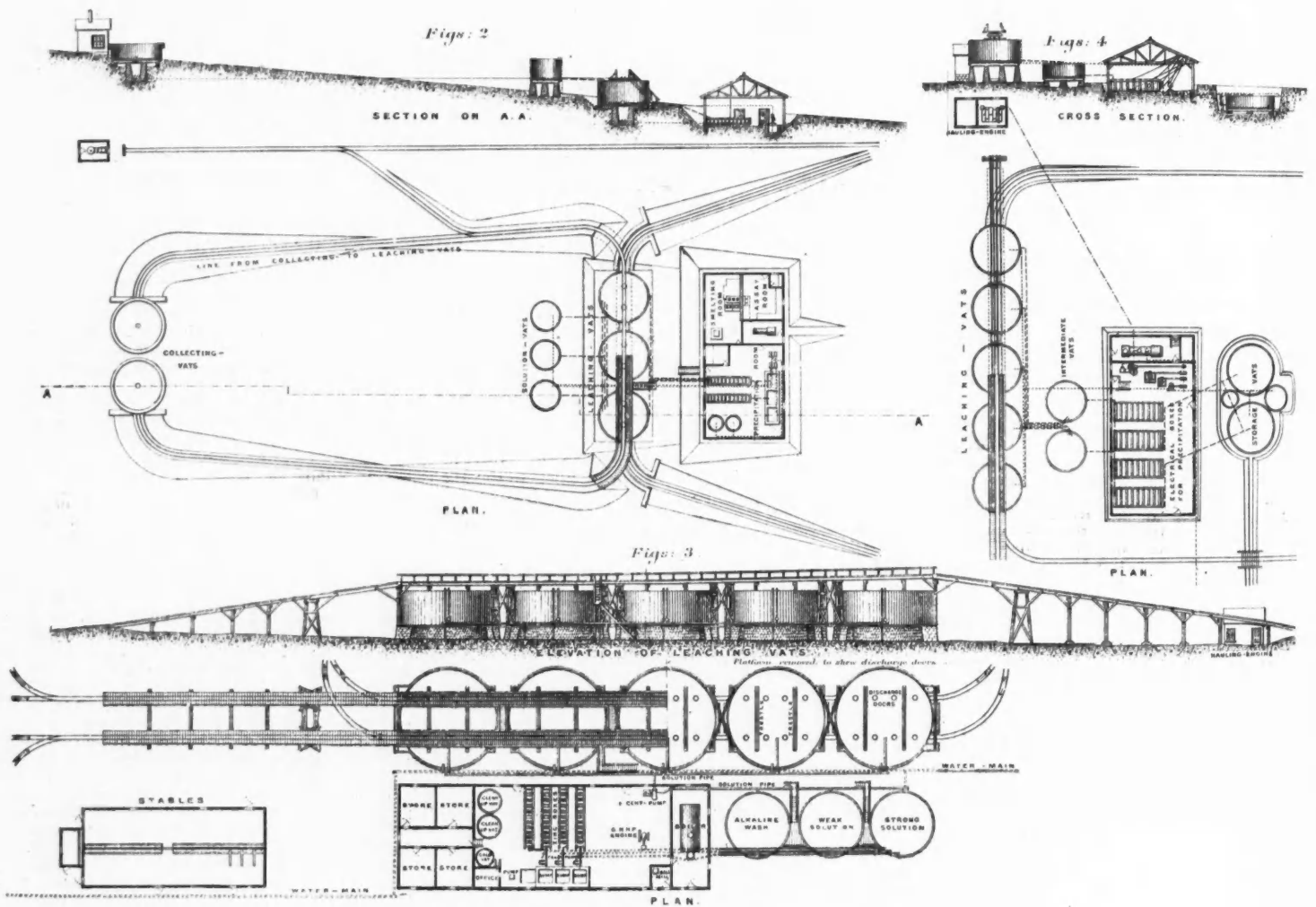
end, added afterward, are worked by the same engine, sometimes one line being worked and sometimes the other. When being pulled from the north end the empty trucks have to run on an upward slope on the platform, but as they are pulled back by the engine this is no objection. The leaching tanks are the largest wooden tanks on the Rand gold-fields, each holding 600 tons, being 40 ft. in diameter, with 14-ft. staves, the staves as well as the bottom being of 9 in. \times 3 in. material.

Each vat has eight discharge doors disposed as follows: The center line is laid down and the semicircle on each side of it is divided into two equal areas by a line parallel to the center line, which is therefore at a distance of two-fifths of the radius from it. The two lines so obtained give the center lines of the two rows of doors, and therefore of the two tunnels through the masonry piers. The semicircle is then divided lengthwise into four equal areas, and the center of gravity of each is the proper position for a door. In practice the points so obtained are altered slightly to make the openings equidistant. Plans and section of a discharge door are shown in Figs. 6. A circular hole, 16 in. in diameter, is cut in the tank bottom: above this is placed a flanged tube of the same diameter, and 7 in. high, and below the wood a cast flange with a turned face on the under side of it. The two flanges are bolted together through the wood. A bolt rests on snugs cast on the tube and passes through a central hole in the cover, which is screwed up in place by a nut. The tube is then filled with waste sand and a slab of well-worked clay pressed down over the top of it. As it is dangerous to dig a small hole down

in diameter with 6-ft. 6-in. staves, and one 7 ft. \times 4 ft., are provided for use in cleaning up the gold.

When cleaning up the gold, the cyanide liquor in the zinc boxes is first displaced by clean water. The zinc is then removed, being first carefully washed in the box, thus allowing all fine zinc and gold to fall to the bottom; the greater part of the water is then pumped into the two 9-ft. vats, to allow of the settlement of any fine gold which may be brought away with it. The remaining water is pumped into the smallest vat, leaving at the bottom of each compartment a quantity of precipitated gold, mixed with zinc in fine powder and small fragments. The mixture is carefully scraped and mopped up, and is washed through a fine screen into the small clean-up vat, the object of the screen being to eliminate the coarse pieces of zinc and any rubbish. A few pounds of alum are added to the small vat, and its contents are allowed between 24 and 48 hours to settle. Then the water is carefully decanted off until the slime begins to come with it. The remaining pulp, of water, gold and zinc, is run into iron drums and sent to the smelting department, where it is first roasted in a special calcining furnace to oxidize the zinc, after which the roasted material is smelted in the ordinary way.

The special furnace for roasting slimes, shown in Fig. 7, is a combined reverberatory and muffle furnace. There is a firebox at one end, a cast-iron hearth in the middle on which the material lies, and an exit flue at the other end. The fire-bridge is built in two parts, with a passage between them, leading to flues below the cast-iron plate, so that part of the



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through 12 ft. of sand, the difficulty is obviated by the use of removable slotted tubes in short lengths of 2 ft. which are placed above half the doors reaching to about 6 ft. from the top of the tank. The tank is then ready for filling, which takes usually about ten hours. It can be emptied in nine hours by 16 Kaffirs working inside, with 20 mules, trucks and drivers, on a discharging line. The three solution-vats are each 26 ft. in diameter, with 15-ft. staves, and are constructed in the manner previously described. There are four zinc boxes, each 24 ft. long, 3 ft. wide, and 2 ft. 3 in. deep, constructed similarly to those at the Main Reef works. One 4-in. centrifugal pump throws all the solution from the storage tanks to the leaching vats. From the latter it runs through the zinc boxes into cement-lined brick sumps, the top of which are level with the tops of the zinc boxes. A 2-in. centrifugal pump is connected to each sump and kept working. It is placed so low that when the sump is nearly full, the pump is filled up, and so automatically starts pumping, which it continues until the sump is empty. A very small pipe connected to the top of the case of the pump and overflowing into the sump renders the action more certain, by allowing the air to escape. A 6-H. P. engine drives the four centrifugal pumps, in addition to two lathes for producing zinc turnings for precipitation, and a small ball mill for grinding lime. This engine, together with one 8, one 10, and one 12-H. P. hauling engine, is fed by one 60-H. P. return-tube boiler. Two small vats, 9 ft.

heat and products of combustion are deflected and pass under the plate, while the remainder passes over it with plenty of air, thus effecting the oxidation of nearly all the zinc.

The last example for illustration is the cyanide works of the Worcester Gold Mining Company, Fig. 4, where the electrical process of Messrs. Siemens & Halske was first introduced on a commercial scale by the Rand Central Ore Reduction Company under the supervision of Mr. A. von Geruet. There are five leaching vats placed on a row of stone piers with a single tunnel beneath. Each vat is 20 ft. in diameter, with 10-ft. staves, and is of 100 tons capacity. Between the vats and the precipitation boxes there are placed two tanks, 16 ft. in diameter, with 6-ft. staves, forming two intermediate reservoirs, in order to enable the flow through the precipitation boxes to be kept constant, a matter which is very important. A better method now being introduced to secure the even flow, is to pump all the solution into a small raised tank, provided with an overflow into the intermediate tank, and a delivery pipe to the precipitation boxes. The small tank is kept always full to overflowing, so that it delivers under a constant head. In an excavation beyond the boxes there are two storage tanks, 20 ft. in diameter, with 6 ft. staves, from whence the solutions are returned to the leaching vats.

Two collecting vats, 20 ft. in diameter, with 8-ft. staves, are installed and receive the tailings from the 25-stamp battery of the Worcester Gold

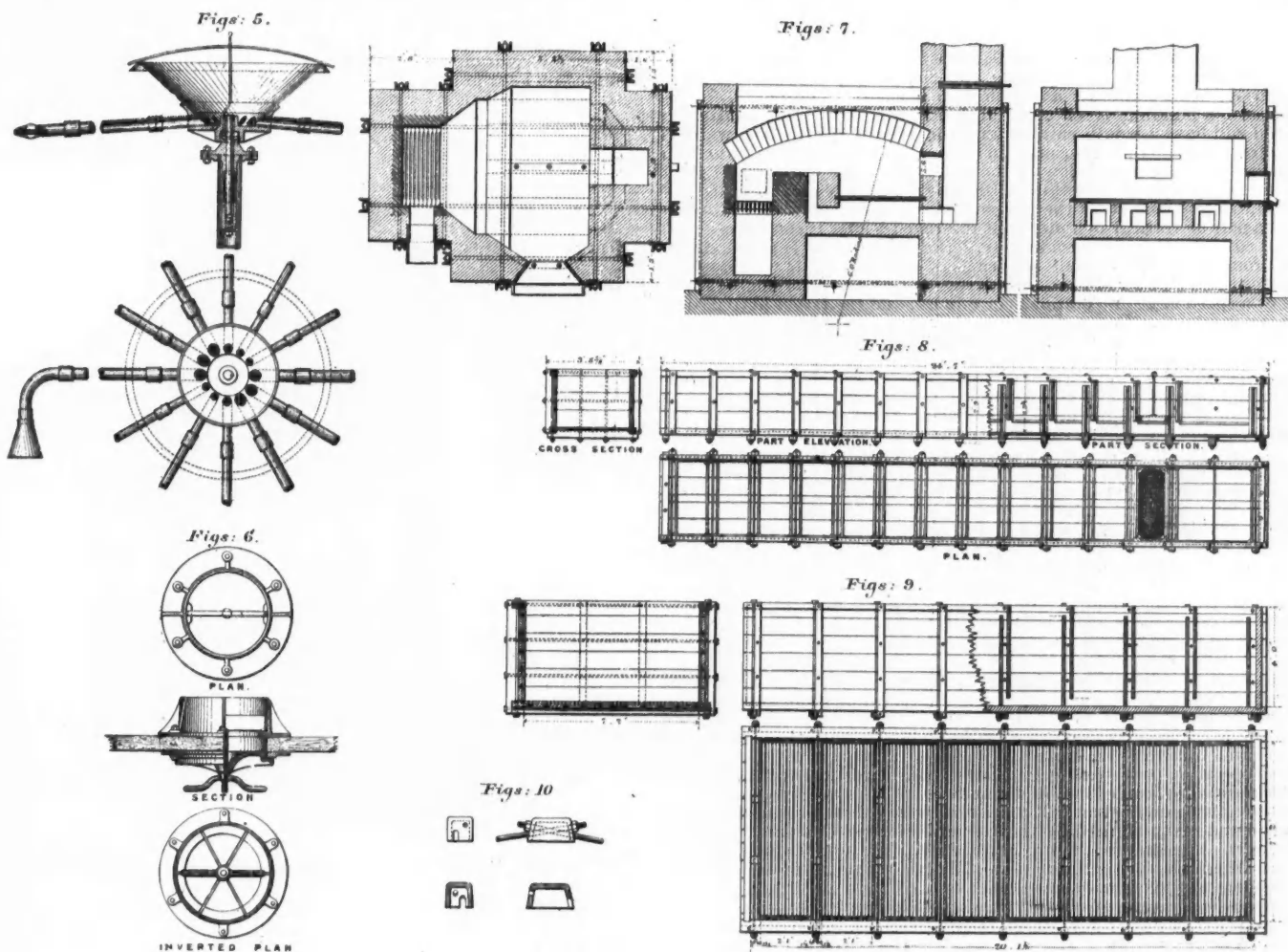
Mining Company. There are four electrical precipitation boxes, the construction of which is shown in Figs. 9. They are 18 ft. long, 7 ft. wide and 4 ft. deep. Each contains 89 iron-plate anodes, 7 ft. x 3 ft. x 1/4-in. (cased in canvas to retain the small quantity of Prussian blue produced), and 88 cathodes of lead-foil stretched on wires fixed in a wooden frame. Each frame contains three strips, 3 ft. x 2 ft., so that, counting the double surface of each lead sheet, there are altogether about 3,000 sq. ft. of cathode surface, the current density being 0.05 ampere per square foot. The boxes are made of 3-in. material throughout, with stiffening pieces across the sides and bottom. The divisions are of wood or are formed by raising some of the iron plates a little above the level of the liquid, while others are placed down on the bottom, the joints being made watertight by wooden fillets caulked with hemp packing. In cleaning up the gold by this process the frames are taken out singly, and the lead-foil is removed and replaced by fresh lead-foil when sufficient gold has been precipitated on it. All that is necessary afterward is to smelt the lead and finally cupel it, thereby obtaining clean gold, alloyed, however, with 10% of silver.

A 20-H. P. semi-portable boiler supplies steam for hauling, pumping, precipitation and lighting, supplying a 10-H. P. hauling engine and an 8-H. P. horizontal engine which drives a Siemens-Halske dynamo, giving 300 amperes at 10 volts, a small dynamo for lighting and a 4-in. centrif-

is therefore important to prevent such lumps from entering the vat in a dry state.

By ploughing, harrowing and shoveling through standing screens, dry slimes have been brought to fine powder, and, by mixing sparingly in the vats with plenty of sand, have been successfully treated so far as extraction is concerned; but the cost of this treatment is large. This plan was followed by the introduction of a disintegrator designed and manufactured, principally of wrought iron, on the spot. It has two disks studded with strong steel pins arranged in concentric circles. One disk is fixed, while the other rotates, and the space between them is closed by a circular casing attached to the rim of the fixed disk, with a hopper at the top and an opening at the bottom leading to a bucket elevator. A larger disintegrator, manufactured by the Krupp Grusonwerk Company, of Magdeburg, has also been used, in which there are two cages revolving in opposite directions within a stationary casing. When the ratio of the slime to the sand is small, the action of the disintegrator, with the subsequent manipulation for transport to the vats, ensures a good leachable product without the use of a screen, but with a large ratio of slime to sand the product is almost unleachable.

For these reasons the authors, in conjunction with Captain Mein, worked out a system of treatment of the tailings direct from batteries by catching them in what are now called "collecting vats." The essential



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ugal pump. Only 4 H. P. is consumed in precipitating 100 tons of solution in 24 hours.

PREPARATION OF MATERIAL.

It has been customary from almost the commencement of mining in the Rand district, after passing the battery-pulp over amalgamated plates, to run it into large shallow reservoirs, formed generally on a hillside by an earthen dam, with an overflow outlet for the water to escape after being cleared by the settlement of the sand and slime in suspension, and of sufficient area to effect such settlement. This arrangement, known as the "tailings-dam," has the following results: The heavier grains of sand are deposited first near the inlet of the dam, then the lighter particles in fairly regular sequence, and finally the finest slimes, which settle in the pond of comparatively still water on the side of the reservoir near the outlet. After the dam has been filled and drained dry, in some parts clean coarse sand is found alone, then usually finer sand with clearly marked layers of slime, and almost invariably the lower side is a solid mass of settled slime showing the horizontal stratification due to its method of deposition, with sometimes thin layers of sand interposed. Much of this slime possesses the plastic properties of clay and is consequently unleachable, but it has further disadvantages. If lumps of dry slime are treated with sand, the solution, as it dissolves gold from the sand, soaks into the dry slime lumps and remains there after the rest of the material has been drained dry. Consequently it is a common occurrence for slime lumps to assay higher after treatment than before, and it

advantages of these are a good distribution of the pulp over the whole area of the vat, a steady outflow over the whole periphery of the vat, and an easy means of transfer of the collected product to the leaching vats. Wooden vats are usually fitted with filters and bottom-discharge doors, and having a trough fixed round the top to catch the peripheral overflow and deliver it into launders leading to the slime-pits. The best form of distributor, Fig. 5, consists of a central casting, carrying a conical receiving hopper and a number of radial pipes, keyed on to a vertical spindle, which bears on a slightly convex steel pin in the bottom of a second casting bored to fit the spindle. Coarse wire screening is fixed over the hopper to keep stones and rubbish from entering the pipes. The pipes are of different lengths, and each is fitted with a bend in order to produce automatic revolution of the apparatus, with a flattened nozzle to spread the pulp into a wide stream. The pulp is consequently delivered in a number of concentric circles, as many as are desired, the object being to obtain a uniform mixture of the material in every part of the tank, because with great uniformity a large part of the slimes can be caught without obtaining an unleachable product, more especially when the product is transferred to another vat for treatment.

The gain by transfer is twofold, a better mixture being secured by shoveling into trucks and tipping; while the leaching-vat is filled with a light, porous and quickly leached material instead of a closely packed mass through which solutions can run but slowly. The following sizes have been found in practice to be effective, with the usual character of

clean quartz rock free from magnesium silicate: For 25 stamps, 20 ft. diameter; for 50 stamps, 24 ft. diameter; for 100 stamps, 32 ft. diameter.

The depth of a vat does not appear to be of great importance, depending chiefly on the available fall in each case. For exceptionally slimy material, vats of smaller diameters must be used.

The treatment of slimes is a question of importance, as at present there are many hundreds of thousands of tons of unleachable material lying useless on the hands of various companies on the Witwatersrand. A brief account of the trials already made may serve to prevent waste of time on methods which have already proved unsuitable. The slimes have been made into bricks, which, after being burned to render them porous, were broken up into small pieces and treated in the same way as sand; but the cost was too great and the method was abandoned. Another method consists of treating the material in barrels or in vessels with agitators, and extracting the gold-bearing solutions by filter-presses. This method has proved successful, but its commercial value has yet to be demonstrated. The only process which has yet produced economical results is that of treating the slimes in vessels with agitators, alternately agitating and allowing the slimes to settle, and separating the solution by decantation after each settling.

AN OREGON ELECTRIC TRANSMISSION PLANT.

A portion of the water power of the Falls of the Willamette River at Oregon City, 12 miles from Portland, Ore., has long been utilized for electric lighting and power. The Portland General Electric Company has extended this work by the construction of a 3,200 H. P. generating station. This is one-quarter of the ultimate capacity of the plant as designed, foundations being put in for a station with 12,800 H. P. output.

The station building is of concrete, stone, iron and brick, and when finished will have a length parallel with the river of 364 ft. The water is taken from the canal, led through an extensive hydraulic installation and discharged into the river below on the other side. The water-wheel plant is from the works of the Stillwell-Bierce & Smith-Vaile Company, of Dayton, O., and consists at the present time of three units, each consisting of a pair of vertical cylinder gate improved Victor turbine wheels, 42 in. and 60 in. in diameter respectively. The larger wheel is an auxiliary to be brought into service only at periods of excessive high water, which the records show occur about once in every five years. The smaller wheel runs at a speed of 200 revolutions per minute, and the larger at 100 revolutions per minute. Both turbines are set at the same level and each carries a pulley; that of the 42-in. wheel being fixed to the generator shaft. When the large wheel is in operation the two pulleys are belted together, the smaller wheel is disconnected and the large wheel drives the generator at a uniform speed of 200 revolutions. When the smaller turbine is operated alone the belt lies upon a shelf surrounding the pulleys.

The weight of the vertical shaft with the armature is about 33,500 lbs., and to carry this a system of extra bearings is introduced, one of the ring thrust type and the other a hydraulic oil bearing, both supplementing the ring bearings on the armature shaft. They are enclosed in cases filled with oil delivered by hydraulic pressure, and are surrounded by water jackets. The length of the generator shaft is 29 ft., and it is 8½ in. in diameter. It is not a continuation of the shaft of the wheel, but is coupled to it by means of a disc coupling, which allows of a certain free movement up and down of the generator shaft. The shaft of the 60-in. wheel runs from the coupling to a bearing set in the floor of the station. Both wheels in each section are controlled by hand-wheels and both are regulated by the same governor. The belt tightener is also controlled from either floor by a hand wheel.

In addition to this turbine equipment, an auxiliary power equipment has been furnished, consisting of a set of pumps, including a hydraulic pump for supplying oil to the thrust bearing cylinders and a duplex water pump to circulate the water in the cylinder water jackets. They are operated by two 15-in. horizontal turbines enclosed in the same flume. For the operation of the exciters a further pair of vertical turbine wheels has been installed, each 48 in. in diameter.

The complete power plant will consist of twenty three-phase generators, designed and manufactured by the General Electric Company, and two direct current generators, acting as exciters. The total capacity of the station, 12,800 H. P., will, therefore, be divided into 20 units, each one independent of the other.

One peculiar feature of the Portland installation is the employment of large blocks of power for street railway service, involving the transformation of the polyphase current sent over the line into direct current for railway circuits. The frequency is 33 cycles per second, selected on account of the large amount of power which it was necessary to convert from alternating into direct current. The current is delivered directly to the line without first passing through transformers, and when it reaches Portland is transformed down to a potential of 400 volts. For the power service the step-down transformers are connected to rotary converters which will deliver a continuous current of 500 volts for street railway service, as well as for the operation of stationary motors.

The generators are of special design and are set upon the floor of the station, the armatures revolving in a horizontal plane, with one bearing at the floor line and another on top of the armature underneath the collector rings. Each generator has twenty laminated poles. The armatures are a little over 7 ft. in diameter and are about 2 ft. high. These armatures are constructed to deliver current directly to the line at a working potential of 6,000 volts, effective pressure. On account of this high voltage, unusual precautions are taken to perfect the insulation of the armature coils to avoid leakage to the ground. The armatures are wound with flat wire, and each of the coils is divided into sections, each section being separately insulated. The thoroughness of the insulation has been tested by subjecting the armatures to a pressure of 15,000 volts, alternating and short circuiting and open circuiting them under full excitation without injury. The field coils are wound for excitation of 500 volts continuous current, and each has been subjected to a test of 5,000 volts alternating. From the dynamos the leads are run to floor connectors and pass underneath the floor to the switchboard.

The exciters, each having 250 kilowatts capacity, are set up to allow of the armature revolving in a horizontal plane with one bearing only at the floor line. The high tension panel switchboards are built of native

marble. Each panel carries a double-pole main switch for the high potential circuit and a double-pole double-throw switch for the exciting circuits. It also carries a rheostat for the control of the excitation of each machine, and a single-throw switch opening the circuit. In addition the board carries a current indicator for each line, and one for the exciting circuit, and a potential indicator with station transformer placed at the back. The upper part of each panel consists of a set of plug connections for coupling the machines in parallel, or for direct line connections from each generator. The exciter switchboard is separate.

From the generators the current passes directly to the line through the switchboard. The line is 14.3 miles long, a separate circuit being installed for each machine. It passes through an undulating country, following the course of the Willamette River as closely as possible. The poles upon which the three-phase wires are strung also carry a number of wires for the 5,000-volt continuous arc current from the old transmission station, as well as the wires over which the old system of lighting with high frequency 5,000-volt alternating current is effected. The loss in the long distance transmission line is calculated at full load at about 11%.

The distributing sub-station is a two-story building, covering a space of 40 ft. x 100 ft. The lower floor is divided into three rooms, one containing the transformers, the second the rotary converters, the other being used for a repair shop, lamp and meter room. The upper story of the building is occupied by the offices. In the transformation room at present are the necessary transformers for the three units already installed—45 transformers in all. The receiving end of each line is connected to a bank of 15 transformers per generator, five being placed between each pair of wires of the three-phase system. The transformers are mounted on an iron rack five transformers high and three wide, and foundations are already laid for six additional units. Each set of five transform-

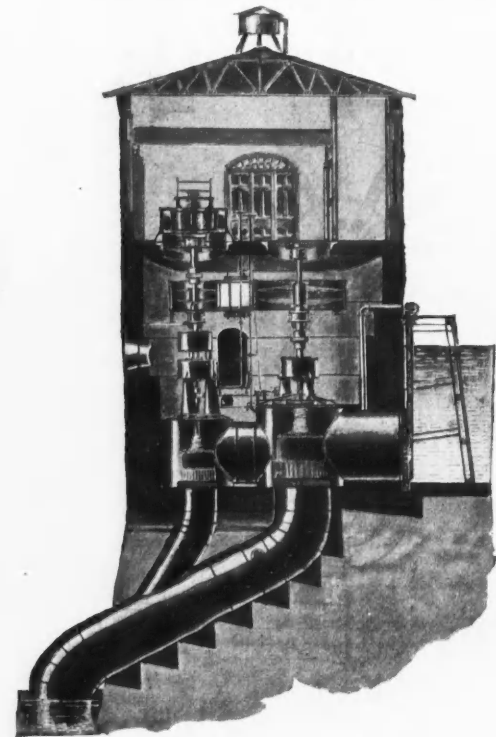


FIG. 2.—SECTION THROUGH THE STATION.

ers is connected to the primaries in series and to the secondaries in parallels. The transformers regulate at a little over 1% variation of the secondary from no load to full load. The transformers are of the standard General Electric sub-station type, having numerous air passages between successive bunches of iron lamina and between the coils so that they may be cooled by artificial ventilation. The distribution of light from the secondaries is effected on the Edison four-wire system, allowing the operation of synchronous and induction motors from the lighting mains. The four-wire system is worked at 1,000 volts between wires.

The direct current for the railway service is obtained by conversion from the three-phase alternating current, by means of rotary transformers. Two of these are at present installed in the sub-station, and space has been left for an additional three. The capacity of each converter is 500-H. P. delivered to the bus-bars of the continuous current switchboard.

The long distance transmission lines, for railway service, as in the case of the lighting circuits, are connected to step-down transformers, transforming the current from 6,000 volts on the line to 400 volts at the secondaries. The secondaries are connected to the three collector rings on one side and the current is thus brought into the armature of the rotary converter. The alternating current at 400 volts is then converted in this machine into direct current at 500 volts at no load and 550 volts at full load delivered from the commutator side. The rotary converters are arranged for self-regulation, the voltage on the direct current side compounding with the same regularity as that found in direct current dynamos despite the varying losses on the long distance line and the varying armature reaction in the rotary converter. The shaft of the rotary converter is extended 12 in. beyond the bearing of the alternating current side to take a small pulley from which any small machine or an arc dynamo may be driven. From the rotary converters the wires are taken to the power switchboards.

Continuous current is furnished to the railways and to the stationary motors already installed, but new motor installations will be made with the three-phase motors, which will be run straight from the three-phase switchboard, in parallel with the rotary transformer.

The direct railway current will be carried to the East Side station by means of cables under the Willamette River, and this distribution will reach as far as Milwaukee.

The loop from Oregon City to Portland and back will thus be as follows: Beginning at Oregon City with 33 cycle three-phase current at 6,000 volts, 143 miles will be traversed as far as Portland; the current will then be transformed to 400 volts, alternating and passing through a rotary converter; issue therefrom at 600 volts continuous, which will be transmitted eight miles to Milwaukee and connect with the continuous current from Oregon City.

The plant, when finished, will be one of the largest long distance transmission plants in the world. Its satisfactory operation so far shows the effectiveness and feasibility of the three-phase transmission system for general service.

SOME NEW RUSSIAN STEEL WORKS.*

The very heavy requirements of the Siberian Railway for rails and other material have given a great impetus to the Russian iron industry. Among the new establishments which this vast undertaking has called into life is the Polowzew rail rolling mill, at Bogoslawski, in the Government of Perm. The Bogoslawski mining district possesses the advantages of excellent deposits of iron ore, extensive woods and navigable rivers, and consequently a cheap and convenient means of transport to the interior of Siberia. The iron works in question have been completed in a comparatively short time, although they are in every respect up to date. The installation comprises four charcoal blast furnaces, each of which has a capacity of some 30 to 35 tons of pig iron. The iron ore used contains

some distance from Bogoslawski, but belonging to the same company, are being materially enlarged, the extensions comprising two Siemens-Martin furnaces of 10 tons each, four puddle furnaces, one medium and one fine rolling mill, an engineering shop of considerable dimensions, etc.

The whole of the plans have been prepared and the work has been executed by Russian engineers and men, a staff of about 3,000 men having been employed in the construction. The bulk of the machinery, with the exception of the boilers and blowers, has, however, been imported from abroad, because the Russian manufacturers are hardly yet in a position to deliver such machinery. The mill engine, the reversing rolling mill, the medium and fine rolling mill, with engines; the saws, the ingot-shearing machine, a steam hammer of 2½ tons, the hydraulic machinery for handling the ingots, the cranes, etc., have been supplied by the Markischen Maschinenbau Anstalt, Wetter-Ruhr, Germany; the three-high rolling mill, with saws, steam engine for the feeding table, feeding table, etc., were furnished by the Duisburger Maschinenbau Actiengesellschaft, Duisburg, Germany; the steam engine for the three-high rolling mill, the hydraulic cranes and lifts, the force pumps, the accumulators, the pumps for feeding the boilers, the traveling steam cranes, etc., were supplied by the John Cockerill Company, Limited, Seraing, Belgium; five steam engines of 40 to 50 H. P. were obtained from G. Kuhn, Stuttgart-Berg, Germany. The cranes for the foundry and the caliber rollers have been supplied by A. Delattre & Co., Ferrière la Grande, Maubiege, France, and the ventilators have come from Farcot, Paris. The electric light plant came from the General Electric Company, Berlin, and the machine tools from B. Schiess, Dusseldorf.

Mining Progress in Bohemia.—Considerable progress has recently been made in the mining industry in Bohemia, and particularly in the brown coal districts, where the growth of manufactures has caused an increased demand for fuel, according to the London "Mining World." Besides

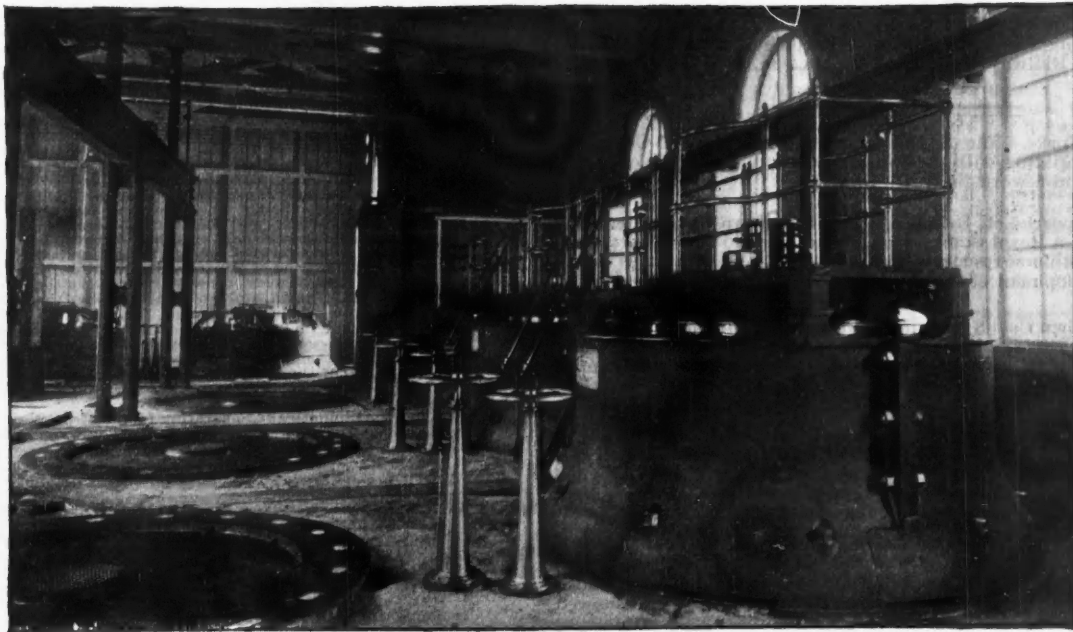


FIG. 1.—INTERIOR OF STATION, SHOWING THREE-PHASE GENERATORS.

about 90% oxide of iron, 0.57% oxide of manganese, and 0.04% of phosphorus. For the transformation of the pig iron into steel, there are four Siemens-Martin furnaces, each with a capacity of 15 tons, and with generators for wood and peat, traveling steam cranes, hydraulic lifts and cranes for the loading of the wagons, etc. Ingots are cast of 1½ tons, for six lengths of rails, heated in four rolling furnaces, and rolled in a reversing mill, with rolls 39.37 in. in diameter and 8 ft. 6.4 in. long. The handling of the reversing steam engine, as well as all the movements of the rolling mill, are done by hydraulic machinery. When the ingot has been partly rolled, it is cut in two pieces by a shearing machine, and heated in a Siemens furnace; the divided ingot is then passed through a three-high rolling mill of Erdmann's system, with rolls 750 millimeters (29.53 in.) in diameter and 2.100 meters (6 ft. 10.7 in.) in length, and rolled into rails, which are then cut by two pendulum saws, having been fed on to a rolling table of about 170 ft. in length. The further treatment of the rails is effected by three double straightening presses, four milling and four rail-drilling machines. The steam for the engines is generated by 16 tubular boilers installed in a separate building; the boilers have each 150 square meters (1,614 sq. ft.) heating surface. Two steam pumps on the bank of the river supply the works with the requisite quantity of water, and at a distance of some 1,500 ft from the river are two reservoirs and a water tower. The steam engine for the three-high rolling mill has a cylinder 1.250 meters (49.21 in.) in diameter and 1.500 meters (59 in.) stroke, and a flywheel of 60 tons. The requisite fire-proof material for the furnaces, etc., is supplied from a special manufactory capable of turning out a million bricks a year.

In addition to the rolling mill, there is a foundry with three cupolas, four revolving and one traveling crane, besides an engineering shop well fitted with modern machine tools. Apart from the factory buildings, there are a large colony of houses for the officials and 120 houses for married workmen, a railway station, an infirmary, a fire brigade depot, storehouses, etc.

In addition to the foregoing, the Saswinski Iron Works, situated at

various smaller mines of brown coal in the northwest of the province, may be mentioned a large pit worked by a Vienna company that has just been equipped with new modern appliances on an extensive scale. The same company has purchased two new coal-fields. A second company is also about to open a new mine, and the proprietors of a third coal-field intend to turn their business into a company, with a capital of 7,000,000 fl. Preparations are being made near Kaaden for working beds of kaolin, while a deposit of feldspar which has been discovered at Proschwitz will also be exploited. Serious efforts are now being made to reopen the gold and silver mines for which Bohemia was at one time celebrated.

Desulphurization of Iron.—The London "Iron and Coal Trades Review" states that Dr. Baxeres Torres, who has been working for a long time in the laboratory of the Technical Association of London, has constructed a special converter from which he has produced iron giving, when tested by Kirkaldy, results satisfactory enough to create interest. The furnace combines some of the features of the reverberatory furnace and the Bessemer converter. It is lined with baryta, which at a high temperature is said to decompose the graphitic carbon and silicon found in ordinary gray pig iron. The furnace in use at the laboratory, which produces about 2 cwt., taking three hours to each charge, and using Cleveland iron with 1½% of phosphorus and 1% of sulphur, produced bars regarding which Messrs. Kirkaldy made the following report: Bar 1 in. × 1½ in. × 13½ in. long of 0.564 in. area, turned, gave an ultimate stress of 9.39 tons to the square inch. The second bar, 15 in. long, of the same dimensions, gave an ultimate stress of 10.99 tons per square inch.

The Fusing Point of Alloys.—A gold medal or a premium of 150 florins is being offered by the Dutch Society of Science at Haarlem for a paper on the equilibrium phenomena of one or more alloys of two or three metals ranging from the melting point of the metal most difficult to fuse to the lowest temperature at which the alloy will continue to remain in a liquid state.

*Abstract of article in London "Engineering."

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

SUPREME COURT OF CALIFORNIA.

Mining Claim.—Independent of the acts of Congress providing a mode for the acquisition of title to the mineral lands of the United States, the term "mining claim" has always been applied to a portion of such lands to which the right of exclusive possession and enjoyment, by a private person or persons, has been asserted by actual occupation, or by compliance with local mining laws, or rules, or customs. The words "mining claim" as used in the law have no reference to the different stages in the acquisition of the government title. In the opinion of the Court it includes all mines, whether the title is inchoate, as in the case of a mining claim in its strict sense or perfect as in the case of a fee simple title.—*Morse vs. De Adro*, 40 Pacific Reporter, 1018.

UNITED STATES CIRCUIT COURT, DISTRICT OF MONTANA.

Placer Patents.—The fact that a placer claim for which a patent has been issued included at the time of its location part of a lode claim, which had not then been forfeited, is a matter which cannot be considered in a collateral attack upon the placer patent, by one who has made a subsequent vein location upon part of the same land after the issuance of the placer patent. The presumptions are all in favor of a placer patent as against a lode claim located subsequent to its issuance upon part of the same ground; and where the patentee files an adverse claim against the application for patent to the lode, and brings an action in support of such claim, the burden is upon the lode claimant to overcome these presumptions, and to show by clear and convincing proofs that the vein on which the lode claim was located was a known vein at the time of the application for the placer patent. In order that a vein or lode, included within the limits of a placer patent, shall be excluded from the operation of the placer patent, under the United States Statutes, so as to be subject to subsequent location, such vein must have been known, at the date of the application for the placer patent, to exist and to contain minerals in such quantity, and of such value and quality, as to justify, under the circumstances then existing, expenditures for the purpose of extracting them.—*Montana Central Railway Company vs. Mogeon*, 68 Federal Reporter, 811.

Russian Iron Works.—The Saxon Engineering Works, of Chemnitz Germany, are negotiating with the Russian government for the establishment of extensive iron works in South Russia.

The Mineral Resources of Bulgaria.—The Bulgarian Government has recently appointed a Royal Commission to inquire into and report upon the extent of the mineral resources of the country, and the steps to be taken for the development of the same.

A Bohemian Brown Coal Syndicate.—Efforts are being made at Aussig, Bohemia, to organize a syndicate of North Bohemian brown-coal merchants. Should the attempt be successful, the syndicate will control about half the total brown-coal production of Bohemia.

German Charcoal Blast Furnaces.—The last charcoal blast furnace in Upper Silesia has lately been blown out. In 1870 there were 17 such furnaces in operation in the district, but on account of the scarcity of wood in the neighborhood and the inability to compete with coke furnaces, the charcoal furnaces have gradually been abandoned.

Imports and Exports of Spain.—The Spanish imports of fuel for the seven months ending July 31st according to the Customs Report included 976,894 tons of coal and 81,637 tons of coke. The imports of coal showed but little difference from the corresponding period last year, but in coke there was a decrease of about one-third. Imports of metals included 11,308 tons of pig iron and castings; 4,855 tons of wrought iron; 11,176 tons of steel, and 1,018 tons of tin plate; all showing a slight decrease from last year.

Exports of minerals from Spain for the seven months are reported as follows, in metric tons.

	1894.	1895.	Changes.
Iron ore.....	3,012,767	2,846,579	D. 196,188
Copper ore.....	350,752	332,251	D. 18,501
Zinc ore.....	20,141	18,195	D. 1,946
Lead ore.....	8,475	4,913	D. 3,562
Salt.....	126,215	126,565	I. 350

Exports of metals this year included 15,271 tons of pig iron, a decrease of 12,919 tons; 18,922 tons of copper, an increase of 795 tons, and 87,034 tons of lead, a decrease of 4,854 tons from last year.

PATENTS RELATING TO MINING AND METALLURGY.

United States.

The following is a list of the patents relating to mining, metallurgy and kindred subjects issued by the United States Patent Office. A copy of the specifications of any of these will be mailed by the Scientific Publishing Company upon receipt of 25 cents.

TUESDAY, OCTOBER 22D, 1895.

- 548,174. **Apparatus for Making Sodium Carbonate.** Joseph A. Bradburn, Syracuse, N. Y. A heater tower of iron cylinders mounted on each other, perforated plates supported horizontally in the tower between the said cylinders, a circular grid raised above the central portion of each plate and resting on the same near its edges, two layers of hollow iron balls lying on each grid, and the outlets and inlets for said tower.
- 548,176. **Magnetic Ore Separator.** Charles G. Buchanan, Brooklyn, N. Y. A revolving drum, devices for feeding ore thereon, relatively stationary magnets within the drum, and an endless belt below the drum with its ore-carrying side within the influence of the magnets.
- 548,177, 548,178 and 548,179. **Stone and Ore Crusher.** Morton G. Bunnell, Chicago, Ill. Assignor to Frederick C. Austin, same place. A crusher having a crushing hopper comprising a pair of independently movable jaws forming one of its sides and connected together by links. Three different arrangements of cam and links are covered.
- 548,188. **Apparatus for Casting and Handling Pig Metal.** Harry R. Geer, Johnstown, Pa., assignor of one-half to Frank S. Hyde, same place. Oppositely located wheeled truck beams, upright supporting frames secured on said truck beams, upper and lower pairs of track rails fitted within

said upright supporting frames and disposed at right angles to the truck beams, oppositely located chain wheels carried by the upright frames, an endless-chain engaging with the chain wheels and carrying rollers traveling on the track rails, and an endless series of chills or molds fitted on said chain.

- 548,233. **Machine for Concentrating Gold.** Charles Sill and William Wright, New York, N. Y. said Sill Assignor by mesne assignments, to Charles Coo- well, Woodside, N. Y. A table, a concentrating drum journaled above the same, rollers having longitudinal movement over the table in advance of the concentrating drum, and a direct operative connection between the drum and the rollers to cause the latter to reciprocate on the table when the drum is rotated.
- 548,242. **Dredging Machine.** George W. Wood and Hugh B. Alexander, Chicago, Ill. Combination with a suction pipe, having a telescopic extension, of endwise moving bars, to which said extension is secured, frame timbers, means for loosely retaining said bars in relation to said timbers to permit of an endwise movement, a sump, supported on the ends of said bars and secured to the suction end of the suction pipe.
- 548,265. **Hydrostatic Electric Amalgamator.** James D. McKinnon, Portland, Ore. A horizontal frame, formed in one piece and provided with a set of transverse rollers having their bottoms arranged in the same plane and also having inclined or upwardly diverging side walls and adapted to contain mercury.
- 548,287. **Brick Machine.** Henry C. Barker, St. Louis, Mo., Assignor to the Stand- ard Foundry Company. Combination of upper and lower plungers, levers connected to the plungers, a gear wheel, a pitman, a link connection between the gear wheel and the levers, a charger, a hook pivoted to the charger and adapted to be engaged by a projection on the pitman, and a cross-piece having an adjustable plate.
- 548,299. **Dry-Washing Machine and Concentrator.** George O. Dickinson and Rod- erick G. Graves, Butte, Mont. Combination of a suitable frame work, a crank shaft mounted in the cross-beams, and means for transmitting power thereto, a casing divided into a series of compartments and having a common lid or cover for each of said compartments and a discharge- outlet beneath said lid or cover, screens adapted to carry raggings in each of said compartments upon which the ore to be treated is placed, a series of bellows, one for each compartment, an air duct leading from the lower part of said casing in which the bellows are mounted, to an opening in the lid or cover, and plenum connecting bellows and the crank.
- 548,303. **Apparatus for Concentrating Sulphuric Acid.** Eli Dyson, Manchester, England. Combination with a furnace, flues and inclined chamber of a number of concentrating vessels constructed with an outer shell or casing of cast iron and an inner casing or lining of vitreous material.
- 548,324. **Rock-Drill.** Horace B. McCabe, Lakewood, Colo. Combination with the chuck, the bit and suitable operating cams, of a hammer com- prising two independently operated parts, one being hollow and sur- rounding the other which telescopes therein, and both being always in line with the chuck stem.
- 548,377. **Method of and Apparatus for Purifying and Pulverizing Mica.** Thomas J. Lovett, Chicago, Ill., Assignor to the Allerton Lubricant Company, same place. The method consists in first disintegrating the ore, by subjecting it to the action of rotary beaters, until the mica is reduced to thin flakes and the gritty constituents of the ore are reduced to a degree of fineness greater than that of the mica, and are completely detached therefrom, then, through the medium of an air-blast, subjecting the disintegrated mass to the action of sifting-mechanism.
- 548,383. **Magnetic Separator.** James D. McKinnon, Portland, Ore. Combination of a magnetized cylinder, a non-magnetic belt arranged over the magne- tized cylinder and taking around rollers arranged on opposite sides of the same, a non-magnetic belt arranged beneath and adjacent to the first named belt, and a magnet beneath the second belt.
- 548,391. **Method of Purification of Mineral Oils.** Walter B. Price, San Francisco, Cal. The improvement consists in treating the oil to be purified with strong sulphuric acid, at a temperature above the boiling point of water.
- 548,399. **Air Compressor.** John Stambaugh, Jr., Youngstown, O., assignor to William Tod & Co., same place. In a fluid compressor, the combination, with a compressor cylinder, of a wrist plate, or other oscillating member actuated by the motor of the compressor, a rock shaft mounted on or near the end of the compressor cylinder, a valve controlling a port, or ports, at the end of the compressor cylinder and connected to the rock shaft.
- 548,458. **Means for Automatically Separating Liquids from Natural Gas.** Miron G. Reynolds, Anderson, Ind. A separating pipe or cylinder having a gas and liquid inlet and a gas outlet at one end, a water discharge outlet at or near its opposite end, a diaphragm exterior to said cylinder but whose opposite sides are in communication therewith, and a valve controlling said water discharge.
- 548,496. **Welding Furnace.** Oakes A. Ames, North Easton, Mass. Combination with the firebox having a flame opening near its front end and the heat- ing chamber above the firebox with which said flame opening communi- cates, of the water circulating pipes located in the top and bottom of heating chamber.
- 548,538. **Mechanism for Boring and Drilling Wells.** William L. Harcastle, Laurel Hill, Tenn. An attachment for well drilling machines, consisting of a horizontal ratchet having an opening for a guide-frame, a housing on the frame, spring-pressed clamps therein to engage the cable which lies within the frame, a pawl engaging the horizontal ratchet and operated by a connection from the drill lifting lever, and means for tripping said pawl at suitable intervals to release the ratchet.
- 548,566. **Process of Making White Lead.** John S. McArthur, Glasgow, Scotland. Patented in England May 17, 1894, No. 9655. The process, in which lead oxide is dissolved in a solution of a tartrate of soda or of potash or of a mixture of these alkalies or of the double tartrate known as "Rochelle salt" at or about a boiling temperature, and is subsequently treated with carbonic acid.
- 548,580. **Method of Oxidizing Protosalts of Iron to Persalts.** Norman McCulloch, Glasgow, Scotland. The method of oxidizing ferrous solutions by agitat- ing the iron solution with air in amount at least sufficient to effect the complete oxidation of the iron, and in presence of nitric oxide or nitrogen peroxide, in the proportion of about 2½ parts nitric oxide or nitrogen peroxide per 100 parts of iron to be oxidized.
- 548,595. **Amalgamator.** Alexander C. Rumble, San Francisco, Cal., assignor to the Midas Gold Saving Machinery Company, same place. Combination with a rotatable, inclined amalgamating cylinder, of a discharge regulating plates.
- 548,607. **Rock-Core Drill.** James F. Duggan and Milan C. Bullock, Chicago, Ill. The combination, with a core barrel provided at its lower part with a plurality of internal, inclined ribs or surfaces, of an expandable core lift- ing device provided with a plurality of external, inclined projections.

Great Britain.

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

WEEK ENDING SEPTEMBER 14TH, 1895.

- 17,340 of 1894. G. Love, Durham. Passing molten iron or steel through an inclined revolving cylinder in order to toughen it.
- 17,983 of 1894. T. Pilkington, Vallejo, Cal., U. S. A. Improvements in stamp stem guides.
- 18,592 of 1894. H. L. Sulman and F. L. Teed, London. The use of a mixture of cyanide of potassium and bromide of cyanogen for extracting gold from ores.
- 13,642 of 1895. G. Lansell, Bendigo, Victoria. Raising water from mines by a com- pressed air system.
- 14,029 of 1895. E. A. Uehling, Birmingham, Ala., U. S. A. Treating molten iron with purifying agents which are compressed into the shape of cyl- indrical cores and immersed into the molten metal and revolved.

PERSONAL.

Mr. J. M. Merrill has resigned his position as outside superintendent for the Butte & Boston Mining Company at Butte, Montana.

Captain James Hoatson, for some time past mine superintendent of the Butte & Boston Mining Company at Butte, Montana, resigned on November 1st.

Mr. Joseph W. Pinder, who lately returned from the Ecuador gold fields, has been appointed general manager of El Grupo Mining Company, State of Sonora, Mexico.

Mr. E. A. Walton, of London, England, managing director of the Mines Exploration Syndicate, is now on his way to Cripple Creek, Colo., to examine several properties for the company.

Mr. Mark Smith has been appointed Assistant United States District Attorney for Arizona, and will have charge of several suits which have been begun against mining companies for cutting government timber.

The New York State factory inspector has appointed a deputy who is to exercise the duties of the State mine inspector, which office was abolished by the legislature. Richard King, of Syracuse has been appointed, at a salary of \$1,200.

Mr. F. C. Van Dusen, formerly superintendent of the Stewart Iron Company's coke works near Uniontown, Pa., has gone to Elkhorn, W. Va., as general manager of the Crozier Coal & Coke Company's works at that place.

Mr. James H. Tibbetts, of Amador County, California, for many years engaged in mining on the "mother lode" and on the Comstock, is going to Matabeleland at the request of Mr. John Hays Hammond, to take charge of some claims there. For the past year Mr. Tibbetts has been connected with the California State Mining Bureau.

Mr. Alfred Rickard has retired from the superintendency of the Gold Coin mine of Colorado and goes to New Zealand and then to Western Australia on a six months' tour in the interests of a private syndicate in London. Later he will return to Colorado and resume his professional work. Mr. Rickard will have his headquarters at Coolgardie.

Mr. Carl F. Hesse, the distinguished mining engineer and metallurgist, who for many years has been connected with metallurgical works and mining in several of our Western States, and was recently manager of the Odin gravel mine, of Nevada City, Cal., has accepted an appointment as manager of the Water Trust Mining and Public Crushing Company, of Western Australia, and sails this week, via England, for his post. Mr. Hesse's engagement is for three years.

OBITUARY.

Robert Newell Flanegin died last week at Muncie, Pa., aged 52 years. He was one of the first men in the country to learn the open-hearth process of making steel, and had served a long term of years with the Carnegie Steel Company.

James M. Wilcox, president of the American Cement Company, director of the Lehigh Coal and Navigation Company, and largely identified with other corporate interests, died at his home in Haverford, Pa., on October 23d. He was 71 years old.

Wayne Woodring, manager of the W. P. Rend Coal Company's oil wells, and a prominent citizen of McDonald, Pa., died at that place on October 27th, aged 49. He was one of the best known oil men in Pennsylvania, having been connected with several prominent companies for the past 20 years.

Francis Hinton, for many years manager of the Milwaukee Iron Company, committed suicide in Paris, France, on October 22d. He was born in Milwaukee, Wis., in 1853, and from his 17th year had been in the iron business. He was a director of the Illinois Steel Company, and a large stockholder in the Metropolitan Land & Iron Company, owning the Norrie mine.

Frederick Hubbard, a well-known civil engineer, died at his home in New York City on October 30th. He was born at Hamilton, N. Y., in June, 1817, and was graduated from Hamilton College at Clinton. After he had completed his collegiate studies, he became a civil engineer, and during his life was associated with John B. Jervis, William McAlpin and Edward F. Tracy. Mr. Hubbard was actively engaged in the construction of the New York Central & Hudson River, the Erie, the Michigan Southern and the Northern Indiana Railroads. Mr. Hubbard retired from active life some time ago.

SOCIETIES AND TECHNICAL SCHOOLS.

Mining Society of Nova Scotia.—A general meeting will be held at the rooms of the society in Halifax, on Thursday, November 21st.

Engineers Club of Philadelphia.—A regular meeting was held at the club-house in Philadelphia, October 19th. The secretary exhibited a wall map of Fairmount Park presented to the club by Gen. Russell Thayer, and the club's thanks for the same

were voted. Mr. W. C. Furber opened a general discussion on the "Durability of Iron in Modern Building Construction," and stated that information on this subject was very desirable, as comparatively little was really known about it. He had made some experiments in the way of testing different preparations for preventing rust, but had so far made little real progress. The decay of the supporting frames of the high buildings now growing very common involved problems which need careful consideration. The coverings available at present are different kinds of paint, bituminous coatings and cement. The discussion was continued by Messrs. Rinald, Mills, E. K. Landis, Christy, Schumann, Falkenau, Barr and Webster. Some doubt was brought out as to whether any kind of paint would be a permanent protection to iron, and the general opinion expressed was that until we have gained more experience continued care and watchfulness will be required.

The club has recently started a series of "Practical Talks on Electricity" to be held in the weeks alternating with the regular meetings. On October 26th Mr. Thomas Spencer spoke of electric lighting installations, and an interesting discussion followed.

INDUSTRIAL NOTES.

The Embreeville Furnace, at Embreeville, Tenn., has gone into blast.

The Paxton Rolling Mills, Harrisburg, Pa., are putting in a new electric crane.

The Eagle Iron and Steel Company, at Ironton, O., has its works running full double turn.

The Sunbury Iron Works, Sunbury, Pa., have started up after a long period of idleness.

Belfont Furnace, at Ironton, O., is being overhauled and rebuilt; it will soon be ready to start.

The Wellman Steel Company at Thurlow, Pa., has a number of orders on hand, and is running its works steadily.

The Central Iron Works, Harrisburg, Pa., are full of orders. The Universal mill has been turning out 200 tons of plates a day.

The iron and brass foundries in and about Lawrence, Mass., have agreed to increase their molders' wages to \$2.50 per day.

Sarah Furnace, at Ironton, O., is making about 100 tons a day of Bessemer pig iron. The product is contracted for some time ahead.

The Risdon Iron Works, San Francisco, recently completed a large hoisting engine for the Merced Mines in Mariposa County, California.

Messrs. Caird & Hawksworth are building a new machine shop and foundry in Helena, Mont. They will make mining and milling machinery.

J. F. Parkinson, of Palo Alto, and F. Hall, of San Francisco, have bonded the William Tell and Saddle Rock mines at Sierra City, Cal., and will develop them.

The Ammoniacal Chemical Company, Raleigh, N. C., has bought a tract of land in Moore County, N. C., and purposes putting up a chemical factory there.

The Victoria Furnace Company has put its furnace at Goshen, Va., into blast. The company is putting in two new cylinder ore washers at its plant.

The United States District Court has ordered J. D. Ewen, receiver, to sell the Spathite furnace in Florence, Ala., at public sale on or before November 22d.

The court has authorized Charles F. Wells, receiver of the Linden Steel Company, Pittsburg, to borrow \$70,000 for the purpose of continuing the works in operation.

The Keystone Axle Company has made contracts to build works in Beaver Falls, Pa. They will include an open-hearth steel plant, rolling mill, forge and foundry. The main building will be 80 x 200 ft.

The Stedman Foundry Company at Helena, Mont., has lately completed a 50-ton concentrating plant for J. Garneau, of Wall Spring Creek; also a five-stamp mill for a gold mine in Jefferson County.

It is understood that the Carnegie Steel Company is about to build two more new blast furnaces at Duquesne, near Pittsburg. The furnaces will be alike, 100 ft. high, 22 ft. bosh, and with a capacity of 500 tons.

It is stated that the Bethlehem Iron Works and the Carnegie Steel Company have received invitations to bid on two contracts for Harvey armor plate, one for the Russian and one for the Brazilian Government.

Superintendent Holmes, of the stone quarrying plant at Merrimac, on the Carson River, recently bought a large air compressor from the Savage mine, and a quantity of other machinery for the plant at the quarry.

A third contract for steel beams and other material for the new Boston subway has been awarded to the Pennsylvania Steel Company. Five concerns

competed. The price all around is \$49.88 per ton, and the contract is for about 1,000 tons.

Raycraft Brothers and others at Carson City, Nev., have agreed to sell the Buckeye placer mines, 12 miles from Pine Nut district, to Alvinza Hayward, the Hobart Estate Company and Charles D. Lane. A large amount must be expended to bring water to the mines.

The Union Iron Works, San Francisco, are very busy in all departments. In the foundry and general machine shop an unusual number of large orders are on hand. In the shipbuilding department, besides the work on the battle-ship "Oregon," there are under construction an oil tank steamer of 6,000 bbls. capacity, and 11 steel barges 240 ft. long, to carry 500 tons on 5 ft. draft, for the Amour River in Siberia.

Messrs. Brunner, Mond & Co., the well-known English chemical manufacturers, are said to have concluded negotiations whereby Messrs. Bell Brothers have agreed to hand over to them their ammonia works at Port Clarence. Messrs. Brunner, Mond & Co., it is stated, will take over the concern and commence to develop it in January next, and with this object in view, they have acquired a large tract of land.

The Wilbraham-Baker Blower Co. of Philadelphia, Pa., has placed the order for its new pattern store house with the Berlin Iron Bridge Co. of East Berlin, Conn. The building will be 64 ft. wide and 86 ft. long, one story high, with brick side walls, covered with the Berlin Iron Bridge Company's patent anti-condensation corrugated iron roof covering, and will be absolutely fireproof. The Wilbraham-Baker Blower Co. reports trade as very brisk, and is full of business in all departments.

At a recent meeting of the stockholders of the Frank-Kneeland Machine Company, manufacturers of iron and steel works machinery, held in Pittsburg, the old officers of the concern, Isaac W. Frank, president and general manager, and Edward Kneeland, secretary and treasurer, were re-elected. A resolution was passed at the meeting empowering the officers to add to the machine shop an extension 16 x 100 ft. This, with the additional equipment of machinery, consisting of an 8-ft. planer, 16 ft. boring mill, 10-ft. horizontal boring mill, 3 roll turning lathes, a 20-ton electric traveling crane, additional boiler, engine and generating capacity and other necessary tools to make the plant complete in every detail, will about treble the present capacity. An addition 50 x 100 ft. has just been made to the foundry.

TRADE CATALOGUES.

To the list of catalogues (given in our last issue), of the Walker Manufacturing Company, Cleveland, Ohio, are to be added No. 10, "Street Railway Equipment"; No. 12, "Interurban, Suburban and Elevated Railway Equipment," and No. 11, "Power Generators." The contents are expressed by the titles. No. 11 gives illustrations of a number of motors for street railroad and haulage work.

Henry R. Worthington has issued a special edition of the "General Catalogue" of the Worthington pumping engines, steam pumps and hydraulic machinery, for circulation at the Atlanta Exposition. The company has a large exhibit there, a variety of pumping machinery being shown, while Worthington pumps are used for the water-supply of the grounds and the electric fountains. The catalogue is in the compact form adopted by this company and gives notes on the wide range of hydraulic and pumping machinery which it manufactures.

The Frick Company, Waynesboro, Pa., has just issued new editions of two of its catalogues. The first one is descriptive of the "Eclipse" Corliss engines, manufactured by the company. This includes a number of horizontal and upright patterns, both simple and compound, of all sizes. The illustrations show the details of the engines very fully, and the catalogue gives some useful tables and directions as to the care and adjustment of engines. The second catalogue shows the variety of refrigerating machinery, which is this company's specialty. This catalogue describes and illustrates some very heavy machines, and gives much information about refrigerating and similar work.

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.

In Washington, October 25, the Interstate Commerce Commission announced its decision on claims filed for reparation by shippers, members of the Independent Refiners' Association, of Titusville and

Oil City, Pa., in two cases brought by those associations, one against the Western New York & Pennsylvania and the Lehigh Valley Railroad Companies, and the other against the Western New York & Pennsylvania, the New York, Lake Erie & Western, the Pithburg, the Boston & Maine Railroads, and the Delaware & Hudson Canal Company. These claims were filed under an order of the Commission entered in November, 1892, requiring the defendants to refund to the parties legally entitled thereto, all sums received for the transportation of barrels containing petroleum oil, shipped to New York harbor points, or Boston or Boston rate points, when the use of tank cars had not been open to the shippers of oil. The shipments covered by the commission's award are those sent over any defendant road as initial carrier from Titusville, Oil City, or vicinity, by members of the complaining association between September 3d, 1888, when the practice of charging for carrying barrels containing oil was commenced, and May 15th, 1894, when hearing on the claims was had. The reparation awarded by the commission to various claimants amounts to \$84,984, and the defendant carriers participating in the shipments are held severally liable. In the case of the same association against the Pennsylvania Railroad Company, and the Western New York & Pennsylvania Railroad Company, it appears that the defendants had been able to furnish a large number of tank cars, and that the record did not enable the Commission to determine whether the claims were supported by facts which would bring them within the order of November, 1892. It is held that the remedy of the claimants is a proceeding in the courts, based on the reparation generally awarded by said order.

ARIZONA. Pinal County.

Silver King Mining Company.—A press dispatch from Phoenix states that a true fissure vein, assaying high in native and ruby silver, has been struck in the Silver King mine, which has been idle for several years, and prospecting has mostly been done in levels below 500 ft. The present strike was made at a depth of only 70 ft. No details are published.

CALIFORNIA. Amador County.

(From Our Special Correspondent.)

Jackson Gate.—This mine, owned by San Francisco parties, is located on the "Mother Lode," about one mile north of Jackson, just east of the Kennedy mine. The property consists of 60 acres, about 2,300 ft. on the lode. The croppings are several hundred feet wide in some places. A tunnel run to crosscut the ledge is in 136 ft., 80 ft. in the ledge with no hanging wall in sight. A shaft has been started on the top of the hill, and machinery has been purchased capable of sinking 500 ft. At the 400-ft. level a crosscut will be run. The shaft is now down 80 ft. in the vein at an angle of 60°. Although most of the ore is low grade, some of the sulphurets are rich. The Blue Lakes Water Company's ditch furnishes an ample supply of water for power.

Tri-Mountain.—The Fogus Mining Company of Nevada has entered suit in the United States Circuit Court at San Francisco against H. M. Wolfe, et. al., for possession of the Tri Mountain quartz mine and mill site in Amador County. The property is valued at \$50,000. Besides possession the plaintiffs ask for \$20,000 damages.

Butte County.

(From Our Special Correspondent.)

Banner.—This mine, 5 miles above Oroville on the Feather River, has been examined by J. B. Low, of San Francisco, and a favorable report has been made to the shareholders. The mine under the present management has yielded about \$80,000, an average of \$35 per ton. They will sink to the depth of 1,000 ft., tapping the lode, when the capacity of the mill will be increased to 40 stamps.

Gold Bank.—This mine, on the south fork of the Feather River at Forbestown, is now owned by Crane & Grayson, who have commenced the foundations for an air compressor and other machinery. Development work is being pushed. The tunnel is now in 1,000 ft., and they expect to tap the vein within 200 ft. further.

Del Norte County.

(From Our Special Correspondent.)

The Union, Pride of the West and other copper mines in the Low Divide District, are being reopened after lying idle for the past 30 years. The shaft, drifts and stopes of the Pride of the West have been cleaned out to the depth of 100 ft. The Pride of the North is down 115 ft.

Nevada County.

(From Our Special Correspondent.)

Champion.—This property, an account of whose sale to a French syndicate was published in this journal last week, consists of a group made up of the Champion, Wyoming, Ural, Merrifield, Merrifield Extension, Climax, New Year's, New Year's Extension, Muller, Phillips, Relocation, Bavaria and the Mary Ann claims. The first three have been patented, are considered the most valuable and comprise the option given. They are among the best equipped mines in the State. The ledge is reported to be from 5 to 10 ft. thick, the ore averaging about \$6 free milling with about 6% of sulphurets averaging \$70 per ton.

The improvements consist of a hoisting and pump-

ing plant which cost \$85,000, a 30-stamp mill valued at \$40,000, a 40-stamp mill in process of erection at an outlay of \$50,000 besides an electric lighting plant.

Delaware.—In this mine, a consolidation of the West Harmony and the Tip-Top mines, development work is being carried on by a small force, which will be increased as soon as the channel is reached in the Tip-Top grounds.

Harmony.—This drift mine is taking out gravel, which runs about \$2 50 per carload. The mill capacity is 120 carloads per day. In a short time the company will open up new ground on the east side.

Home.—This mine on Deer Creek, 1½ miles west of Nevada City, is pushing development work. The shaft is down 270 ft. on a 16 in. ledge; the vein matter is 3 ft. wide and is filled with stringers of quartz from wall to wall.

Placer County.

Mayflower Gravel Mining Company.—At the annual meeting of the stockholders of this company, held in San Francisco last week, 45,830 shares were represented, and the following gentlemen elected to serve as officers for the ensuing year: F. Chap-pellet, president; F. H. Green, vice-president, and Chas. Mayne, F. W. Zeile and H. Bendel, directors. D. M. Kent was re-elected secretary and the Crocker-Woolworth, National Bank, treasurer. The secretary's financial statement showed a credit of \$20,000. Dividends aggregating \$30,000 were paid during the year, and making a total of \$160,896.60 paid since September, 1891.

Riverside County.

(From Our Special Correspondent.)

Alice.—This mine, 4 miles south of Merrifield, has started up under the management of Wilson & Cheatham. A 5-stamp mill is on the ground. It is estimated that 150 men are prospecting in the neighborhood of this property.

Siskiyou County.

(From Our Special Correspondent.)

Sam Bratt Company.—This company at Horse Creek, Klamath River, has built an extensive ditch to supply water for hydraulicking. The channel at bedrock indicates a width of 200 ft. containing coarse gold. A space of about 100 ft. uncovered by the giants is being bottomed so as to have a cleanup.

COLORADO.

Clear Creek County.

(From Our Special Correspondent.)

Belman.—The shaft is now down 250 ft. Another drift will be commenced from this point on 2½ ft. of pay ore which has opened out. In drifting on the 150-ft. level, the vein has opened out 20 ft. wide, and it has been necessary to cross-cut from the foot to the hanging wall to get at the ore which also lays there.

General Thomas.—This mine is again working, and in the fourth level there is 18 in. of pay ore, 10 of which is smelting averaging \$100 a ton, the balance is \$6 mill-dirt.

Lucy.—Denver business men have taken a lease and bond on this property, and are drifting into the hill on the first level. They are arranging to put a new steam hoist on the shaft farther up the hill. The ore from this mine is lead, with some gold and silver, and worth about \$30 a ton.

Newton.—Contracts have been let by the company for extending the drifts, although the mine is worked almost exclusively by leasers. In the first level the streak is 7 in. wide. A shipment of first-class just made, ran 30 oz. gold, and the balance 3 oz. gold to the ton.

Pioneer.—The drifts are being extended, and a winze is going down from the adit level, about 400 ft. in. The mineral streak is 9 in. wide at the breast and the management claims it is worth \$100 a ton. Milling ore is also being taken out and there are fully 200 tons ready to be treated at the mill, which has just been rebuilt.

Stanley.—In the fifth level, the largest ore body cut in the mine since the present company took charge has just opened up. The streak is solid smelting ore, and is about 3 ft. wide. It is probably the same ore chute as appears above in the road and first levels.

Custer County.

Geyser Mining & Milling Company.—The secretary of this company informs us that some very good shipments of sulphides were made during the past summer. One shipment of 101 tons produced at the smelter \$41,000 net.

El Paso County.—Cripple Creek District.

(From Our Special Correspondent.)

Anchor.—The Airheart lease, on the Anchors made its first shipment of 3 oz. ore from a shaft sunk 186 ft. The vein is large and requires but little sorting. This lease is also on Gold Hill.

Battle Mountain properties are being troubled with water. Independence No. 2 has found it imperative to order heavy pumps, and the Anna Lee, the deepest shaft in the district, will soon have to follow this example from present appearances. The mines do not show any evidence of "petering" at water level.

Grace Greenwood.—This is one of the old Gold Hill claims. This week the lessees struck some rich ore directly below the grass roots. The ore is gold and telluride, and is plentifully scattered through the 3 ft. vein. This property is owned by G. L.

Kimberly, an iron miner of Pennsylvania, and Dr. Lautermann of Buena Vista. Considerable prospecting and development work was done on this claim during 1892 and 1893.

Lost Dollar.—This property on Bull Hill, recently sold to Mr. Antoine Eilers, the well-known smelter man, is improving. The property is being worked on lease. The Monroe, Jackson & White lease is shipping about 20 tons of ore per day, the low grade sampling close to \$40 per ton, and the high grade from 5 to 7 oz. per ton. As soon as the levels are driven and communicated between the shafts the output will be doubled. Caley's lease on the same property is shipping about 8 tons per day of 5 oz. ore, with appearances favorable for an increasing output.

Monument.—This is a fractional claim on Battle Mountain, about 400 ft. west of the Portland properties, and has made a nice strike of telluride ore in a shaft 35 ft. deep. The property is being worked under lease.

New Moon.—The Cobb lease on Gold Hill has shown a decided improvement during the past week in the sinking of the shaft. Additional miners have been engaged.

New York Tunnel & Mining Company.—This company has penetrated Bull Hill 952 ft. The tunnel commences on the east fork of Squaw Gulch. Operations began in October, 1892 and have continued almost uninterruptedly ever since with two men. In that distance of 952 ft. with a vertical depth of 450 ft. 17 veins have been intersected, 16 of which have been recorded, and almost all the veins carry mineral. Only on one vein has any drifting been done. The work has been well done and is the best single track tunnel in the camp, driven by manual labor. The west slope of Bull Hill has been prospected but little on surface.

Premier Mining Company.—The Deerhorn, recently purchased by this company, is working a small force of men at the surface, taking out a little ore wherever it can be found. It was expected that this company would at once set about doing development work on a large scale.

Raven.—This group, on Raven Hill, including the Raven, Princess E., Maid of Erin, Snowy Range and Gregory Lode mining claims, about 32 acres patented, has been transferred to Messrs. Moffat & Smith, of Denver, and Hathaway, of Cripple Creek, for 60 days, on a payment of \$10,000 option money. A mining engineer from Denver estimated the reserves at \$1,000,000. The group is a valuable one.

Rose Maud.—This mine, on Raven Hill, formerly owned by the Anaconda Company, is being actively worked by lessees, who are shipping from three different shafts at shallow depths.

Volcano.—This claim just south of the Florence and Cripple Creek depot, is about to make its initial shipment to the smelter, the grade of ore varying from 3 to 4 oz. The vein is small and appears to be a metamorphosed granite permeated with telluride vapors. The country rock is granite. The shaft has been sunk 60 ft.

Gunnison County.

Vulcan.—A deal has lately been closed for the sale of this mine to a syndicate of Denver people, among whom are Du Bois brothers. The new owners have assumed control of the property and, according to the local papers, are preparing for extensive operations. The mine is in the Gunnison region. It was located by N. Z. Fulton, C. F. Hamlin, Dr. Jennings and J. S. McCullough, who later bonded it to S. B. Outcalt and F. S. Winters for \$50,000. The lessees put on a new plant of machinery, sunk the shaft 120 ft. and drifted on the vein for some distance. Several carloads of high-grade ore have been shipped. The selling price of the property is reported to have been \$100,000. F. S. Winters, one of the former lessees, will be superintendent of the property under the new management.

Ouray County.

(From Our Special Correspondent.)

Bachelor.—This company has decided to run a new tunnel at the foot of Bachelor hill, in order to gain greater depth on the vein and handle the increasing influx of water at reduced expense. The tunnel is being rapidly pushed by two shifts.

Caroline Mining Company.—This company has inaugurated the insurance plan by which its employees are required to sign a contract releasing the company from blame in case of accident, the former being protected by receiving a regular stipend in case of injury. Foreman Krusher has purchased two new bicycle cars for use in the mine.

Daniel Bonanza.—Mr. Douglas Wise, of California, has secured a lease on this property, and is pushing development with a large force of men. Some ore has already been encountered but not in sufficient quantity to ship.

Grizzly Bear.—Negotiations are pending for a sale of this property, which will probably be consummated shortly. A New York company has an option on the mine and last week announced its intention of taking it up.

Guston.—This famous property is now idle, owing to trouble with the miners, all of whom walked out a few days ago. The trouble grew out of a demand for increased wages, which was refused by the company.

San Juan Chief.—This property has ceased operations for the winter, owing to its inability to handle

the immense inflow of water without greatly increased steam capacity; about 200 men have consequently been thrown out of employment.

FLORIDA.

Citrus County.

Central Peninsular Mining and Development Company.—This company was recently organized to develop the muck deposits of the Tsala-Apopka lakes and is now building a large dredge to work in the lakes. The company is also arranging to build a fertilizer factory at Inverness. Mr. F. C. Fishback, of Charleston, S. C., is manager of the company.

Levy County.

Osceola Phosphate Company.—This company's works, near Albion, have been started up again.

Marion County.

Standard Phosphate Company.—This company will shortly resume work in its mines at Early Bird, under charge of Dr. J. C. Borzer as superintendent.

GEORGIA.

White County.

The following gold properties are reported at work steadily, the mills running and making returns: Hamby, owned by M. Martin; Lumsden mines, owned by J. Freeman; St. George Company, near Cleveland; Yonah, owned by W. Turner; Thurmond at Lot No. 10. Arrangements are being made to put up three more mills at the Logan mine, on the Plattsburg company's lot, and on the Thompson property.

IDAHO.

Idaho County.

Idaho Company, Limited.—This company's stock is \$100,000, divided into 1,000 shares of \$100 each, par value. The property is at Elk City. The company's office is in Chicago, Ill., and is in charge of Mr. John S. Driver, Secretary.

(From Our Special Correspondent.)

The excavator on the Meadows started up on October 8th, and is running very successfully.

The hydraulic elevator on American Hill is handling large quantities of gravel, and it is expected that a month's run can yet be made.

T. A. Carter, of Butte, Mont., has bonded the Buffalo Hill Diggings, and will clean out the old Jeff Davis tunnel that taps the deposit, and work the entire tract through this tunnel.

Mr. John W. Goss has been working a crew on the Slate Creek Mining Company's property, thoroughly prospecting the high bar with view of extensive renewals to be put in early in the spring.

Elk City District.—The stamp mill on the Cleveland mine has started up, and is running successfully. Ten stamps will be added early in the spring.

Florence District.—The Boyer two-stamp mill has been running 10 days on rock from different claims in the camp. Low-grade ore only has been crushed. The returns on ore crushed from two lots of thin ore have been \$11 and \$27 per ton. This practically settled the question as to the value of Florence rock, and whether it will pay to work. The custom mill is running day and night and has a capacity of six tons per day of 24 hours.

Newsome Creek District.—Mr. Wesley Compton has examined and bonded the Golden Kid Group, for \$30,000, and has taken possession of the claim, and has to commence immediately to work the same. These claims are the big discoveries that were made this summer by N. F. Beverly and others. They are on a contact between mica schist and diorite, and are supposed to be the "Mother Lode" claims of this section. The ledge, which carries free gold only, is 18 ft. in width, and has been traced and located for a distance of 5,000 ft.

Salmon River.—The Victor Mining Company is putting in a large flume to convey water on the Victor and Wild Cat claims at John Days. The work is under the charge of W. H. Harris, an experienced placer miner.

Warren District.—An experienced mill man and miner has arrived in this camp to take charge of the Lucky Ben Group of properties in the interest of W. Compton, of Seattle, who has purchased the same. The Huntington Mill on the property will be thoroughly overhauled and repaired, and will be started up as soon as enough ore can be taken out of the mine to keep it running.

Owyhee County.

Booneville.—Operations have been resumed upon this mine. Colonel Dewey has placed Simon Harris in charge of the work. A new bunk room 16 x 24 ft. has been built for the accommodation of the miners and a large quantity of supplies laid in. The present work is confined to the lower cross-cut tunnel, which will be extended to the vein (about 50 ft.) and then connections made by a 90-ft. upraise to a winze from the upper workings. This crosscut has tapped one ledge which will be developed as soon as connections are made and ventilation secured.

Sterling.—The owner of this property, near Silver City, F. Gearhart, is putting it in shape to work through the winter steadily.

Trade Dollar.—Everything is being made snug for the winter around this property, says the Silver City "Avalanche." Supplies of every kind are being laid in for extensive work. The adit tunnel drift has been started up again and is now breaking into a body of ore, the face showing strong pay-streaks

upon both walls. The new upraise is now about 180 ft. above the adit tunnel, and is 4 x 12 ft. in size, constructed of 4 x 12 in. planks, and of three compartments. At the 110-ft. level an offset of about 2 ft. (or half the width of the chutes) is made for convenience and safety. The ladder-way is constructed with stations at intervals of about 25 ft., thereby insuring security to the miners. A hand-blower has been put in at the foot of this upraise which keeps the air in the face of the tunnel good. The mill will soon close down for a short time to make preparations for winter, including the putting in of hot-air pipes to heat the mill.

Shoshone County.

Consolidated Tiger and Poorman Mining Company.—The consolidation having been finally approved by the stockholders and the necessary deeds executed the properties are now under control of the new company.

Spokane and Corbett Gold Mine.—This mine, says the "Coeur d'Alene Miner," is better known as the Jenkins property. Francis Jenkins is the sole owner and it was first started and is now in steady operation under his direct and daily supervision. The property in question is situated in Duncan gulch, a tributary of Trail gulch, about half a mile above the little mining camp of Myrtle, a camp which is now but a reminder of the time when the gulch was filled with adventurous gold seekers. The mill building is constructed of lumber sawed on the spot and roofed with corrugated iron. It is of a 20-stamp capacity, though but 10 are used for the present. The others can be added at any time that this is considered necessary. The stamps are driven with an engine of 45-H. P., supplied by a 50-H. P. boiler. This consumes about three cords of wood in each 24 hours. The tables employed are of the silver-plated kind. These are supplemented by two double Gilpin County Gilt Edge concentrators for treating the tailings, saving the auriferous pyrites. The Challenge self-feeders for the stamps render the mill as nearly automatic in its operation as may be possible, requiring only two men on each shift, an engineer and amalgamator. Most of the ore is fine enough for the stamps as it is delivered into the bin, but a large grizzly catches all the coarser ore and automatically runs it into a Gates crusher. The ore bin is 20 x 18 x 16 ft. in size and holds about 100 tons. The capacity of the stamps is from 20 to 25 tons per day. The gravity tram way which carries the ore from the mine to the mill is 1,000 ft. in length. The average inclination is from 25° to 30°. The track is wide, over 3 ft., thus allowing room to dump between the rails. The cars hold about one and a half tons each. The capacity of the tramway is far in excess of any demands that will ever be made on it. It has repeatedly taken down 30 tons in 25 minutes, and 60 tons of ore was run down in 45 minutes at one time. The mine is opened by three tunnels, known as the lower, middle and upper, each one connecting with the gravity tramway. These are in length 300, 350 and 325 ft. respectively, commencing with the upper one. These are about 100 ft. apart on the pitch of the vein, which is in the neighborhood of 45°. The lower tunnel is being pushed ahead to reach the chute of ore that has been encountered in the upper levels. In the back of the upper level the slope was followed from a point near the breast of the tunnel outward to the surface, a distance of 300 ft. The ore vein is continuous the entire distance, varying in width from 9 in. to 3 ft. The ore chutes are 25 ft. apart. The back of this slope is not over 25 ft. above the tunnel level at any point. The work is all done single handed, and each miner sorts his own ore and shovels it into one of the chutes. The ore is oxidized near the surface in the slope above the upper levels, but at a greater depth it carries a variable proportion of pyrites. There are now 30 men employed by the company in every capacity. Of these six or seven are doing development work under contract. It takes four to run the mill, while several are employed tramping, timbering, etc.

ILLINOIS.

The Thirty-ninth General Assembly of this State increased the number of coal mine inspection districts from five to seven. On October 21st, Governor Altgeld re-appointed Messrs. Keating, Cumming and Key of the old inspectors and Messrs. Duncan, Pickett, Malloy and Bennett from the successful competitors appearing before the State Board of Examiners early in September. The Governor thought it was a wise policy to shift the inspectors around and they are respectively assigned as follows: James A. Keating, First District, Streator; Charles Duncan, Second District, Galva; Robert Pickett, Third District, Canton; Henry E. Malloy, Fourth District, Danville; John Key, Fifth District, Springfield; Thomas S. Cumming, Sixth District, Belleville; James B. Bennett, Seventh District, Carbondale. On October 23d, the seven inspectors appeared at the Executive Chamber by appointment and Governor Altgeld took occasion to give them a general talk respecting their duties, and the policy of his administration regarding the mine inspection service. After this address there was a conference on the practicability of enforcing the enactment, making the mine inspectors ex-officio inspectors of weights and measures; that is, to test scales at coal mines. It is believed by the inspectors, and the belief is shared by Secretary Schilling, that the enforcement of this law is problematical, because of the expense it will entail in carrying the weights from place to place. The law insists upon one inspection every six months, and it was estimated that

the cost would be for the 850 shipping mines throughout the State something like \$27,000 for the two years, for which the legislature made no appropriation. The inspector and governor, however, will consider ways and means by which the law may be enforced at a nominal expense.

KENTUCKY.

Bell County.

Central Appalachian Coal Company.—S. S. Smith has leased from John W. Buchanan, receiver, the coal mines at Forks of Straight Creek, and will begin operating them at once. The mines were operated by the Central Appalachian Company in 1893 and have been shut down since.

Bath County.

Bath County Iron Company.—This company is about to begin the construction of a railroad from the Chesapeake & Ohio road at Olympia to Forge Hill, and is making preparations to work its iron ore deposits at that place. The ore bank at Olympia, on which the company has been working, is now nearly exhausted.

MICHIGAN.

Copper.

Wolverine Mining Company.—The new No. 4 shaft is now down 30 ft. The shaft is in the new ground bought last year, and is 1,080 ft. south of No. 3 shaft.

Iron—Gogebic Range.

The report of Clarence M. Boss, inspector of mines of Gogebic County, covers the period of 12 months, and ending September 1st, 1895, giving the total amount of ore mined, number of mines being operated, number of fatal accidents, and the number of men employed. The total number of mines operated in the county during the past year was 12; the number of persons employed was 2,310; the number of fatal accidents 11; total number of gross tons of ore mined 1,576,938. The following are the mines worked and the number of tons of ore produced by each: Anvil, 43,047; Ashland, 92,021; Aurora, 266,493; Brotherton, 9,760; Davis, 6,756; Eureka, 20,842; Newport, 149,257; Norrie & East Norrie, 696,440; Pabst, 203,907; Palms, 15,045; Sunday Lake, 3,800; Tilden, 369,570. Average number of men employed in the mines in Gogebic County September 1st, 1894, was 1,399; total number employed September 1st, 1895, was 2,310; a gain of 911 over the number employed last year. There has been the usual number of non-fatal accidents at the different mines during the year of which there has been no report made to the inspector, and which have been due in most instances to the carelessness of the employees themselves in not using the means provided them by the companies to ensure their safety. Additions have been made in the working force of many of the mines since September 1st, which will make the total number of men employed considerably more than that given in the report.

Iron—Menominee Range.

The annual report of Mine Inspector Trestrail, of Dickinson County, shows that the number of fatalities in the mines is small. The total number of fatal accidents occurring in the county was six—three at the Chapin, two at the Pewabic and one at the Traders. The total number of non-fatal accidents noted is 15, the greater number of which occurred on surface. The total number of tons of ore mined from September 30th, 1894, to September 30th, 1895, was 1,243,218, from the following properties: Chapin, 561,827; Pewabic, 257,755; Millie, 8,139; Traders, 20,090; Keel Ridge, 13,319; Quinnesec, 596; Cyclops, 1,800; Aragon, 141,752; Curry, 53,000; West Vulcan, 130,000; Loretto, 57,640. The average number of men employed during the same period was 1,984. There are 16 iron mines in the county; number of explorations in the county, 6; number of persons employed underground, 1,524; number of persons employed on the surface, 469; average number of persons employed, 1,984; number of fatal accidents, 6; number of fatal accidents per thousand, 3.03; total number of persons employed October 1st, 1894, 2,036; total number of persons employed October 1st, 1895, 2,352; gain of 316.

MINNESOTA.

Duluth.

(From Our Special Correspondent.)

Notwithstanding the dearth of vessels and the high freights, which continue almost at the top notch of the past weeks, considerable ore is going forward, reports that the business of the year had been stopped at all lake ports being, to say the least, somewhat premature. There is quite a movement from Escanaba this week, large amounts of tonnage having been chartered from there. From Two Harbors 27 large cargoes were loaded last week, aggregating not less than 65,000 tons, while from Duluth about 40,000 tons went forward. Ashland shipments have been very light for the last two weeks, reaching a total for the 15 days of not over 60,000 tons. Marquette has sent down but little. The Minnesota Iron Company has still to send forward, on its own apportionment, not less than 270,000 tons, if it can get the vessels and the weather holds out, which now seems rather unlikely. The fact that the season for Al vessels will this year end on December 10th, instead of on December 1st, is in favor of the shippers. The Minnesota Iron Company expects to end the season with total shipments of not much less than 1,900,000 tons, from both Minnesota ranges, a far larger amount than was ever mined by any company

in the history of the trade. What it can do for a season that promises good things is well indicated by what it has done this year.

The order for ore cars to be let by the Duluth, Missabe & Northern, which was set at 200 when specifications were made, but which this correspondence predicted would be for far more than that, is to be for 500 cars, and will be let very soon.

The Duluth & Iron Range road has made an optional contract with the Baldwin Locomotive Works for 10 locomotives weighing 240,000 lbs. to be out next spring. The engines are to be similar to four that were built for the same company last season by the Schenectady Locomotive Works and are said to be the heaviest road engines ever built. An inspection of the Two Harbors ore docks was made this week by President Greetsinger and the engineers of this company, and the improvements outlined in this paper were decided on, namely, the completion of No. 3 dock and the construction of No. 5, adding 3,000 ft. to the dock frontage of the company. Number 2 will be raised and otherwise rebuilt, but not yet.

Iron—Mesabi Range.

(From Our Special Correspondent.)

D'Autremont & Sheridan, of Duluth, have six exploring and test pitting crews at work in the two townships of 58-20, west of the Mountain Iron, and 57-17, south of Eveleth. They will put six more crews on the ground very shortly. There is a vast amount of exploring going on along the range at this time.

Auburn.—This company has so far shipped over 360,000 tons and will crowd 400,000 tons for its season's output.

Longyear.—The Duluth, Missabe & Northern road will be extended to the Longyear mine, six miles north of Hibbing, at an early date. This is evidence that the Longyears are to begin mining operations at no distant date.

North Cincinnati.—This property has been leased by Corrigan, McKinney & Co., the former lessees, to parties connected with the Pittsburg Iron and Steel Company, and it will be extensively developed the coming winter.

Saunty.—All work on this property has been stopped, the owners having gotten what they wanted, the knowledge that they had a large body of ore. In the six sections, 240 acres, that have been explored, they have sunk 37 pits in from 10 to 110 ft. of ore, most of it of excellent grade. Negotiations are now under way for the sale of this mine to one of the big corporations, and it will in all probabilities be a shipper next year.

Sheridan.—This property, the lease of which has been bought by the Oliver Mining Company, has been inspected by members of that company the past week, and they have been in Minneapolis making efforts to get the royalty fixed to suit them. If they succeed, which is likely, the mine will be put in condition for the mining of not less than 400,000 tons next year. The Duluth, Missabe & Northern road is being extended to the property and it will be stripped the coming season. There are about 6,000, 000 tons of ore already shown up on the property by the original lessees, d'Autremont & Sheridan, of Duluth.

Iron—Vermilion Range.

(From Our Special Correspondent.)

Minnesota Iron Company.—This company is optioning all the property it can get its hands on, and will this week or next secure the Lucky Boy, south of Ely, and close beside the Anderson. There is supposed to be a valuable deposit of ore in the property.

MISSOURI.

(From Our Special Correspondent.)

Joplin, Oct. 28th.

There has been considerable activity during the past week, and good prices have prevailed. The highest price for zinc ore was \$26.50 per ton, while a very large portion sold above \$25. Lead ore sold for \$18.25 per 1,000 lbs. The output is as follows: Joplin, zinc, 1,443,940 lbs.; lead, 319,330 lbs.; value, \$23,500. Webb City, zinc, 279,050 lbs.; lead, 22,520 lbs.; value, \$3,742. Cartersville, zinc, 1,291,170 lbs.; lead, 201,380 lbs.; value, \$19,018. Zincite, zinc, 26,450 lbs.; value, \$317. Spring City, zinc, 40,690 lbs.; lead, 24,380 lbs.; value, \$932. Scotts City, zinc, 170,000 lbs.; value, \$1,020. Alba, zinc, 42,000 lbs.; value, \$493. Aurora, zinc, 588,000 lbs.; lead, 45,000 lbs.; value, \$6,183. Galena, Kan., zinc, 2,250,000 lbs.; lead, 510,000 lbs.; value, \$33,810. Total output for the district, zinc, 6,104,850 lbs.; lead, 1,122,610 lbs. value, \$89,215.

Dunweg Mining Company.—This company which sometime ago purchased the Ashcroft mine together with 70 acres in fee has opened its land to miners.

Grounds & Irwin.—This company's lease lies just south of the Dunweg land and is coming to the front as a heavy producer. New strikes are reported frequently.

MONTANA.

Deer Lodge County.

Penobscot.—This mine at Bald Butte will not be closed down, says the Marysville "Mountaineer," as was intended by the Longmaid Brothers, who have been operating it since it was abandoned by the original company. The reason is that another strike was made last week, and it is one that will make employment for two months more, at least. The strike consists of the discovery of the flow of

the vein from the old Bonanza. When the Longmaids first began operations they had in mind a prospecting expedition for that purpose, but were deterred by the fact that the old dumps were in the way. In concluding the work, the dumps were run through the mill, yielding a return of \$1.25 to the ton. When the dumps were finally moved out of the way cuts were made from the surface, and the discovery was made. It apparently runs 200 ft. along the course of the old vein. The width has not been ascertained.

Parrot Mining Company.—The Montana Union Railroad company is advertising for bids for grading tracks to the Parrot, Moscow and Oro Butte mines, which are all owned by the Parrot company. The bids are to be in by next Wednesday at noon, and the contract will be awarded and work commenced at once. The estimated cost of the new tracks, including, rails, ties and tracklaying, is between \$12,000 and \$15,000, and it is expected that work will be entirely finished by the first of the year. The new tracks will be required soon, as the Parrot company starts up its new smelter at Point of Rocks near Whitehall. The Montana Union will haul the ore from the ore house to the Northern Pacific transfer east of the Parrot smelter, where it will be turned over to the latter road. The Northern Pacific spur from Whitehall to the new smelter was completed some time ago, and supplies are now being hauled in over it. It is expected that the fires will be started in the new smelter early in the spring.

Granite County.

Bloomington.—This gold claim, which is about 12 miles from Philipsburg, is owned by Peter Sherr and others, but is under lease and bond to parties from Butte, Montana. They have now contracted with the E. P. Allis Company, of Milwaukee, Wis., to put up a 10-stamp mill and engine on the property.

Jefferson County.

King Solomon.—Messrs. Grobe, Hinton & Co. have given up their lease and bond on this mine at Lump City, and it will continue to be worked by the owners, Redding & Sons. Failure to agree on terms is said to be the cause.

Nettie-Irene.—This gold property, near Lump City, is said to be doing well under the charge of M. T. Wilcox. Negotiations for a sale are pending.

Meagher County.

New Era Group.—This group, 17 miles from Townsend, in the Park district, has been bonded by Frank Longmaid, who will put a force at work. The New Era group was once worked by three men on a lease, and it is said that they found good returns, shipping the ore to East Helena. It is oxidized iron, carrying gold, silver and lead, and netting in the neighborhood of \$50 to the ton. The vein is a true fissure, cutting across all formations, and exposed for the length of three locations. Mr. Longmaid thinks that it is likely to be permanent.

Silver Bow County.

Washoe Copper Company.—Work has been suspended this week on the east shaft of this company in Butte, but operations will be continued on the Gold Hill property. At the latter place cross-cutting is in progress at the 500-ft. level to tap the ledge which was cut at the 300-ft. level when sinking the shaft.

NEVADA.

Story County.—Brunswick Lode.

The latest weekly official report of operations on the Brunswick lode says: Shaft No. 1 on the Hale & Norcross ground, near the Chollar north boundary, is down 171 ft. Formation quartz, showing some value. Shaft No. 2 on the boundary of Consolidated California and Virginia and Best & Belcher, is down 120 ft.; bottom in hard porphyry. The Savage tunnel is in 400 ft. The face is in porphyry and low-grade quartz. The hoisting works at both shafts will be completed by the end of this month.

Storey County.—Comstock Lode.

Following are extracts from the latest weekly official letters of the mine superintendents:

Alta.—Assays of the ore recently found on the 850 level range from \$4 to \$4.50 per ton. The ledge is small, but prospects well.

Belcher.—On the 300-ft. level the joint Belcher and Segregated Belcher west crosscut from south lateral drift is out 98 ft.; the face shows clay and porphyry. We hoisted and stored in the ore house at the mine 42 tons of ore, the average top car samples of which show an assay of \$23.40 per ton.

Consolidated California & Virginia Mining Company.—At the annual meeting of the stockholders of this company held in San Francisco, Cal., last week, 130,335 shares were placed on file, and the following gentlemen elected to serve as officers for the ensuing year: Chas. H. Fish, president; Nat T. Messer, vice-president, and H. Zadig, John W. Twiggs and Thos. F. Fish, directors. A. W. Havens was re-elected secretary and D. B. Lyman, superintendent. The secretary's financial statement showed a credit of \$741.08. The superintendent's annual bullion statement for the year is as follows: Worked at Morgan mill, 10,255 tons of ore. Bullion produced gold, \$250,730; silver, \$241,077; total, \$491,807. Average yield in bullion per ton gold, \$24.44; silver, \$23.50; total, \$47.95. Average

assay value of the ore per ton per battery samples, gold, \$24.94; silver, \$30.15; total, \$55.10. Average assay value of the ore per ton per railroad car samples, \$57.56. The above bullion was disposed of as follows: Shipped to Carson mint from October 1st, 1894, to April 30th, 1895, \$363,904; shipped to office in San Francisco from May 1st, 1895, to September 30th, 1895, \$122,902; total, \$486,806. Additional bullion shipped to the office in San Francisco, bar granulations for year 1894, gold, \$70; silver, \$80; total, \$150. From slag, ashes, sweepings, etc., \$1,096.

Crown Point.—The raise from the west crosscut, 700 ft. level, opposite No. 2 east crosscut, is now up 45 ft.; the top is in porphyry and clay. In the stope above the 700 ft. level the south face on the seventh and eighth floors is in clay, cutting off the quartz. We extracted and shipped to the Mexican mill for reduction 657 tons of ore, the average battery sample of which was \$9.17, of which \$8.21 was gold. The usual repairs in the shaft and elsewhere, as required, are under way.

Exchequer Mining Company.—At the annual meeting of the stockholders of this company, held in San Francisco last week, 87,000 shares were represented and the following elected officers for the ensuing year: Chas. Hirschfeld, president; A. K. P. Harmon, vice-president, and Aug. Waterman, A. W. Jackson and Thos. Anderson, directors. Chas. E. Elliot was re-elected secretary and A. C. Hamilton superintendent. The secretary's financial statement showed a credit of \$1,042.31. An assessment of 5c. per share was levied on the capital stock.

Hale & Norcross.—We shipped to the Brunswick mill during the week 338 tons of ore, being the entire accumulation of ore in our ore house on October 16th, averaging per railroad car sample \$50.50 per ton. The mill is now crushing our ore. We have extracted from our openings 30 cars of ore, assaying per mine car sample \$65.14 per ton, of which 18 cars, of the assay value of \$70.51 per ton, were included in the shipment to the Brunswick mill. The remainder (12 cars, assay value \$57.08), is in our ore bins.

Potosi.—We continue to extract ore from the 5th, 6th and 7th floors from the stope above the north drift from the east crosscut, 550 level. The 4th floor is exhausted, the pay having had a length there of 50 ft. On the 5th floor we have worked 70 ft. in length with a 3-ft. streak of fair grade ore still in the north face. We extracted and shipped to the Nevada mill for reduction 257 tons of ore, the average battery sample since last report being \$31.40. We have shipped on the October account two bars of bullion of the par value of \$4,615.59. We are finding bunches of pay ore in the back ledge, lying just west of the streak on which we are now working, which is separated from it by a heavy clay. The back ledge was worked years ago, and the pay we get there lies just east of the old timbers.

Savage.—The yield was 41 carloads of ore from the west crosscut on the 1,050 level, and from the east crosscut on the fourth floor above the 950 level. The car samples of the ore averaged \$30.05 per ton. At the Nevada mill 80 tons of ore will be milled, the average battery assay being \$26.06 per ton.

Segregated Belcher.—There have been hoisted and stored in the ore house at the mine 11 tons of ore, the average top car sample of which shows an assay value of \$22.59 per ton.

(From Our Special Correspondent.)

Hale & Norcross Mining Company.—Mr. J. J. Groom, receiver in the Hale & Norcross mining suits, has taken steps to enforce the judgment of Judge Hebbard as against the estate of W. S. Hobart. Payment has been refused by the executor, and the receiver has applied to Judge Slack for an order requiring the executor to satisfy judgment. The executor has been directed to show cause why the order should not be made.

NEW MEXICO.

Socorro County.—Cooney Mining District.

(From an Occasional Correspondent.)

Confidence.—The additional 10 stamps are in place, ready for work. A winze is being sunk in good ore, as well as the main shaft, which is now 350 ft. deep. One hoist has arrived, the other is on the road.

Cooney.—This mill is running steadily. There is yet ample water in the creek for power.

Florida.—The development work, now carried on for a year, has shown this property up well. A shaft was sunk 50 ft. and a drift run 15 ft. on the vein from bottom of shaft, showing a good breast of ore. A tunnel on the vein, about 200 ft. below, is now in 125 ft.

Keno.—Recent surveys gave the length of the cross-cut, to be driven to tap the vein, at about 290 ft. The cross-cut is now in about 250 ft.

Little Fanny Mine and Sheridan Mill.—The mine is looking well. Recently wages were raised from \$2.50 to \$2.75. The mill is doing work, giving 75% extraction by bullion returns. Mr. N. D. McKenzie is in charge of the mill.

Maud S.—The mill is shut down for want of ore. Six men are at work sinking the main shaft and driving the 300-ft. level.

Queen Vein.—Considerable work is being done all along this vein, as also on the Copper Queen, Moun-

tain Key, Eberle, Deadwood, Sunburst and Summit.

Silver Bar No. 2.—This mine is being worked under a lease by Mr. George Beardsley.

NEW YORK.

St. Lawrence County.

Benson Mines.—Work is to be resumed at these iron mines, and a force is now employed putting the buildings and machinery in order. The mines have been closed down for two years.

OHIO.

The case of Belden vs. the Columbus, Hocking Valley & Toledo Railroad is on trial before the New York Court of Appeals. Mr. Belden is a bondholder, and the suit is to compel Stevenson Burke and certain others associated with him to pay \$8,000,000 and interest to the railroad company for the benefit of the bondholders. The plaintiff claimed that under the terms of the mortgage securing the bonds it was the duty of the officers of the railroad company, of whom Burke was one, to apply the proceeds of the bonds, amounting to \$8,000,000, to double-tracking and equipping and otherwise improving the road. The bonds were used to purchase the stock of a coal company owning 10,000 acres of coal land in Ohio adjacent to the railroad. The nominal value of the stock was only \$1,500,000, but the profits from the coal lands have been \$400,000 a year. The suit was brought in 1890. It was tried before Justice Ingraham, in the Supreme Court, in New York County. He decided against the plaintiff, Mr. Belden. The latter appealed to the General Term, where Justice Ingraham's decision was reversed. The defendant, Burke, thereupon brought this appeal to the Court of Appeals from the decision of the General Term. Messrs. Hornblower and Burke contended on behalf of Burke and his associates that Mr. Belden bought the bonds with full knowledge of all the facts, and that he had lost nothing, as his bonds were worth more than when he bought them. Judge John F. Dillon, Elihu Root and Samuel B. Clarke argued on behalf of Mr. Belden that the proceeds of the bonds should have been used to feed the security—that is, to improve the road—but that they had, in effect, devoted them to other purposes and not to the benefit of the bondholders.

PENNSYLVANIA.

Anthracite Coal.

The coal operators in the vicinity of Hazleton are exerting themselves to meet the demand upon their product. With the scarcity of water and cars, in some instances, they find the work quite difficult. For this reason the Beaver Meadow Colliery of Coxo Bros. & Company shut down for an indefinite period on October 26th. The employees at Beaver Meadow will be transferred to Tomhickon to operate that plant. Their Drifton and Oneida collieries are now working overtime, trying to make up the loss sustained at other places. Markle & Company's Jeddo Collieries are also working overtime. Beginning November 1st an increase of 10% in wages went into effect there, consequent upon the improved condition of the coal trade. The Laurel Hill and Hazle mines of the Lehigh Valley Coal Company are idle on account of the scarcity of water, and to operate the Jeanesville collieries the company is now hauling water in tanks.

Bituminous Coal.

Rockland Iron and Coal Company.—The coal miners of this company in the East Broad Top region have been compelled to shut down owing to the scarcity of water. A large number of miners are thrown out of work by the shut-down.

Butler County.

What promised to be a rather interesting lawsuit over the ownership of a piece of territory in the Kaylor fourth sand pool has been compromised, says the Pittsburgh "Times." About 17 years ago J. A. Heydrick purchased the oil right on the Shearer farm for 20 years. A dry hole was drilled at that time and nothing more was done toward operating the farm. Recently Derkin and others leased the Shearer farm and drilled in a gusher. Heydrick pulled out his old lease and tied up the oil. The matter was taken into court, but now Derkin & Co. have paid Heydrick \$700 and the costs that had accrued.

SOUTH DAKOTA.

Lawrence County.

Plutus.—The ore from the main chute of this mine in the Bald Mountain section yields \$35 to the ton in carload lots. The daily output is four carloads, the ore being treated at the Deadwood & Delaware smelter. There are but six men at work at present, as the openings on the ore level are not large enough yet to admit of any more. The ore is similar to that common to the upper strata in that section, but carries much more iron, says the Deadwood "Pioneer."

UTAH.

Juab County.

Bullion-Beck & Champion Mining Company.—The additional Bryan mill and the four addition a Johnston concentrators ordered some time since for the Bullion-Beck mill at Eureka from the Risdon Iron Works are now on the ground and will shortly be set up. In this connection the directors of the company are figuring on some more extensive improvements to their plant, says the Salt Lake "Tribune." It is proposed to put in an amalgamation plant below the present concentrator, and a

series of pans and settlers by which the company will convert a goodly portion of its output into bullion before it leaves the grounds. The company will continue to turn out and ship concentrates as at present, as the ores carry too much lead to be lost, but it expects to make a large saving in freight and smelting charges by extracting silver bullion by amalgamation, leaving only the lead concentrates to be shipped. The proposed improvement, it is estimated, will cost in the neighborhood of \$30,000, and it is expected that it will be authorized at the next meeting of the board of directors. The mine is said to be in a fair way to open into a large body of ore on the 900-ft. level. Ore was encountered on the 800-ft. level about 400 ft. from the shaft, and was worked down about 50 ft. below the level. Since then the 900 has been pushed forward to cut into this ore chute at a greater depth, and it is expected that it will be reached within a few feet. Meanwhile the 800 level is being driven ahead with the anticipation of reaching another large ore chute. The level is now in 430 ft. from the shaft.

Tintic.—Shipments from the district last week were as follows: From the Bullion-Beck mine, 30 carloads ore; Bullion-Beck mill, 5 carloads concentrates; Gemini, 4 carloads ore; Centennial-Eureka, an average of 2 carloads of ore daily; Eureka Hill mill, 4 carloads concentrates; Mammoth mine, 2 carloads ore; Ajax, 6 carloads ore; Carissa, 1 carload ore; South Swansea, 1 carload ore; Dragon iron mine, 1 carload daily.

Summit County.

Daly-West.—General Manager Daly, of this property, has decided to sink the main shaft an additional 300 ft., which will give a total depth of 1,500 ft. In order to do this it will be necessary to enlarge the capacity of the hoisting works and this is now under way. The buildings for the concentrator are now completed and ready for the reception of the machinery, which will be received within three weeks. It is doubtful, says the Salt Lake "Herald," if operations will be commenced before January 1st.

Massachusetts.—This group at Park City has been purchased by the Alliance Mining Company. The Massachusetts group is made up of 14 claims upon which considerable money has been expended in development work without uncovering any ore bodies. The properties are equipped with a good plant and the main shaft is down about 700 ft. All of the equipment goes with the group, but the title to none of the property will pass until the final payment is made on the purchase price, the first having been made on October 19th. This acquisition gives the Alliance company about two miles right on the strike of its vein and the territory is considered valuable.

Putnam Mining Company.—This company, of Park City, has properties located south of the Anchor, Daly & Daly-West. Two weeks ago the stockholders elected the board of directors, and afterward Col. William M. Ferry, one of the directors, made a proposition for the development of the property, which has been accepted. It results in the securing of a lease and bond on the property, which runs for two years, the consideration being \$300,000. Colonel Ferry will at once commence operations at the mine, and will sink the shaft down to strike the ore.

Tooele County.

Eagle.—Some good developments have been made in the Eagle shaft, north of Camp, says the Mercer "Mercury." The bottom of the shaft, which is now down some 160 ft., has appeared for some days to be in the hanging wall of the ore. A number of assays have been made and run from \$3 and \$4 up to \$20.

VIRGINIA.

Rockingham County.

Virgin's Mining Company.—This company has been organized to work a lead property near Timberville. Some work has been done on the property, and a shaft put down 40 ft. is said to show very well. The directors are: P. S. Loucks, J. R. Stauffer, C. Grazer, Robert Skemp, A. H. Herbert, M. S. Loucks, all of Scottsdale, Pa., and W. N. Taylor, of Pittsburg. The officers of the company are P. S. Loucks, President; C. Grazer, Secretary, and Robert Skemp, Treasurer. It is the intention to begin at once development of the mine. A force of men in charge of an expert mining foreman will be set to work at once and the mine opened up. The necessary machinery will be added as the work progresses.

WEST VIRGINIA.

Doddridge County.

Murphy & Jennings Oil Company.—This company's No. 5 Allen well in the Big Flint district has been completed, and is flowing at the rate of 125 barrels a day.

Tyler County.

Oxford Oil Company.—This company's No. 2 Thomas well in the Keener sand district was completed last week, and is giving 150 barrels a day.

Henry Oil Company.—This company has just completed a 100-barrel well on the Dye farm.

FOREIGN MINING NEWS.

BRITISH COLUMBIA.

(From Our Special Correspondent.)

Rossland.—At this camp the weather continues very clear and fine, greatly facilitating outdoor work. The road to Northport has been in good con-

dition for some time, and the ore output from the War Eagle and Le Roi by this route has been brought up to its former level. In ore mining circles it is stated that in both these properties the ore is proving better and more abundant as depth is gained.

The War Eagle, Le Roi, R. E. Lee, Maid of Erin, Iron Horse, and one or two other mines are introducing machinery of modern patterns.

A party of Englishmen, said to represent considerable capital, recently visited this camp. As a result of their visit it is stated that the Cliff mine and the St. Elmo Consolidated have been purchased. It is also stated that the Josie mine has also been sold to eastern capitalists. I have been unable to see any of the parties, but the transactions do not seem impossible, though it may be that they are not yet fully completed.

Mr. John A. Cameron, of Marquette, Mich., who has had considerable experience in this camp, has collected 210 samples of the ore and quartz, representing all the mines of any note in the camp. These samples are good evidences of the richness of the mineral resources of the Trail Creek country. He will shortly return to his old home in Marquette for the writer.

Trail Creek Smelter.—Considerable progress has been made by the contractors, Messrs. Costello & Anderson, with the new smelter. About one-half the stone foundations are completed and the excavation work is finished. The brick for the smelter is being made on the ground. Wood and water are plentiful and at a convenient distance. Mr. Costello says that he will be ready to turn the building over to the owners by December 5th. The weather continues very favorable for outside work.

The new town of Trail Creek, which is situated at a convenient point on the Columbia River, is already showing evidence of the impetus which has been given to it by the erection of the smelter. Four or five new stores are in course of completion, a wharf to accommodate the loading of ore, and other permanent improvements are in progress, and considerable activity in real estate was an especial feature in the business of the new river town. Mr. Costello informs me that an electric tramway is about to be built between Resland and the Landing, and that the engineers are now at work running the line.

BRITISH GUIANA.

The total shipments of gold from this colony for the nine months ending September 30th, were 88,989 oz., valued at \$1,577,976.

CUBA.

United States Consul P. F. Hyatt, at Santiago de Cuba, reports to the State Department that the Pomi Mining Company, composed of Pennsylvanians, despatched the first ship load of 600 tons of manganese ore to Philadelphia by the Norwegian steamer "Jactern." The company recently completed a short railroad to connect with the Sabanilla & Marota railroad which gives railroad facilities to Santiago Bay, and it now has a capacity of 200 tons per day. But after making a propitious start, the company has been compelled to shut down by the exigencies of the war.

INDIA.

The total output of the Colar Gold Field of Mysore for the month of September was 21,502 oz., an increase of 798 oz. over August, and of 2,591 oz. over September, 1894. For the nine months ending September 30th the total output was 182,145 oz. of gold, an increase of 19,428 oz., as compared with the corresponding period last year. For September the production of the leading companies was: Champion Reef, 6,101 oz.; Ooregum, 6,028 oz.; Mysore, 5,563 oz.; Nundydroog, 3,286 oz.

NOVA SCOTIA.

The statistics of coal shipments from the Nova Scotia collieries for the 9 months ending September 30 show a decrease of 244,000 tons compared with the corresponding period last year. Cumberland shows a falling off of 57,000 tons; Pictou 57,000 tons, and Cape Breton 135,000 tons. This is notwithstanding the operations of the Dominion Coal Company. Had it not been for these, the decrease in Cape Breton County would, it is said, have been 100,000 tons more than it was.

QUEBEC.

The "Canading Mining Review" says: Mr. Chalmers of the Geological Survey, who has spent the summer in an investigation of the surface geology of the Quebec gold-fields, is reported to be greatly impressed with the possibilities of successful mining in the old river beds of the Chaudiere and other localities. He also reports the discovery of quartz veins containing gold at Dudswell as authentic.

SOUTH AFRICA.

Transvaal.

African Gold Recovery Company.—This company reports that in September there were 57,000 oz. gold recovered in the Witwatersrand, and 7,000 oz. in other districts, making a total of 64,000 oz. of gold obtained in the Transvaal by the MacArthur-Forrest cyanide process. This is a decrease of 4,100 oz. from the August report.

TURKEY.

The Ministry of Agriculture, Mines and Forests announces that it has decided to grant concession to work for a term of 99 years an antimony mine situated in the vicinity of Boudjouklou Senyu, in the nahie of Tashlik, province of Sivas. The concession covers an area of about 1,600 acres.

LATE NEWS.

Ellis Clark, Mining and Civil Engineer, died suddenly of diphtheria on the 28th inst., at his home in Philadelphia, Pa. He joined the American Institute of Mining Engineers in 1874. In 1878 he became an assistant to Mr. Frank Firmstone at the Glendon Iron Works, Pa. He afterward spent some time in Europe and in China. In 1891 he assumed charge of the silver mines at Lake Valley, New Mexico, and subsequently was engaged in mining in California and Arizona. He contributed the following papers to the "Transactions" of the Institute of Mining Engineers: "Shaft Surveying the Brown Hematite Mines of Northampton County, Pa." (1878); "The Great Blast at Glendon," (1879); "Ore Dressing and Smelting at Przibram, Bohemia," (1881); and "The Silver Mines of Lake Valley, N. M.," (1894).

The American Cyanide Company, which uses the Kendall cyanide process, recently leased the United States Economic Reduction Works at Florence, Colo., and will soon have the mill in operation treating from 100 to 150 tons of Cripple Creek ore daily. The Moffat-Smith cyanide mill at Florence is now treating a like amount, and shortly Florence can boast of treating from 200 to 300 tons daily of Cripple Creek and Victor ore by the cyanide process. Constructing Engineer Kennon, of the American Cyanide Company, is now superintending the shipping of machinery and leaching tanks necessary in changing the plant from chlorination to the American cyanide process. The officers of the American Cyanide Company are: Otto Mears, president; Jerome B. Frank, vice-president and treasurer; T. L. Wiswall, general manager and secretary. Directors, Otto Mears, J. B. Frank, W. O. Ross, J. W. Huzbe, E. D. Kendall, Alexander Anderson, T. L. Wiswall.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Nov. 1.
PRODUCTION OF BITUMINOUS COAL, in tons of 2,240 lbs., for week ending Oct. 26th, and year from January 1st.

	1895.		1894.
	Week.	Year.	Year.
Shipped East and North:			
Allegheny, Pa.	25,200	2,851,690	979,459
Beech Creek, Pa.	8,000	8,000	12,550,443
Broad Top, Pa.	8,000	8,000	295,438
Clearfield, Pa.	74,050	4,899,792	2,122,107
Cumberland, Md.	8,000	8,000	12,332,108
Kanawha, W. Va.	185,325	2,707,290	12,030,413
Phila. & Erie R. R.	3,125	47,810	61,115
Pocahontas Flat Top.	160,100	2,231,185	2,730,530
Total	247,800	12,777,767	12,621,613

† Week ending Oct. 21st. † Week ending Oct. 19th. † Returns not received.

	1895.		1894.
	Week.	Year.	Year.
Shipped West:			
Monongahela, Pa.	25,375	698,536	558,838
Pittsburg, Pa.	41,850	1,547,676	1,165,472
Westmoreland, Pa.	38,600	1,534,619	1,310,426
Total	105,825	3,780,801	3,034,756

Grand total, 353,625 16,558,628 15,696,379
Production of coke on line of Pennsylvania Railroad for the week ending Oct. 26th, 1895, and year from January 1st, in tons of 2,000 lbs: Week, 129,923 tons; year, 4,711,654; to corresponding date in 1894, 2,724,927 tons.

Anthracite.

There is no new feature to report of the anthracite coal market. Whatever new business is doing consists principally of small orders for immediate delivery from dealers who need the coal urgently. Often the dealer thus affected is entitled to coal bought at the old prices from some company which is unable to deliver it promptly enough. These sales, as a rule, are made at about the circular price, or \$3.90 net on board for stove. Smaller cargoes have been sold at \$4, which is the highest price thus obtained. We hear of a lot of 800 tons of stove coal sold this week to a Boston buyer at \$4.25 alongside New York & New England Railroad wharf, which, in view of the high prevailing coastwise freight rates, is somewhat below the "circular."

It is a difficult matter to give quotations which shall fairly represent the market to-day. The prices asked by the companies are \$4.15 for stove; \$3.90 for egg and chestnut and \$3.75 for broken. These figures are for coal f. o. b., less the usual commission of 15c, and 5c. from Perth Amboy to equalize freights. A prominent seller reported that he was offering his best grades at these prices, but that his customers would have none of them. Another seller who is very short of coal owing to the scarcity of cars, and whose tonnage as it arrives is promptly shipped on old orders, has refused to book several orders at full prices because he was unable to deliver the coal as promptly as the buyer required. In other words, coal is moving as freely as it can, but the tonnage is going principally to fill the orders booked in August and September. Not all of this coal was sold at the lowest figures, the \$2.75 stove of last summer, but on the other hand little of it brings \$3.50, so that the companies will have to dispose of all these old orders before they can be said to be getting good prices for their product. It will take from four to eight weeks to do this, some companies being sold ahead more than others.

The drought in the Lehigh region and part of the Schuylkill has continued up to to-day, and it has naturally restricted production there very materially. Companies operating there as well as producers operating in other districts have also been forced to keep down their output by the

scarcity of cars. There are some like the Reading and the Delaware, Lackawanna & Western which are working to the full capacity; others, like the Delaware & Hudson are shipping about two-thirds of their maximum output, while others cannot work on more than half time. The drought bids fair to be relieved soon and as soon as navigation closes the entire attention of anthracite companies will be directed to the tidewater market. Prices should then ease off, and this fact probably makes buyers unwilling to purchase supplies abroad. It is not too much to say that after December 1st the market will be a "weather market" entirely, with prices firm during cold spells and weak during mild weather.

We are informed on good authority that the Anthracite Coal Operators' Association is taking active steps to secure representation on the boards of directors of the various railroad companies which carry the coal of its members. A proxy committee has been appointed to solicit proxies from the stockholders. A considerable amount of the stocks is already held by members of the association, and it looks as if they would be successful. Such an event would be of considerable benefit to the stockholders of many of the "coalers," as certain unwise actions to which we have been treated in the past will become more difficult when among the directors there is someone who can ask intelligent questions about the coal policy of the road. The benefits that will accrue from this will not be one-sided. To the flippant assertion that the independent operators are looking out for their own interests it need only be pointed out that the prosperity of the railroad company is that of the operator. For the latter to get a high price for his coal means that the carrier is getting a correspondingly high freight, since the rate is 40% of the tidewater selling price. It is to be hoped that the association may succeed in its endeavors.

NOTES OF THE WEEK.

The Schuylkill Coal Exchange announces that the rate of wages, according to the price received for the coal from the collieries drawn, is 11% below the \$2.50 basis for the last half of October and the first half of November. The Philadelphia & Reading Coal and Iron Company officers have decided to make it 10% below, as heretofore. The rate for last month was 17% below, which shows an increase of 6% during the last month.

Bituminous.

The rush for soft coal, to which we referred in our last week's review of the trade, seems to have ceased when the strike ended in an inglorious fizzle. This was to be expected, however, as it was the fear of a shortage of supplies, due to a cessation of mining operations, which made consumers so anxious to increase their stocks. Still, although we cannot report much activity in the market to-day, there seem to be enough orders to "go round" and keep most producers fairly busy.

The great trouble continues to be the short vessel tonnage. There is a great number of vessels now in the Eastern ports, and heavy demurrage bills will have to be paid on account of the delay in unloading. The first favorable wind a short time ago made all the vessels arrive at about the same time, and in discharging them all the available railroad cars were brought into use, so that cars are scarce now, and slow unloading is reported. The cars should be returning to the ports now, and relief will be afforded to the waiting vessels.

There is a fair spot business reported at unchanged prices. Quotations f. o. b., at the various ports, are as follows: Norfolk and Newport News, \$1.90@ \$2.15; Baltimore, \$2@ \$2.20; Philadelphia, \$1.75@ \$2.20; New York Harbor shipping ports, \$2.20@ \$2.65; alongside New York harbor, \$2.50@ \$2.75; Alongside Boston, \$2.75@ \$3.

There is quite a demand for coal in the all-rail trade. Even consumers having season contracts are increasing their orders. Comparatively speaking, more coal is going forward to Sound ports than to other consuming territories, owing to the fact that vessels insist upon going thither rather than around the Cape, as they do not wish to risk that stormy passage. There are many far east orders in the hands of shippers, who, however, can do little on them, owing to the lack of vessels before alluded to. Transportation from mines to tide is very good, better indeed than there is any need in view of the limited vessel tonnage awaiting the coal at the shipping ports. In several instances certain producers have had to curtail production on this account. The car supply varies. Some producers report it as fair, others, who have coal banked up at the shipping ports say differently. The railroad superintendents are apparently discriminating in the car allotments for their own self-protection.

Vessels are in good demand and short supply, and consequently rates are strong and show an upward tendency. We quote as follows from Philadelphia: To Boston, Salem and Portland, 80c.; Providence, New Bedford, New Haven, Bridgeport and other Sound ports, 70c.; Wareham, 90c.; Lynn, 95c. @ \$1.15; Newburyport, 95c.; Portsmouth, 85c.; Dover, \$1.25; Saco, \$1.05; Bath and Gardiner, 90c.; Bangor, \$1, towage where usual. From Baltimore, Norfolk and Newport News, rates are 5@10c. higher.

NOTES OF THE WEEK.

The report of the Beech Creek Railroad Company for the year ending June 30th, 1895, shows that the gross earnings were \$1,273,724 and the net \$573,933.

The total freight carried amounted to 3,162,295 tons, of which 2,968,004 tons were coal.

Buffalo.

Oct. 31.

(From Our Special Correspondent.)

Anthracite coal has been advanced 15c per gross ton wholesale and 25c per net ton retail. The quotations now are as follows: Per 2,240 lbs., delivered free on board vessels at Buffalo, \$4.45 for grate and \$1.70 for egg, stove and chestnut; per 2,240 lbs., delivered on cars at Buffalo or Suspension Bridge, \$4.15 for grate and \$1.40 for egg, stove and chestnut; for Blossburg, \$1 per ton delivered in city limits, and at retail, per 2,000 lbs., delivered in city limits, \$4.75 for grate, \$5 for egg, stove and chestnut, and \$3.50 for pea.

Bituminous coal prices are nominally unchanged, but the dealers are firm in their views, hence little shading is done.

Lake freights on anthracite coal are strong; movement limited, in consequence of lack of supplies for shipment. The supply of bituminous coal for vessel use is comparatively light, but prospects are said to be improving for the future.

Severe storms, with high winds and heavy snow falls, prevailed here and all over the lake regions from Sunday till Wednesday morning.

The shipment of coal westward by Lake from Buffalo, October 20th to 26th, both days inclusive, were large, aggregating 118,906 net tons, distributed as follows: 39,700 tons to Chicago, 35,255 tons to Milwaukee, 1,700 tons to Superior, 10,400 tons to Windsor, 600 tons to Grand Haven, 3,230 tons to Toledo, 1,100 tons to Marquette, 1,450 tons to Sault Ste. Marie, 650 tons to Port Huron, 693 tons to Fort William, 1,225 tons to Detroit, 1,400 tons to Gladstone, and 4,700 tons to ports not stated by vessels from Tonawanda. The Milwaukee freight rate on coal advanced 5c.

The following are the quotations: 90c. to Chicago and Cheboygan, 80@85c. to Milwaukee, \$1 to Grand Haven and Racine, 65c. to Escanaba, 50c. to Toledo, 35c. to Windsor and Detroit, 40c. to Fort William, 30c. to Duluth, Superior and Gladstone, 40c. to Port Huron and Marquette, 60c. to Saginaw, and 50c. to Sault Ste. Marie, closing quiet from lack of coal to ship.

The company formed to manufacture acetylene at Niagara Falls has just contracted for a \$30,000 building.

If electricity is destined ever to become the motive power on the canal, the need for deepening its prism and lengthening its locks is emphasized. If it is not to become the motive power, the canals need to be enlarged to admit of the more profitable use of horse and steamboats.

The Buffalo Car Company has just completed 250 new gondola coal cars for the Fall Brook Company.

The Automatic Dumping Coal Car Company, of New York, was incorporated last week to manufacture devices for opening and closing coal car doors.

The Economic Fuel Gas Company, of Chicago, is increasing the use of natural gas by offering to put in any private house in its territory, free of cost, a gas cooking stove, with water heater and connection complete, if the householder will discontinue the use of coal in the kitchen.

Chicago.

Oct. 30.

(From Our Special Correspondent.)

Anthracite.—The advance in the price of anthracite coal noted last week as being made by the Eastern companies, has become general since then, and there seems to be an expectation on the part of some of the dealers that further advances will be made in the near future. Coal has been very scarce in this market, and transportation facilities are exceedingly limited, but the demand has been very large in the past 10 days. A good many concerns have refused orders for large lots of coal because they did not have it on hand, and receipts are such an uncertain quantity that they cannot promise delivery. The Western trade bought a large lot of anthracite coal last summer which has not yet been delivered, and from the present outlook it hardly seems probable that it will reach here in time for sale this winter. Quotations are now made at \$5.25 for grate coal and \$5.50 for other grades in carloads, and \$6.25@ \$6.50 for smaller lots.

Bituminous.—There has been a steady and healthy improvement in the demand in the past week, and prices have been advanced from 10c. to 25c. per ton. Quotations are now very firm, and consumers and dealers are laying in liberal supplies for the future. The car service is no better than it was last week, and shippers are complaining continually because of their inability to make deliveries.

Pittsburg.

Oct. 31.

(From our Special Correspondent.)

Coal.—The year 1895 will long be remembered as a season of low water and of great loss to the coal men. With about 32,500,000 bushels of coal loaded and no coal shipped by river since April, the loaded craft requires watching and pumping daily, just imagine for a moment how much cash is required to pay these expenses, and at this writing there is no immediate prospect of water; 1872 was very similar to the present one, no coal being shipped from May to December 25th. The local coal trade continues good, the sales up to date being the largest for many years. Railroad trade activity is the rule not the exception; the scarcity of cars continues. A fire broke out at Pumpkin Patch above Louisville, destroying \$10,000 worth of coal and coal property, Pittsburg men the principal sufferers.

Connellsville Coke.—The long drought is begin-

ning to assume a serious aspect. The traffic on the railroads is impeded all along the line, but at no place so much as here; the water for the engines is taken from the Yough River, which owing to its being so low is totally unfit for use, being impure from containing so much sulphur. Engines have to be cleaned at the end of every western run; the sulphur eats out the flues. The yards here are full of freight, which has been the cause of passenger trains being several hours late. At Confluence the creek is almost dry; the reservoirs at many of the coke plants will not furnish sufficient water for open purposes.

Breaking the record is a weekly occurrence in the coke regions now. Last week's shipments increased 4,800 tons, being the largest week's shipment ever sent from the region. The demand was even greater than the shipment. Production increased 425 tons; ovens in blast 16,000 and 1,950 idles. The average time made by the 76 plants in blast was 594 days against 596 days preceding week. The H. C. Frick Coke Company made a full six days at all its plants; the McClure Coke Company all made six days; W. I. Roney and L. L. Dellinger all made six days. The Cochran and the Independent plants all made six days. The shipments of coke from the region amounted to 9,696 cars; increase, 214 cars. Shipments distributed as follows: To Pittsburg, 2,422 cars; to points east, 2,127 cars; to points west, 5,129 cars.

Shanghai, China.

Sept. 13.

(Special Report of Wheelock & Co.)

Coal.—There has been no improvement in Japan since last writing, nor can we see any chance of there being any unless some unforeseen demand springs up for tonnage, thereby removing some of the numerous steamers that are eager to accept any offer between Japan and this. From our last advices from Moji, the coal market seems steady enough, but in acknowledgment we have to write the disturbing news that there is no market with us at all. There has been no business whatever, the result being that our native friends seem sad and disconsolate. Cardiff remains in godown with no offers. There are no fresh transactions to report in Sidney Wollongong and deliveries are going on very slowly. Quotations for cargo lots are as follows: Cardiff, ex godown, 10'50 tael per ton; American anthracite, 12'00 tael; Sydney Wollongong, 9'50 tael; Japan, Takasima lump, 5'75 tael; Namazuta lump, 4'75; other sorts, 3'25 to 3'50 tael per ton for such as are offered.

Kerosene Oil.—Last fortnight we closed with the market in a very unsettled state, but during the first part of the period under review large holders deemed it politic to experiment and reorganize things generally, and bought to the extent of some 40,000 to 50,000 cases at prices gradually ascending from 1'50 to 1'59½ tael per case, but it is quite apparent that very little benefit arose from this maneuver as the market soon after relapsed to its former state leaving things as unsettled as before. There have been no transactions from first hands, importers of both American and Russian declining to accept the prices now ruling. Our stocks at wharves are now 950,000 cases American and 100,000 cases Russian. Quotations are: American, Devoe's, 1'55 tael per case; Chester, 1'47½ tael per case; Russian, Batoum, 1'48½ tael; Batoum bulk, 1'45 tael per case.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Nov. 1, 1895.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending		From Jan. '94.	From Jan. '95.
	Nov. 2, 1894.	Nov. 1, 1895.		
Anthracite.	31	17,401	56	24,250
Coke.....	119	137,002	159	172,450
Charcoal...	22	4,745	22	4,830
Totals...	172	159,148	228	211,530
				5,009,983
				7,505,347

While it cannot be said that the iron market is especially active, it would not be fair to describe it as dull. The situation continues to be rather a waiting one, though that condition cannot last much longer. Buyers begin to realize that demand for finished material is going to continue large, and that their stocks are beginning to grow low. The time is approaching when contracts for next year's supplies must be made, and they cannot meet the calls of their customers much longer on present bases. The persistent efforts to break the market have succeeded only in taking off some of the speculative advances, without forcing any substantial reduction. Some of our contemporaries—who ought to know better—continue to talk of lower prices, and it is easy to give quotations in the absence of actual sales—but not so easy to buy raw iron and steel which is wanted for delivery.

Meantime the makers of pig iron and steel billets are not in a hurry. They have work enough to keep them going and they are still uncertain as to the prices they will have to pay for ore next season, though sure that they will be much higher than for two years past. Another advance in coke is also possible. Under all the circumstances it is not strange that we hear of few or no contracts for 1896 delivery as yet, and it is very probable that several weeks will pass before heavy engagements for next year are made, although buying for immediate wants will increase.

NOTES OF THE WEEK.

Large arrivals of foreign iron ore continue to be reported at Baltimore and Philadelphia. Spanish ore is increasing in quantity, as the contracts placed not long ago begin to be filled. There is some reluctance to contract for Cuban ores, in view of the uncertainty as to delivery arising from the insurrection in the Island.

St. Louis advices report that successful experiments made there with Southern basic iron in the open-hearth furnace have decided the placing of an order for some 10,000 or 12,000 tons of Alabama pig iron.

A Pittsburg dispatch says that the Frick Coke Company has purchased the plant of the Fairchance Furnace Company, at Fairchance. The holdings of the furnace company include the plant of 141 ovens and 10,000 acres of coal land about Fairchance and the old Spring Hill Furnace tract. The details of the sale cannot be learned at this time and the consideration is not announced. Representatives of the two companies are now at work taking an inventory of the stock. The Frick Company takes possession at once. It is also rumored that the Frick Company has purchased the Martin plant of R. L. Martin, of Pittsburg.

THE LOCAL MARKET.

Conditions are not materially changed. While the market is quiet—as it generally is in New York—we have abundant evidence that there has seldom been a time when foundries and machine shops were generally so busy. The Newark people report that they cannot keep up with orders, and this seems to be quite a general cry in the neighborhood of the city.

Pig Iron.—Demand for small lots continues, and is especially marked for the lower grades. Holders are not at all inclined to shade, especially on Southern irons. It is well understood that some of the large foundries, which have been running on iron bought when prices were low, are drawing down their stocks pretty well and must soon be in the market. What prices they will have to pay will be settled hereafter; but sellers are inclined to take a very hopeful view, and do not look for reductions.

We quote, without change, for Northern brands as follows: No. 1 X, \$14@14.50; No. 2 X, \$13@13.50; gray forge, \$12.50@13. For Southern iron, prices are: No. 1 foundry, \$13.75@14; No. 2 foundry, \$13.25@13.75; No. 1 soft, \$13.75@14; No. 2 soft, \$13.25@13.75; forge, \$12.50@13. All prices are for tidewater delivery.

Cast Iron Pipe.—We hear of one contract placed at a price said to be about \$19.25 per ton, but the particulars are not to be had. So far as deliveries go, this is the dull season for pipe; several contracts are under negotiation, but parties are not in a hurry on either side.

Steel Billets.—The market continues quiet, but quotations are steadier at \$23.50@24.50 tidewater. Wire-rods are quoted \$30.75@31.50 tidewater. Imported wire-rods can be had at about \$26@26.50, but we hear of no sales.

Spiegeleisen and Ferro-Manganese.—No sales of any amount are reported, but sellers anticipate a demand. Prices are nominally \$25@26 per ton for imported spiegeleisen; \$52@53 for ferro-manganese.

Merchant Steel.—There is no cessation in demand apparent, and little or no change in prices. We quote: Bessemer machinery, 1'60@1'75c.; open-hearth machinery, 1'75@1'90c.; soft steel bars, 1'40@1'45c.; steel hoops, 1'60@1'80c.; steel axles, 1'65@1'80c.; links and pins, 1'70@1'80c.; tire steel, 1'85@1'90c.; spring, 2'10@2'25c., all delivered. For bars, we quote 1'35@1'45c. for common, and 1'50@1'65c. for refined, on dock.

Structural Iron and Steel.—Demand is steady and many contracts of moderate size are noted. Another contract of about 1,000 tons for the Boston Subway has been taken by the Pennsylvania Steel Company at \$49.98 per ton for all required. We quote, with no material changes, for angles, 1'70@1'85c.; channels, 1'90@2c.; tees, 1'90@2c. Beams, up to 15-in., are quoted 1'80@1'90c. on large orders, but up to 2.10 and 2.15c. has been paid on smaller orders.

Plates.—While no contracts of large size can be noted, the general demand continues good and prices firm, possibly a shade higher on some sorts. For steel plates we quote: Tank, 1'90@2c.; boiler shell, 2'05@2'20c.; flange, 2'10@2'25c.; firebox, 2'50@2'75c. Universal mill plates continue in demand at 1'90@1'95c.

Steel Rails and Rail Fastenings.—For standard sections quotations are unchanged at \$28 at mill, or \$27.75 tidewater. Some good orders have been placed in other markets, but little has been done here. For street rails the demand is good. Some local orders are under negotiation, but they are dependent upon contingencies for the most part, and may not be closed soon. For rail fastenings demand is good. We quote, without change, for fish and angle-plate, 1'45@1'50c.; spikes, 1'80@1'85c.; bolts, square nuts, 2'10@2'25c.; bolts, hexagon nuts, 2'20@2'30c.

Scrap.—Foundry scrap continues scarce and in demand, and there is no difficulty in disposing of lots of any size. We quote nominally \$10.50@12 per ton, though most sales are on private terms.

Buffalo, N. Y.

Oct. 31.

(Special Report of Rogers, Brown & Co.)

The market in this district has been more active during the past week than is usual at this time of the year. Foundries that a few months ago supposed they had covered for their entire wants for the balance of the year, now find they need more iron than they counted on melting. This tends to prove that consumption of pig iron is increasing and certainly is a very encouraging feature. The larger foundries with whom the pig iron subject is of greater importance, have been watching the market closely, and some of them have been in the market during the week just passed. One sale is reported of 3,000 tons and another for 2,000 tons. In both cases immediate shipment of part of the order was stipulated. Although Bessemer has advanced sharply, foundry iron has not, and we are still able to quote on the following basis, cash f. o. b. cars Buffalo: No. 1 Foundry Strong Coke Iron, Lake Superior ore, \$15.25@15.75; No. 2 Foundry Strong Coke Iron, Lake Superior ore, \$14.75@15.25; Ohio Strong Softener No. 1, \$16.25@16.75; Ohio Strong Softener No. 2, \$15.25@15.75; Jackson County Silvery No. 1, \$16.25@17; Southern Soft No. 1, \$15.15@15.65; Southern Soft No. 2, \$14.65@15.05; Hanging Rock Charcoal, \$18.50; Lake Superior Charcoal, \$16.75.

Chicago.

Oct. 30.

(From Our Special Correspondent.)

The only business of any consequence in the past week has been that placed by car-builders for the material to be used in the construction of cars, orders for which were placed by a good many of the railroads in the past ten days. It is reported that about 5,000 cars have been contracted for and that 5,000 or 6,000 more will be placed within a short time. Aside from this business the Chicago market has been quiet, and while it is expected that the demand for nearly all classes of material will increase in the near future it is not especially large at the present time. Prices generally are very firm, and are unchanged.

Pig Iron.—The inquiry for both Northern and Southern iron continues to be light, and it is not probable that any very large business will be done between now and the middle of December. It is expected that at that time a number of consumers whose contracts will be filled by the first of the year will come into the market for renewals, and will probably place larger contracts this time than they did last. The foundrymen of this vicinity are very busy as a rule, and report the chances good for the continuation of their business. Quotations are unchanged and are made as follows: Lake Superior charcoal, \$16; Lake Superior coke, No. 1, \$15@15.50; No. 2, \$14.50@15; No. 3, \$14@14.50; Local Scotch No. 1, \$15; No. 2, \$14.50; No. 3, \$14; Jackson County silveries, \$15.50@16; Southern coke, foundry, No. 1, \$14.25; No. 2, \$14; No. 3, \$13.75; Southern soft, No. 1, \$14.25; No. 2, \$14; Southern car-wheel iron, \$17.50; Southern silveries No. 1, \$15.25; No. 2, \$15; Tennessee charcoal No. 1, \$13@13.50; Bessemer, \$18. Ohio strong softeners, \$15@15.50.

Structural Material.—No important business was closed last week and the general market appears to be rather quieter with the advance of the season. It is not expected that any large new business will be secured by the mills for some time to come. Quotations are as follows: For universal plates, 1'90@2c.; beams and channels, 1'90@2c.; angles, 1'85@1'90c.; tees, 2@2'10c.

Merchant Steel.—One contract of considerable size was placed last week by an agricultural implement manufacturing company, but aside from this no important business was closed. General business has been quiet. The demand is limited and it is hardly probable that it will be better in the immediate future. Prices are firmly maintained as follows: Tool steel, 5@7'50c.; Bessemer bars, 1'65@1'75c.; smooth finished machinery, 1'95@2c.; tire steel, 2'20@2'25c.

Bar Iron.—Several large contracts were placed in this market last week for bar iron and steel for car construction, and others will be placed in the near future for cars which will be ordered by the railroads within the next week or 10 days. General business has also been better, and two or three round lots of iron were sold, with others in prospect. Quotations are maintained at 1'50c. for common iron, 1'60@1'65c. for refined, and 1'65@1'75c. for soft steel bars from strictly billet stock.

Billets and Rods.—Sales of billets in the past week were small, and were made at the reduced price of \$24. No sales of rods were made last week, and they are now quoted at \$31.

Steel Rails.—A moderate business was done by the local mills, and it is expected that the inquiry will be very large for delivery next year. Quotations are made at \$29 and upward, according to specifications.

Cleveland, O.

Oct. 3.

(From Our Special Correspondent.)

Pig iron in this market holds firm at the advancing prices of a week ago, but transactions in iron ore are limited both in number and in volume. The few sales that are being made are at an advance of fully \$1.75 per ton over the prices that were established last spring. The feature for the week has again been the rising lake freights which have practically become prohibitive. The fall in freights of last week which was enabling the ore men to move their product has been succeeded by a decided advance. A little chartering has been done during the past day or two from Escanaba to Ohio ports at

\$1.20, from Marquette at \$1.35, and from the head of the lakes at \$2 per ton. At these rates the most of the ore dealers keep out of the market. It is estimated that if the shipments can be put off until next spring a great saving can be effected. No season chartering of vessels for 1896 has yet been effected to speak of, but ore dealers express a willingness to pay \$1.10 from the head of the lakes. Should lake rates drop back again the present disposition of the shippers is to bring down all the ore they can secure vessels for. The last extensive sale of ores, made some weeks ago, was at \$4.50 per ton, on a basis of a \$1.25 carrying rate from Duluth. At the maximum freight charge, paid this week, \$2, the price of this ore if shipped now would be \$5.25 but very few sales are now made at that figure.

The Ore Shippers' Association, heretofore confined to the old ranges, has invited the mining companies in the Mesabi range to join. The plan proposed is to allow the Mesabi ore a differential of from 20c. to 25c. per ton in selling price. The mine owners in the old ranges have quite generally interests also in the newer ones. Nothing has yet been done towards fixing a scale of ore prices for next season. In a tentative way \$4.50 is mentioned as a basis for standard specular Bessemer, but the disposition is to await the action of the association.

For delivery yet this season prices are as follows: Standard specular Bessemer, \$4.75@5; standard hematite Bessemer, \$4.25@4.50; standard specular non-Bessemer, \$3.75@4; standard hematite non-Bessemer, \$3.25@3.50.

Philadelphia. Nov. 1.

(From Our Special Correspondent.)

Pig Iron.—No change has been made in either published quotations or private selling prices. Furnace people all say they have more to gain by waiting than by selling their next year's iron now. The idea prevails that iron will be higher. Everything offered since Monday—which has not been much—has been taken at good prices. The large consumers have no plans laid, but are waiting for developments. Anthracite is likely to go higher, coke a firm and unsafe to count on, so that present quotations are not likely to weaken. No. 1 Foundry is \$14@14.50; No. 2, \$13@13.50; Forge, \$12@13.

Billets.—Buyers will wait as long as they can before making purchases, thinking as they do that, after some of the big orders are filled, prices will ease up or rather down. A good deal of stock is still due. Asking prices are \$23.50@24 at which some little business has been done.

Merchant Iron.—The railroads are obliged to contract for cars. Nearly all shops are busier. Mill agents are getting more business in consequence. If orders for cars keep coming the mills will feel the good of it soon. Refined iron is 1-40 delivered; average, 1-30. Sharper competition is in sight.

Skelp.—Some additional skelp work is here and it was shipped in at a shading from 1-40.

Sheets.—Good sized orders have been sent to mills this week. Manufacturers deny that there is a general slipping back of prices. There is not quite enough work on the other hand to allow mill men to dictate.

Pipes and Tubes.—A steady demand for shop work is reported all around, but quotations are more in buyers favor than they were. Butt welded, black, is 55 and galvanized 50% discount.

Merchant Steel.—A somewhat better demand is coming for all kinds of merchant steel.

Plates.—There is quite a rush of work on large buildings and contractors are pushing day and night. Large orders are promised this week. Mills have booked considerable office building work for December. Tank steel, 1-75; universal plates, 1-90; shell, 2-00; flange, 2-15.

Structural Steel.—This week's inquiries call for 3,500 tons if we get it all. Some of it is for local winter delivery. Angles are 1-75; beams and channels, 1-80. Prospects for trade are good.

Rails.—Apart from small orders, no business has been closed. Brokers say there is no telling what some railroad companies may decide to do between now and December.

Old Rails.—Price still \$16 and very little business.

Scrap.—Quiet and likely to weaken from appearances.

Pittsburg. Oct. 31.

(From Our Special Correspondent.)

Raw Iron and Steel.—Business developments during the week on the whole have been generally favorable; for certain products there was a steady demand, for others the demand was not so active. The growing complaints of the insufficiency of cars to move the increasing freight tonnage of the railroads attests the activity of business and foreshadows a larger demand for railroad equipment, which had been allowed to run down on many systems during the long period of reduced earnings. The recovery of the decline in Bessemer has produced a favorable effect in the leading markets; there has been a better inquiry for manufactured iron and steel, including the demand for railroad equipments, and the general iron situation indicates a return of the confidence recently impaired by the temporary reaction in values. The ore question is attracting a good share of attention and by the decided uncertainty as regards the future on the part of producers. With lake freights on superior ore

up to \$1.25, and with contracts for next year's supplies under negotiation at that figure, furnacemen are disposed to go slow and buyers are more inclined to give orders. It is certain that this problem of next year's ore supply is now the serious factor in the trade, and until some terms are arrived at the markets are likely to hold firm. The prospect of a scant ore supply in the near future was no doubt one of the principal causes of the advance in Bessemer here and at other leading points.

The Carnegie Company is making extensive improvements at the Braddock mill, which will make it the largest billet plant in the United States, not excepting the Duquesne plant. The roughing rolls in the rail mills are to be changed so that billets may be finished without using a double set of rolls. The Edgar Thomson Steel Works made a change from rails to billets; it will be the last time a change of rolls will be necessary at that plant for a change of production. At Youngstown, the total amount distributed was nearly \$200,000 in wages; the largest pay roll at any one office was at the Brown-Bonnell Iron Company, \$65,000 being paid out.

At the close Bessemer prices are fairly maintained; next year's delivery commands the highest prices at Valley furnaces, \$14.85@15.25, as to time of delivery. Billets are weak and prices irregular; muck raw declining; other articles show no change.

COKE SMELTED, LAKE AND NATIVE ORE.		Tons	Cash.
10,000 Bessemer, Nov., Dec., Valley	.....	15.25	
6,000 Bessemer, Jan., Feb., March, 1896, Valley	.....	15.00	
5,000 Bessemer, Dec., Jan., Pittsburg	.....	16.10	
4,000 Bessemer, Jan., Feb., March, Pittsburg	.....	16.40	
3,000 Bessemer, Nov., Dec., Valley	.....	14.85	
2,000 Bessemer, Nov., Dec., Valley	.....	16.00	
1,000 Gray Forge, Nov., Pittsburg	.....	13.10	
1,000 Gray Forge, Nov., Dec., Pittsburg	.....	13.25	
1,000 Bessemer spot, Pittsburg	.....	16.00	
800 White and Mottled, Pittsburg	.....	12.00	
500 Gray Forge, Pittsburg	.....	13.00	
350 No. 2 Foundry, Pittsburg	.....	13.75	
250 No. 1 Foundry, Pittsburg	.....	14.75	
50 Gray Forge, Pittsburg	.....	13.25	
50 No. 2 Foundry, Pittsburg	.....	13.50	
CHARCOAL.			
600 Cold Blast	.....	\$24.00	
250 Cold Blast	.....	24.00	
75 No. 2 Foundry	.....	17.25	
60 Warm Blast	.....	17.25	
60 No. 2 Foundry	.....	17.25	
BLOOMS, BILLETS AND SLABS AT MILL.			
1,500 Billets, Dec., Jan., at mill	.....	\$21.50	
1,000 Billets, Nov., Dec., at mill	.....	21.75	

METAL MARKET.

NEW YORK, Friday Evening, Nov. 1, 1895.
Gold and Silver.

Prices of Silver per Ounce Troy.

October.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.	Oct.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.
26	1.88	30 1/2	67 3/4	.524	30	1.88 1/2	31 1/2	68	.526
28	1.88	30 1/2	67 3/4	.524	31	1.88 3/4	31 3/4	67 3/4	.524
29	1.88 1/2	31 1/4	67 3/4	.525	1	1.88 1/2	30 3/4	67 3/4	.523

Silver has shown steadiness and indications pointed to a higher market. When the advancing tone received a check on Wednesday, owing to the reaction in securities growing out of current rumors connected with the Turkish and Chinese questions. The market to day is a little steadier.

The United States Assay Office at New York reports the total receipts of silver at 96,000 oz. for the week.

Gold and Silver Exports and Imports.

At all United States ports, September, 1895, and years 1895 and 1894 in coin and bullion:

	Gold.		Silver.		Total excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
Sept. 1895	\$17,424,065	\$749,456	\$5,397,944	\$1,781,193	E. \$20,291,350
1895	73,190,222	28,839,929	38,663,160	7,980,664	E. 75,032,859
1894	90,506,508	16,691,345	35,353,425	7,345,753	E. 191,804,835

Imports and exports of gold and silver in ores for

the nine months to September 30th are reported as below:

	Gold.		Silver.	
	1894.	1895.	1894.	1895.
Imports	\$567,669	\$1,306,112	\$5,679,930	\$9,128,483
Exports	25,539	326,653	200,101	99,985

Excess, Imports, \$542,110 - \$979,459 \$5,479,829 \$9,028,498

These imports and exports in ores are not included in the table of exports and imports of coin and bullion given above.

Adding the exports and imports in ores to those in coin and bullion, we have the following statement for the nine months of the present year to September 30th:

	Exports.		Imports.		Excess.
	Gold.	Silver.	Gold.	Silver.	
Gold	\$73,516,935	\$39,146,051	\$39,146,051	\$7,179,147	E. \$43,370,884
Silver	38,763,144	17,109,147	17,109,147	21,653,998	E. 21,653,998

Total \$112,280,080 \$47,255,198 E. \$65,024,882

The statement includes all United States ports, the figures being furnished by the Bureau of Statistics of the Treasury Department.

Gold and Silver Exports and Imports, New York

For the week ending November 1st, 1895, and for years from January 1st, 1895, 1894, 1893 and 1892:

	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
Week	\$116,355	\$8,221	\$743,900	\$8,201	E. \$843,733
1895	58,752,257	27,351,471	32,541,912	1,455,620	E. 62,490,066
1894	85,346,206	15,225,995	29,178,241	1,519,067	E. 97,779,441
1893	70,159,547	58,574,395	26,661,134	3,063,371	E. 35,191,919
1892	59,161,503	7,712,368	18,093,170	2,691,333	E. 65,855,972

The gold exported for the week went to the West Indies; the silver went to London, with exception of \$68,250 to Panama. The gold imported was from the West Indies; the silver from Central America.

FINANCIAL NOTES OF THE WEEK.

The business conditions show little change during the past week; no unfavorable influences are to be reported, and no cessation of activity. The reports in our special market letters from all the leading centers still point to growth of trade and to demand which keeps pace with production.

The speculative markets in New York, however, continue dull, and have this week sympathized to some extent with the downward tendency shown abroad. The bear clique in New York is still in control, but in a market which is entirely professional. Outsiders are generally too busy and find too much use for their funds in their own active businesses to go "into the street," and the operators continue to be left largely to their own devices.

The elections this fall have had very little influence on business. In nearly all the State campaigns local issues have taken a more prominent part than usual. The great majority of people are not considering the presidential election of 1896 at all yet, and even the currency question is very much in abeyance for the time.

The statement of the United States Treasury on Thursday, October 31st, shows balances in excess of outstanding certificates as below, comparison being made with the corresponding day of last week:

	Oct. 24.	Oct. 31.	Change.
Gold	\$93,010,658	\$93,079,204	I. \$68,546
Silver	14,627,904	15,318,877	I. 720,973
Legal tenders	50,254,574	50,506,549	I. 251,975
Treasury notes, etc.	27,365,618	26,596,199	D. 769,419
Total	\$185,258,754	\$185,631,679	I. \$372,925

Government deposits with national banks on the same date amounted to \$15,205,860, a decrease of \$367,545 during the week.

Total United States Treasury notes issued under act of July 14th, 1890, in general circulation and in the Treasury, \$141,440,200. Against these are held in the Treasury 17,433,608 coined standard silver dollars, and silver bullion purchased at a cost of \$124,001,762, making a total of \$141,440,370.

The Treasury receipts for the month of October, estimating the closing days of the month, show little improvement over September. The figures of the deficit for the month, which are dwelt upon in some quarters, are not of special importance, because the month has included heavy interest payments for the new quarter which should be spread over the two following months in order to afford a fair comparison. The deficit for October is \$6,161,000, and the interest payments made will not much exceed \$5,000,000. The next two months, at the same rate of receipts, would wipe out most of the deficit. For the four months of the current fiscal year the receipts have been as follows, the miscellaneous income being included in the totals, though not given separately in the columns:

	Customs.	Int. revenue.	Total.
July	\$14,076,984	\$12,898,405	\$26,975,389
August	15,639,047	12,172,105	27,811,152
September	14,613,867	12,260,908	26,874,775
October	14,500,000	12,500,000	27,000,000

Total \$58,919,898 \$49,830,518 \$108,750,416
Average per month \$14,729,974 \$12,457,629 \$27,187,603

The expenditures averaged about \$30,000,000 per month. The figures have shown a marked improvement since June, the six months of the present year up to June 30th having shown total receipts of \$151,298,890, an average of about \$25,216,000 per month.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending October 26th gives the following totals, comparisons being made with the corresponding weeks in 1894 and 1893:

	1893.	1894.	1895.
Loans and discounts	\$397,324,800	\$499,692,700	\$502,492,800
Deposits	433,261,700	594,295,200	530,633,200
Circulation	14,619,800	11,619,700	14,050,300
Specie	96,561,500	93,926,600	63,151,700
Legal tenders	60,538,400	118,512,100	86,201,300
Total reserve	\$157,102,900	\$212,438,700	\$149,353,000
Legal requirement	108,315,425	148,823,800	132,663,300
Surplus reserve	\$48,787,475	\$63,614,900	\$16,689,700

Changes for the week were increases of \$1,309,525 in surplus reserve, and \$1,299,800 in specie; decreases of \$1,827,500 in loans, \$308,000 in legal tenders, \$1,270,900 in deposits, and \$80,800 in circulation.

For convenience of comparison, we have grouped together in the table below the specie holdings of the leading banks of the world at the latest dates covered by their reports. The amounts are reduced to dollars, and comparison is made with the holdings at the corresponding dates last year:

	Gold.	Silver.	Total.
Asso. Banks of New York			\$63,151,700
1894			93,926,600
Bank of England	\$208,520,145		208,520,145
1894	180,887,390		180,887,390
Bank of France	392,303,100	\$246,209,307	638,512,400
1894	380,649,920	217,834,310	628,484,230
Imp. Bank of Germany			232,070,000
1894			238,220,000
Austro-Hungarian Bank	113,660,000	64,432,000	178,092,000
1894	75,058,000	73,050,000	148,108,000
Netherlands Bank	21,351,000	33,977,000	55,328,000
1894	20,365,000	33,900,000	54,265,000
Belgian National Bank			21,426,000
1894			23,875,000
Bank of Spain	40,022,000	55,463,000	95,485,000
1894	40,020,000	49,120,000	89,140,000
Bank of Italy	59,640,000	9,380,000	69,020,000
1894			
Imp. Bank of Russia	351,560,000	53,080,000	404,640,000
1894			

The return for the Associated Banks of New York is of date October 26th; all the others are of date October 31st, except the Bank of Italy, whose return is dated September 30th, and the Bank of Russia, September 16th-28th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England reports its gold only, not considering silver at all. The Imperial Bank of Germany and the Belgian National Bank do not report gold and silver separately.

The imports of specie by water at San Francisco for September and for the nine months ending September 30th were as follows:

	Sept.	Nine mos.
Mexico	\$410,098	\$1,918,838
British Columbia	34,416	201,837
Australia		187,592
Central America		25,000
Japan		4,346
Society Islands		3,507
Hawaiian Islands		50,000
Total	\$444,514	\$2,691,630
In 1894	114,338	2,330,864

Imports in September, 1895, embraced \$97,136 in gold and \$347,378 in silver, and for the first nine months of the year, \$1,195,556 in gold and \$1,495,474 in silver. Most of the silver came from Mexico. A much larger quantity from Mexico was received by rail, as noted in our last week's issue, and is not included in the above total.

Shipments of silver from London to the East for the year to October 17th are reported by Messrs. Pixley & Abell's circular as below:

	1894.	1895.	Changes.
India	\$4,233,315	\$2,895,180	D. \$1,338,135
China	2,317,578	1,516,117	D. 801,461
The Straits	1,086,616	637,003	D. 449,613
Total	\$7,637,509	\$5,048,300	D. \$2,589,209

Receipts for the week were £18,000 from the West Indies and £172,000 from New York; a total of £190,000. The total shipments were £95,393, of which £48,000 went to Bombay, £32,333 to Hongkong and £15,000 to Japan.

Indian exchange has been quiet and lower, the average price of Council bills having fallen 13½d. per rupee, a loss of ¼d. The dollar and tael exchanges are somewhat firmer.

London despatches note that on October 31st the sum of £3,250,000 sterling (or \$41,250,000) was formally transferred from the Chinese to the Japanese Government, being one-fourth of the whole indemnity. The money still lies in the Bank of England, but may, of course, now be withdrawn, in whole or part, at any moment for Japanese requirements. The money has been in the bank since the completion of the Russo-Chinese loan negotiations.

Domestic and Foreign Coins.

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

	Bid.	Asked.
Mexican dollars	\$0.54	\$0.54½
Peruvian soles and Chilean pesos	.48½	.50
Victoria sovereigns	4.87	4.90
Twenty francs	3.86	3.90
Twenty marks	4.75	4.80
Spanish 25 pesetas	4.78	4.83

Other Metals.

Copper.—We have just discovered that in our edition of October 19th, page 383, we quoted casting copper 11¼@%, while the price ought to have read 11½@%.

The flatness in the copper market which we have reported for some weeks past has made further progress. The business which has been transacted for the last six weeks has, as we pointed out in our various reports, been almost of a retail character. The quotations have therefore continued to be nominal, and are still so to a certain extent. This specially refers to Lake copper, which has been sold and offered in a small way at 11.75@11.70, but most of the larger companies still remain out of the market, awaiting further developments. Electrolytic copper, cakes, wirebars or ingots is now to be had at considerably lower prices, and some sales have taken place at 11½ and for export at a somewhat lower price, while in casting copper sales have been made at from 10.80@10.90. There have also been some transactions in Arizona pig copper, but the terms and prices are not reported.

Copper shares in Boston all show more or less declines for the week, with the exception of the gilt-edge stocks, which were fairly steady. On the average, prices for copper stocks are now lower than on July 1st last, when the price of Lake copper was 10½.

The European market has been rather irregular. The week opened at £45 10s., being a decline of 10s. from the close of the previous week, but on October 29th prices dropped to £45 for spot. Since then they have rallied somewhat, and the closing quotations to day are £45 2s. 6d. @ £45 10s. for spot, and £45 10s. @ £45 17s. 6d. for three months prompt. There has been little demand for consumer's copper, and prices in general have suffered somewhat. We quote: English, tough, £48 10s. @ £49; best selected, £49 10s. @ £50; strong sheets, £55 @ £55 10s.; India sheets, £52 10s. @ £53; yellow metal, 4½d.

Our cable from Europe states that copper statistics for the second half of October have decreased 2,400 tons. This is mostly due to the small shipments from this side.

Copper Exports.—The exports of copper from the port of New York during the week ending November 1st, as reported by the New York Metal Exchange, were as follows:

Copper:		
Hamburg—Havel	Plates	50 tons.
Rotterdam—Amsterdam	Plates	149 "
"	Pigs	75 "
"	Ingots	50 "
Trieste—Povhatan	Bars	60 "
Havre—Naranja	Plates	20 "
" —La champagne	Plates	50 "
Hamburg—Persia	Ingots	100 "
Rotterdam—Maasdam	Bars	30 "
"	Plates	35 "
"	Bars	50 "
Matte:		
Swansea—Exeter City		90 tons.
Liverpool—Cevic		144 "

The exports of copper from the port of Baltimore for the week ending October 31st are reported by our special correspondent as follows:

Copper:		
Rotterdam—Durango	4,035 Ingots	67,200 lbs.
"	5,287 Bars	672,252 "

This is a total of 609 long tons of copper, and 234 tons of matte from New York, and of 330 tons of copper from Baltimore; making in all 969 tons of copper and 234 tons of matte exported for the week. The imports for the week were 619 tons of matte from Mexico.

Tin.—Consumption continues at a very satisfactory rate, and the deliveries are good. In conjunction with the higher prices cabied from Europe, our market has advanced, and we quote spot and futures 14.70. Shipments from the Straits for the second half of October have been 700 tons to the United States and 800 tons to Great Britain. The statistical position of tin is still rather unfavorable, but with the large deliveries both in Europe and on this side, a diminution of the stocks is looked for.

The market abroad opened firm at £65 10s., and reached the highest point on October 31st, when a large business was done at £66 15s. Afterward a slight reaction set in, and the closing prices are £66 5s. @ £66 7s. 6d. for spot, and £66 15s. @ £66 17s. 6d. for three months prompt.

Lead.—After the large transactions of the few past weeks, the market has settled down, and prices are steady at 3.30@3.32½.

The foreign market continues very strong, and Spanish lead is quoted £11 7s. 6d. @ £11 10s., and English lead 2s. 6d. higher.

Receipts of lead at New York during the month of October, as reported by the New York Metal Exchange, were 6,935 long tons, of which 2,335 tons came from Europe, and 4,600 tons from Mexico. Exports of Mexican lead in bond from this port amounted to 2,480 tons, of which 55 tons went to Canada, and the balance to Europe. The stock in

bond at New York and nearby ports on October 31st is estimated at 9,946 tons, being 1,745 tons less than at the opening of the month.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is quiet at about 3.02½, and trading is very light.

Spelter.—The market has been very irregular, and generally followed a downward course. Sales are reported from St. Louis at \$70, and we have to quote 3.90@3.95, New York.

The foreign quotations are £15 5s. @ £15 6s. 3d. for ordinaries and £15 10s. for special brands.

Antimony is dull with only a retail business doing. Cookson's 7½, Hallett's 7½, and United States Star 7½.

Monazite.—The following quotations have been furnished us by parties dealing extensively in the mineral; Monazite containing 1¼ to 3% thorium oxide, 8c. per lb.; 2 to 3%, 10c.; 3 to 4%, 15c.; 5 to 7%, 25c.; 7 to 9%, 30c.; 9 to 11%, 35c. per lb.

Nickel.—A little more active demand is reported, but prices are not higher. We quote 33@37c. per lb. according to size of order.

In London quotations are steady at 12@13d. per lb. Paris quotations are unchanged at 4 fr. per kilo. (equal to 35c. per lb.) for pure metal, and 2@2.25 fr. per kilo. for copper-nickel alloy, 50% nickel. These prices are shaded on large orders.

Platinum.—Prices are very firm, but unchanged, and we quote \$12 per ounce, New York, for large lots. The London price is higher, 46@47s. per ounce.

For chemical ware, best hammered metal, Messrs. Eimer & Amend, New York, furnish the following quotations, the prices given being respectively for orders of over 250 grams; for orders of over 100 grams and less than 250 grams, and for orders of less than 100 grams: Crucibles and dishes 46c., 47c. and 48c. per gram. Wire and foil are 43c., 44c. and 45c. per gram. The current retail price for crucibles is 60c. per gram.

Quicksilver.—There has been no change in prices and quotations continue at \$40 per flask, New York. The London price is £7 7s. 6d., with £7 5s. quoted from second hands.

Imports and Exports of Metals.—Imports of metals into this port for the week ending October 24th, as reported by the New York Metal Exchange, were as follows: 28,650 boxes tin and black plates, 100 tons Straits tin, 50 tons Australian tin and 521 bags antimony ore from the United Kingdom; 150 tons Straits tin and 200 tons Belgian lead, duty paid, from Holland; 150 tons Straits tin from Bremen; 500 tons Belgian lead, duty paid, from Antwerp.

Exports of metals from the port of New York for the week were 13 tons of zinc skimmings to Bristol 80 tons of sulphate of copper to Mexico; 4 tons zinc skimmings to Liverpool, 25 tons nickel to St. Petersburg; 32 tons tin scrap to Amsterdam; 8 tons mineral zinc to Rotterdam.

Arrivals at Baltimore for the week ending October 26th were: 2,962 tons iron ore from Bona; 3,406 tons iron ore from Spain; 5,413 tons iron ore and 787 tons manganese ore from Cuba; 76 tons ferro-manganese and 2,313 boxes tin plates from Liverpool.

Arrivals at Philadelphia for the week ending October 26th were: 3,075 tons iron ore from Spain; 3,600 tons iron ore from Greece; 200 tons ferro-manganese from Liverpool; 300 tons lead from Antwerp.

Exports from Baltimore for the week ending October 31st, as reported by our special correspondent, were 500 tons wash-metal to Liverpool.

Imports of metals into this port for the week ending October 31st, as reported by the New York Metal Exchange, were as follows: 50 tons ferro-silicon, 511 tons ferro-manganese from Liverpool; 400 tons spiegeleisen, 500 tons Belgian lead, duty paid from Antwerp; 320 tons spiegeleisen from Glasgow; 44 tons manganese ore, 60 cases antimony, 400 lbs. aluminum; from Hamburg; 25 tons Straits tin, 165 tons Belgian lead, duty paid, from Rotterdam.

Exports of metals from the port of New York for the week were: 50 tons tin scrap to Antwerp, and 13 tons sulphate of copper to Mexico.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, November 1.

Heavy Chemicals.—This market has been quiet but steady. Several very fair sized sales for 1896 delivery are reported. Buyers do not seem to have become accustomed to the higher prices, and as a consequence have not been eager to purchase. There is a firm tone to the market and the tendency if anything is toward a higher range of values. Alkali and carbonated soda ash have been rather quiet. For caustic soda a fair demand for futures is reported at unchanged prices. Bleaching powder has been in better demand, especially for next year's delivery.

We quote: Caustic soda, 2.15@2.25c. for spot; Carbonated soda ash, 48%, is .95@1c., according to quantities and deliveries. Alkali is .90@1.05c., according to test. Bleaching powder, \$1.90@2c. with little offering at those prices. Sal soda, 65@70c.

During the month of August, 1895, the exports Alkali from Great Britain amounted to 479,220 cwt. of which 231,422 cwt. went to the United States. The exports of bleaching chemicals during the same month amounted to 111,664 cwt., of which the United States received 67,762 cwt. This is a decided increase over the exports for August, 1894.

Acids.—The jobbing demand for the various acids continues good, and, in the absence of heavy stocks in makers' hands, prices have ruled quite firm, especially on orders for prompt delivery. The inquiry for 1896 delivery has been fair, and the prospects for a good business next year are promising. We quote, per 100 lbs. in New York and vicinity, in lots of 50 carboys or over as follows: Acetic acids (in barrels), \$1.40@1.70 according to make and size of order. Muriatic acid, 18°, 75@90c.; 20°, 90c.@1.15. Nitric acid, 36°, \$3.50 @ \$4; 40°, \$4 @ \$4.50; 42°, \$4.75@5.25. Oxalic acid, \$7.10@7.60. Mixed acids, according to mixture. Sulphuric acid, 60°, 75@85c.; chamber acid, \$6.50@7.25 per ton at factory. Blue vitriol is in demand, with sales at \$3.90@4.10 according to size of order. **Brimstone.**—We quote for shipments, best un-mixed seconds, \$15@15.25. Thirds are 25@50c. less.

Fertilizing Chemicals.—A better feeling is reported in this market, and the improved situation in the South due to better prices for cotton makes sellers hopeful. The ammoniates have been in better demand and are consequently somewhat firmer in price. We quote: Sulphate of ammonia, gas liquor, \$2.55@2.60; bone, \$2.50@2.55. Dried blood, high grade, \$1.75@1.85; low grade, \$1.60@1.70, per unit. Azotine, \$1.85@1.90. Concentrated phosphate (30% available phosphoric acid), 70@71½c. per unit. Acid phosphate, 13% to 15%, av. P₂O₅, 57c. per unit at seller's works in bulk. Dissolved bone black, 17% to 18%, P₂O₅, 90@92c. per unit. Acidulated fish scrap, \$12, and dried scrap with few or no sales, nominally \$21 f. o. b. fish factory. Tankage, high grade, \$19@20; low grade, \$18@19. Bone tankage, \$21; ground bone, \$19@20. Bone meal, \$21 @ \$22.50.

In lots of 50 tons on contracts we quote, per 100 lbs.: Double manure salts, 48-53% (basis of 48%); New York, Boston and Montreal, \$1.10; Philadelphia and Norfolk, \$1.12½; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$1.15. Sulphate of potash, 90%, and minimum, 96% respectively (basis of 90%); New York, Boston and Montreal, \$2.08@2.10; Philadelphia and Norfolk, \$2.10½, Charleston, Savannah, Wilmington, N. C., and New Orleans, \$2.13.

Muriate of Potash.—Quotations for lots of 50 tons are as follows: 80-85% and minimum 95%, respectively (basis of 80%); New York, Boston and Montreal, \$1.78; Philadelphia and Norfolk, \$1.80½; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$1.83.

Kainit.—Prices for kainit (minimum 23%) are as follows for invoice and actual weights respectively: New York, Boston and Philadelphia, \$8.80; Norfolk, \$9.15; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$9.55.

Nitrate of Soda.—We quote spot, \$1.82½@1.85; hipments, \$1.75@1.77, according to position.

Liverpool. Oct. 22.

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

Since our last report there is practically no change in the position of heavy chemicals. The prospectus of the Castner-Kellner Alkali Company is to be issued to the public to-morrow. The capital is £300,000 in £1 shares, of which the Aluminum Company, which is the vendor, takes 100,000 shares in part payment of the purchase money. The intention is to erect a plant to turn out about 6,000 tons of pure caustic soda and about 13,000 tons of bleaching powder per annum, by the electrolytic process. The new concern is looked upon with considerable favor here.

Soda ash is in fair request, although not brisk. The spot range for tierces is about as follows: Le-blanc ash, 48%, £4@4 5s.; 58%, £4 5s.@4 10s.; ammonia ash, 48%, £3 10s.@3 15s.; 58%, £3 15s.@4 4 per ton, net cash. Bags, 5s. per ton less than tierces. Soda crystals are quietly steady at £2 7s. 6d.@2 10s. per ton, less 5% for barrels, and 7s. less for bags. Makers decline to quote for delivery beyond the end of November.

Caustic soda is in good demand, but without change in values up to the present, although there has been some talk lately of putting up prices. We quote spot range: 60%, £6 5s.@6 10s.; 70%, £7 5s.@7 10s.; 74%, £8 5s.@8 10s.; 76%, £9 7s. 6d.@9 10s. all per ton, net cash.

Bleaching powder is rather scarce at the moment, and hardwood is held for £7 5s. up to £7 10s. per ton, net cash, according to export market. Chlorate of potash is reported to be in better demand, and a fair business is said to have been done at 4½d. for prompt and forward delivery, and there is nothing offering at under that figure. A fair number of orders are reported from Japan recently, and most of the second-hand lots seem to have been cleared off the market. Bicarb. soda is in fair request at £6 15s. per ton, less 2½% for the finest quality in 1 cwt. kegs, with usual allowances for larger packages. Sulphate of ammonia continues firm at from about £9 7s. 6d.@9 12s. 6d. per ton, less 2½% for good gray, 24% and 25% in double bags f. o. b. here, according to quality. With the firmer feeling, buyers seem rather more disposed to operate. Nitrate of soda is rather slow of sale, at about £8@8 2s. 6d. per ton, less 2½%, for double bags f. o. b. here, according to quality and quantity. Carb. ammonia, lump, 3½d. per lb.; powdered, 3½d. per lb., less 2½%.

Valparaiso, Chile. Sept. 11.

(Special Report of Jackson Brothers.)

Nitrate of Soda.—This article has been comparatively inactive during the past fortnight, transactions being for the most compulsory to fill up ves-

sels, or amongst producers to cover previous sales. Sellers limits, which closed on August 31st at 5s. 4d., shortly became unobtainable, and were reduced to 5s. 3½d. for September-October delivery, without meeting with any response, although at the same time combined freight of 26s. 3d. was freely offered, exporters' ideas being about 5s. 2d.@5s. 2½d. The refined quality is little sought after, scarcely any inquiry existing from the United States. We quote 95% September-December shipment, 5s. 3½d.; January-March, 5s. 4d.; 96%, 5s. 5d., all sellers. The price of 5s. 3½d., with 26s. 3d. all round freight, stands in at 7s. 3½d. per cwt., net cost, and freight without purchasing commission. Reported sales are 346,000 quintals.

We quote current freight rates on nitrate in iron vessels 26s. 3d. to ports in United Kingdom. To the United States rates are nominal at 26s. 3d. to Hampton Roads or orders.

MINING STOCKS.

Complete quotations will be found on pages 431 and 432 of mining stocks listed and dealt in at:

New York.	Aspen, Colo.	St. Louis.
Boston.	Colorado Springs.	Paris, France.
Philadelphia.	Duluth, Minn.	Mexico.
Baltimore.	Helena, Mont.	Shanghai, China.
Pittsburg.	Salt Lake, Utah.	Valparaiso, Chile.
Denver, Colo.	San Francisco.	London, England.

NEW YORK, Friday Evening, Nov. 1st.

The half-hearted spurt of quasi-activity in the mining stock market, which we reported last week, has dwindled away as swiftly as it grew and the market is once more in the lifeless condition which we have had to report these many months. There is no active demand for any one stock. The Colorado stocks appear to be the favorites in what little trading there is, especially Chrysolite, of which sundry unconfirmed rumors are afloat, and American Flag, which being a low priced gold stock is regarded by some as being worthy risking a few, a very few dollars on.

Chrysolite declined during the week from 31c. to 24c., with sales of 2,600 shares.

Of American Flag 4,300 shares changed hands at 4@6c. Iron Silver was quiet at 28@30c. with sales of 700 shares. Of Isabella 100 shares were sold at 30c. Other sales of Colorado stocks consisted of 1,900 shares of Lacrosse at 14@16c.; 1,400 shares of Leadville Consolidated at 12@14c.; 1,900 shares of Little Chief at 20@22c., and 1,000 shares of Small Hopes at 20c.

The Comstocks were quiet and featureless. Comstock Tunnel was steady at 9@10c., with sales of 1,400 shares, and there was a solitary transaction of 100 shares of Consolidated California & Virginia at \$2.60.

Of the California stocks the only one traded in was Brunswick Consolidated, which shows sales of 1,300 shares at 11@13c.

Phoenix, of Arizona, which had not been dealt in for some time past, this week shows sales of 1,700 shares at 8@9c.

There were also sales of 20 shares of Caledonia, a Black Hills stock, at 75c., and of 290 shares of Castle Creek at 2@3c.

Boston. Oct. 31.

(From Our Special Correspondent.)

The month closes with a very weak market for the copper stocks, and every indication of still lower prices in the near future.

Boston & Montana stock has been persistently hammered, and the low price has reached stop orders resulting in still further declines, and to-day it sold down to \$65½, the lowest point since early in July before the boom was fully under way. The decline has reached other stocks on the list, and all are selling at figures much below those of a week ago. Butte & Boston sold down from \$17¼ to \$14¼, closing at \$14½.

Catmet & Hecla dropped from \$315 to \$310 on small sales. Quincy opened at \$132, and declined to \$125, closing at that figure. Tamarack sold up early in the week to \$136, but the constant pressure of long stock forced the price down to \$130 from which it rallied to \$134, closing sale. Osceola continues to droop, losing \$4 this week from \$29 to \$25, and was heavy at the latter price. Kearsarge sold at \$17¼ and dropped to \$14¼ with a rally to \$15. Franklin, which sold at \$18 last week, fell off to \$14½, with more stock offering than usual. Atlantic, after selling at \$20 declined to \$16¼, rallied to \$17½, and closed at \$17. Tamarack, Jr., dropped from \$18 to \$15 on sales of about 500 shares. Wolverine declined to \$6½, a loss of \$½. Arnold sold at \$2 and declined to \$1½. Tecumseh declined to \$2 for 50 shares. Centennial sold at 15c. and Bonanza at 35c.

The Anaconda Mining Company has been placed upon the unlisted department of the exchange, but so far no transactions have been recorded.

The gold mining stocks have ruled dull and heavy. Merced sold from \$35 to \$30, Santa Ysabel declined from \$11½ to \$9. Gold Coin mines were steady at \$1.10 to \$1.05. Boston & Cripple Creek advanced to 50c. on sale of 400 shares, since which it has been offered at 25c. and no buyers. Pioneer sold on the street at \$2½.

3 P. M.—The market closed weak.

Colorado Springs, Colo.

(From our Special Correspondent.)

The stock market during the past week, has been fairly active, and in some shares, strong. Mr. E. F. Wells, of the Colorado Springs Board of Trade and

Mining Exchange, placed one block of 100,000 shares of Portland at \$2 per share, with a New York investor. This is the largest transaction ever consummated on the floor of the Exchange and shows the faith Eastern investors have in Cripple Creek stocks. Considerable Portland stock is now owned in New York. A year ago it was selling at 35c. per share and to-day it is held at \$2. There are some stocks now quoted at low figures from which a higher value may be expected.

Pharmacist, Sacramento, Gould, Enterprise, Gold & Globe, Pappoose, Golden Age and Summit have all been strong, and advanced somewhat during the week. Many thousand shares have changed hands.

From the long list of stocks bought and sold on this Exchange, a total of 3,392,880 shares were traded in during the past week, which represent a cash value of \$302,823. Many of these stocks were placed with Eastern investors, who are becoming more numerous every day.

On the Colorado Springs Mining Stock Association the past week was rather quiet, though without any general reaction in prices. In fact, quotations have ruled steady, with the exception of some of the Aspen stocks, which were somewhat weak, owing to a number of rumors that affected them unfavorably.

The Association continues to extend its field of usefulness. The number of letters received by members from Eastern investors grows larger every day and shows that the Association's reputation for conservative and upright dealings is not confined to this city. This is as it should be.

BY TELEGRAPH.

Messrs. Gardner & Co. wire us the closing quotations for the week ending October 31st as follows:

Name of Company.	25	26	28	29	31	31
Anaconda.....	.62	.61	.61	.61	.59	.58
Argentum-Juniata.....	.55	.55	.56	.56	.55	.51
Consolidated.....	.15	.149½	.15	.154½	.15	.15
Isabella.....	.24	.25½	2 ¼	.26½	.26	.26
Mollie Gibson.....	.53	.52	.50	.51	.51	.49
Portland.....	1.97	1.97	1.97	1.93	1.94	1.91
Summit.....	.25	.24	2 ¼	.25½	.23½	.25½
Union.....	.23½	.23½	.23½	.23½	.23½	.23½

Salt Lake City, Utah. Oct. 26.

(Special Report of James A. Pollock.)

The mining stock market reflected continuance of the activity it has maintained for some time past. The quiet absorption of stock continues.

Ajax is not moving to any extent, but the reports from the property are very encouraging and regular shipments of fair grade ore are maintained. Alliance is steady and in fair demand. Last week the company closed a contract for the purchase of the Massachusetts claims at a figure supposed to approximate \$100,000. This will give the company almost two miles of ground on the lode. Centennial Eureka is not moving to any extent. There are frequent bids for the stock, but none coming out, stock being in strong hands and well supported. Crescent is awakening from its lethargy and there is a probability of a renewal of interest in this old-time favorite.

Dalton is in very strong demand and the insiders and their friends continue to buy all available shares. Daly West has much to commend it. Horn Silver is irregular, but shows some evidence of renewed strength and activity. Lucky Bill has levied assessment No. 14 of 1¼c. per share. Mammoth would like to become active but there is so little stock coming out that trading has been retarded. It has become an expected occurrence to announce an advance in Mercur shares. The stock continues to climb. The \$25,000 dividend was paid on the 21st. Ontario is a trifle stronger. I recently visited the mine, and can state that with silver selling at \$1 per ounce the old mine would regain its prestige as the greatest silver producer in the country. Silver King is weakening for some inexplicable cause. The prospective litigation need not be regarded seriously.

This week records the appearance upon the market of a new Mercur stock, namely the Sunshine, which has been added to the regular list. This company has been opening up its property by systematic development for two years past, and has uncovered ore in sufficient quantities to induce the management to erect a mill of 200 tons daily capacity. The stock was not offered upon the market by subscription as was expected, and which would have been the better plan, but is being offered by individual holders and brokers at \$2.50 per share.

San Francisco. Oct. 26.

(From our Special Correspondent.)

The market was pretty quiet this week on the usual amount of inside trading, without much variation in prices. The long promised outside buyers have not yet made their appearance, which is so anxiously looked for. There are indications that some new developments are to be made in the hope of attracting the public, and rumors are already in circulation of surprises to come. Among other points made is that Consolidated California is about to begin important work at several points where there are indications of possible new developments. The company has arranged with the Nevada Bank for the funds needed and will levy no assessment. What the precise indications may be we are not told.

Some of the closing quotations are given, as follows: Consolidated California & Virginia, \$2.05@2.75; Confidence, \$1.60; Ophir, \$1.50@1.55; Hale & Norcross, \$1.45; Sierra Nevada, 91@93c.; Best & Belcher, 86@87c.; Challenge, 58@59c.; Crown Point,

37@38c.; Andes, 36@37c.; Overman, 14c. Bodie Consolidated sold to-day at 34c. and Bulwer at 6c. Mono was quoted during the week at 12c. There were sales of Caledonia at 10c.

The Iowa Mining Company has levied an assessment, of 5c. per share.

The annual meeting of the Great Western Quicksilver Mining Company has been called for November 6th.

London. Oct. 19.

It is quite probable that the continued slump in the South African mining market has been considered of sufficient interest to Americans to have warranted the cable news companies to supply news of it daily to your public press, so that anything I write here may be old news. Suffice it, then, to say that there has been a very decided fall all round in South African land and gold companies, commencing with the land and trust companies and dragging in, sympathetically, the dividend-paying gold companies. It has been supposed in some quarters here, and will no doubt be supposed in America, that the English public have at last come to their senses, and discovered that the South African companies are blown out like bubbles and that they have been fools to buy such stuff. Such, however, is, unfortunately, far from the truth; for the present movement is the result of nothing but a professional bear raid. It was considered that for various reasons, chiefly the operators' own experience, the South African market could not possibly be forced any higher, and arguing on the well-known principle that he who does not progress recedes, a new campaign was opened on opposite lines. The newly constituted bears have, therefore, been selling inflated shares in large blocks wherever such selling could be effected without entailing too large a fall. Already their short selling has imposed on weak holders, and floods of selling orders have come in. The shares which have served as playthings in this way are chiefly British South Africa, East Rands, Rand Mines and Consolidated Goldfields. An attempt was made to bang Barnato Consols and Barnato Bank, but Mr. Barnato loaned money freely for carry-over purposes. It is by no means extraordinary that falls should take place in British South Africa, East Rands and Rand Mines, as they are highly speculative non-dividend shares; but it seems rather strange that an attack should be made on Consolidated Goldfields, as a dividend of 100% has just been declared, which, together with an interim of 25%, makes 125% for the year, besides which as much as £1,000,000 was carried over. The bears are taking advantage of all the rumors floating round and magnify them to extraordinary proportions. For instance: there is some fear of a scarcity of the water supply at some of the Johannesburg mines, such as the Robinson, but to hear he way bears talk, one would imagine that the Water Company was hopelessly insolvent, that universal drought had commenced and that the mills would have to shut down indefinitely.

While the South African market has been so disturbed the West Australian market has been practically stationary, and comparatively little business has been done. The only section of the market which has had a good time of it has been the Indian gold mines. Quite a number of leading houses who were great on South Africans, have just discovered that Indians offer a steady and profitable return for money, and it may be opportune to mention the dividends paid by the leading mines in the Mysore field and compare them with the facts brought out in your excellent editorial in your issue of October 5th. The Mysore Company have paid 35% on the capital of the company during the past year, or 11% on the present price. For the current year the dividends on the Ooregum Company will be 55% for the preference and 45% for the ordinary, or about 13% and 14% respectively on present prices. The Champion Reef Company has already paid two dividends of 20% each and another one at least as large is expected, so that the total dividend will be at least 60%, equal to 12% on the present price. As, however, the gold-field is a comparatively small one it does not present openings to rival capitalists, and consequently no money has been spent to create markets on the Stock Exchange. The companies all issue very full fortnightly statements of the results of their development work, and any one who has wit enough to calculate from fortnight to fortnight the rise or fall in reserves will know when the right time comes to clear out without loss.

In the American section the great event of the week has been the introduction of the block of Anaconda stock in the market. As I predicted, the same course has been observed in this case as in other issues by the exploration company, viz., that no public issue has been made by advertising, but that the whole block has been handed over to underwriters, who, of course, in several cases, are members of the Exploration Company. No public announcement of any sort has been made with the exception that Mr. Hamilton Smith has joined the board of directors. The price paid by the syndicate for 300,000 shares was £2,000,000, and the price at which they were underwritten is £2,100,000, giving a profit of 5% to the syndicate. The minimum price per share at which they can be sold on the market is therefore £7. Already large sales have been effected at £7 5s. 0d., and in all probability the quotation will before long settle down to about £9. As I mentioned last week this introduction of Anaconda, and the coming introduction of Cripple Creek properties by the same company is the beginning of a new era of English speculation in American mines. In a short time I shall be sending you weekly lists

of American properties brought over here, and I shall ask you and your readers to supply full information as to the value of the properties and the character of the vendors. It is to be hoped that your readers will co-operate with you in this way, so as to choke off swindlers and uphold the high character of American mining.

In one or two recent letters I have mentioned that the Springdale Gold Milling and Mining Company, a Denver company with a large block of shares held here, had suddenly ceased reporting progress after a series of promising reports and a small dividend. Quite six months ago crushing was reported to have commenced, but no results have been published. It would be most valuable to English investors if some Colorado reader could give information as to what is being done at this mine, and whether there is any likelihood of any return ever being made.

A company has been formed called the North American Exploration Company, Limited, with a capital of £500,000. The founders of this company are Messrs. Lewisohn Brothers and Messrs. Ladenberg, Thalman & Co., and the special object is to introduce American mining investments on the continent of Europe and also in England. The chief offices will be in Paris and New York. Though no details of the scheme are as yet obtainable, it may be said that the formation of such a company by firms of such high standing is a very important event.

A company has been formed called the Leland Stanford Gold Mining Company, Limited, with a capital of £300,000, to acquire and work the Leland Stanford and Snipe claims on Groom Creek, six miles south of Prescott, Ariz. The vendor, Mr. A. G. Plumer, of Philadelphia, takes £45,000, of which £2,000 is cash, and he pays all promotion expenses. The three lodes are said to be 4 ft. 6 in., 3 ft. 6 in., and 3 ft. in width respectively, and rich in refractory gold ores. The properties have been independently examined by Mr. D. E. Keating. On the face of it the scheme is an excellent one, and the prospectus is drawn up in a very straightforward manner.

Paris. Oct. 20.

(From Our Special Correspondent.)

Our special home markets have again suffered in sympathy with the gold stocks, but there has been rather dulness than weakness in most of them. The zinc and lead stocks have been fairly maintained, though some reduction in the copper shares is to be noted. The coal and iron stocks have shown but little movement; but those of the metallurgical companies have been in request, generally at improved prices.

The South African market continues to absorb attention, and its fluctuations have been generally downward. No one doubts that the level of prices has been too high, and a check to the rise has been expected. The present overturn came somewhat suddenly, and some operators were unprepared; but there has been less disturbance in reality than many of our London friends would have you believe. The reaction, however, has been sufficient to delay some new ventures which were ready to be brought out.

There is a very sore feeling here over the action of the London banks in refusing to discount bills for our banks. It looks very much as if certain parties had organized a huge speculation for the fall, and the banks had helped them. If the stocks held here had been in the same position as those in London it might have succeeded. As I wrote last week, however, the speculative holdings are so small in comparison with those for investment, that such an operation cannot succeed until owners of stock generally take fright and they have not done so yet.

The foreign commerce of France for the nine months ending September 30th is reported by the Ministry of Commerce as below:

	1894.	1895.
	Francs.	Francs.
Imports:		
Food.....	906,419,000	716,682,000
Raw materials.....	1,615,911,000	1,540,235,000
Manufactures.....	406,073,000	422,343,000
Total.....	2,922,403,000	2,679,260,000
Exports:		
Food.....	454,937,000	444,578,000
Raw materials.....	548,991,000	618,236,000
Manufactures.....	1,132,298,000	1,207,508,000
Postal parcels.....	54,744,000	79,772,000
Total.....	2,190,970,000	2,410,094,000
Excess, imports.....	731,433,000	269,166,000

This shows an excellent increase in our trade in manufactured articles.

A decree has been issued by the Government to regulate concessions for the working of the phosphate beds in Algeria. A tax of 50 centimes per ton will be levied on the phosphate exported. The decree makes no mention of the concessions previously granted, and it may be supposed that those held by English companies, the revocation of which had been demanded, will not be interfered with.

The investigation into the Southern Railroad scandal is in progress, and no doubt the ministry feels uneasy. So far nothing of moment has come out, and the public is pretty well occupied over the success in Madagascar. Still, one never knows what may happen in these affairs. It does not take much to upset a ministry, and public opinion has been very sensitive ever since the Panama infamies. No doubt M. Ribot feels as if he was "crossing the marsh with his pole at home," as they used to say when I was a boy in Bretagne.

As to Madagascar, we are already discussing its

future. A native government under French supervision seems most probable; with plenty of concessions for French trade, and for railroads, mines and ports in the future.

The reported treaty between Russia and China is doubtless true in part at least. Our dear friends across the channel are filled with sorrow at finding that the Czar has dared to infringe upon their old-time monopoly of greed. AZOTE.

MEETINGS.

Adelaide Copper Company, stockholders' meeting, at the office, 426 Sansome street, San Francisco, Cal., November 8th, at 2 p. m.

Enterprise Mining Company, annual meeting at the office in Jersey City, N. J., November 19th, at 11 a. m.

Great Western Quicksilver Mining Company, annual meeting, at the office, No. 530 California street, San Francisco, Cal., November 6th, at 3 p. m.

Lehigh Zinc and Iron Company, annual meeting, at the office, No. 925 Chestnut street, Philadelphia, Pa., November 5th, at noon.

Providence Mining Company, annual meeting, at the office in New York, November 13th, at 10 a. m.

Siskiyou Consolidated Quicksilver Mining Company, annual meeting at the office, No. 306 Pine street, San Francisco, Cal., November 5th, at 2 p. m.

ASSESSMENTS.

Name of Co.	Loc'n.	No.	Divq.	Sale.	Amt.
Ada Con.....	Utah.....	15	Nov. 12	.....	.01 1/2
Alpha, Con.....	Nev.....	5	Nov. 25	.....	.10
Alta.....	"	50	Oct. 21	"	11
Bullion.....	Mont.....	7	Nov. 8	"	.009
Bunker Hill.....	S. D.....	7	Oct. 10	"	.02
Butte & Deer L.....	Mont.....	7	Nov. 11	.....	.10
Golden Gate.....	Alaska.....	1	Oct. 28	Nov. 14	.01 1/4
Gray Eagle.....	Cal.....	41	Oct. 28	"	.05
Hite.....	"	1	Sept. 28	"	.08
Jackson.....	Nev.....	15	Nov. 25	Dec. 21	.25
Live Oak Con.....	Cal.....	9	"	"	.10
Lucky Bill.....	Utah.....	15	"	Nov. 25	.01 1/4
Mountaineer.....	Cal.....	7	Oct. 18	"	.02
Mount. T. Grav.....	Nev.....	7	Oct. 21	Nov. 11	.02
Nevada Queen.....	"	9	"	"	.12
Occidental, Con.....	"	20	Nov. 4	"	.25
Savare.....	"	87	Oct. 23	"	.20
Seg. Belcher.....	"	16	Nov. 15	"	.10
South Eureka.....	Cal.....	22	Oct. 4	Dec. 2	.02
Transit.....	S. D.....	7	"	"	.001

DIVIDENDS PAID BY MINING COMPANIES, OCTOBER AND YEAR 1895.

NAME OF COMPANY.	Loca-tion.	Paid in October.	Paid in since Jan. 1.
Ætna Con.....	Cal.....	\$10,000	\$10,000
Am. Dev. & Mg. Co.....	Mont.....	.....	24,340
Alaska-Mexican.....	Alaska.....	.....	25,500
Alaska-Treadwell.....	"	.....	150,000
Amethyst.....	Colo.....	.....	36,000
Argentum-Juniata.....	"	39,000	156,000
Bald Butte.....	Mont.....	.....	12,500
Bangkok-Cora Bell.....	Colo.....	3,000	51,000
Belden, F. E. Mica.....	N. H.....	4,000	38,000
Boston & Montana.....	Mont.....	.....	300,000
Bullion-Beck & Champion.....	Utah.....	50,000	325,000
Calumet & Hecla.....	Mich.....	500,000	1,500,000
Centennial-Eureka.....	Utah.....	60,000	330,000
Champion.....	Cal.....	3,400	27,200
Con. Cal & Va.....	Nev.....	.....	162,000
Copper Queen Con.....	Ariz.....	.....	150,000
Copis.....	Nev.....	.....	1,000
De Lamar.....	Idaho.....	95,000	540,000
Elkhorn.....	Mont.....	.....	50,000
Elkton.....	Colo.....	.....	7,500
Forepaugh.....	"	.....	16,000
Gold & Globe.....	"	.....	11,250
Golden Fleece.....	"	20,000	152,000
Hecla Con.....	Mont.....	.....	115,000
Homestake.....	So. Dak.....	31,250	281,250
Hope of St. Louis.....	Mont.....	.....	10,000
Horn Silver.....	Utah.....	.....	100,000
Iron Mountain.....	Mont.....	.....	90,000
Jackson.....	Cal.....	.....	2,000
Kennedy.....	"	.....	184,000
Le Roi.....	R. C.....	25,000	25,000
Mayflower Gravel.....	Cal.....	.....	48,000
Mercur.....	Utah.....	25,000	200,000
Mollie Gibson.....	Colo.....	.....	50,000
Montana, Ltd.....	Mont.....	191,000	102,300
Mont. Ore Purchasing Co.....	"	40,500	160,000
Moose.....	Colo.....	6,000	60,000
Morning Star Drift.....	Cal.....	9,600	153,600
Moulton.....	Mont.....	.....	30,000
Mt. Rosa.....	Colo.....	.....	5,000
Napa Con. (Quicksilver).....	Cal.....	20,000	90,000
Nugget.....	Colo.....	.....	5,000
Osceola Con.....	Mich.....	.....	100,000
Portland.....	Colo.....	6,000	180,000
Quincy.....	Mich.....	.....	600,000
Silver King.....	Utah.....	37,500	187,500
Smuggler.....	Colo.....	.....	350,000
St. Joseph (Lead).....	Mo.....	.....	37,500
Standard.....	Cal.....	.....	20,000
Tamarack.....	Mich.....	.....	200,000
Tom Boy.....	Colo.....	.....	40,000
Union.....	"	.....	12,500
Utah.....	Utah.....	2,000	15,000
Victor.....	Colo.....	20,000	200,000
Victor L. & M. Co.....	"	3,000	9,000
War Eagle.....	B. C.....	.....	132,500
W. Y. O. D.....	Cal.....	.....	24,000
Total.....		\$1,030,550	\$7,794,340

Readers of the "Engineering and Mining Journal" will confer a favor on the publishers if they will notify the "Journal" of any errors or omissions in the above table.

STOCK QUOTATIONS.

COLORADO SPRINGS COLO. Table with columns for Company Name, Par value, and dates from Oct. 22 to Oct. 29. Includes companies like Alamo, Anconada, and Argonaut.

* Official quotations Colorado Springs Mining Stock Association. Sales: Listed, 267,335; unlisted, 386,110; value, listed, \$61,922.62.

COLORADO SPRINGS, COLO.* Table with columns for Company Name, Par value, and dates from Oct. 23 to Oct. 29. Includes companies like Anaconda, Anchorite, and Argonaut.

* Official quotations Colo. Spr'gs B'rd of Trade & Mfg. Exch. All the companies are located in Colo. Total shares sold, 3,392,895; cash value, \$42,523.31.

SAN FRANCISCO, CAL.*

Table with columns for Company Name, Location, Par value, and dates from Oct. 26 to Nov. 1. Includes companies like Alta, Best & Belcher, and Bodie Consolidated.

* Official quotations San Francisco Stock Exchange.

ASPEN, COLO.*

Table with columns for Company Name, Location, Par value, Bid, Asked, and Sales. Includes companies like Alta Argent., Argonaut Junata, and Aspen Contact.

* Special Report of Arkell, MacMillan & Stewart. Total sales, 160,551.

BALTIMORE, MD.*

Table with columns for Company Name, Location, Par value, Bid, and Asked. Includes companies like Balt. Mg. & Sm. Co., Conrad Hill, and Coal.

* Official quotations Baltimore Stock Exchange.

NEW YORK.*

Table with columns for Company Name, Location, Par value, and dates from Oct. 26 to Nov. 1. Includes companies like Adams, Alice, and Argonaut Junata.

* Official quotations N. Y. Stock and Com. Stock & Petroleum Exchanges. Total sales, 18,820.

BOSTON, MASS.*

Table with columns for Company Name, Location, Par value, and dates from Oct. 25 to Oct. 31. Includes companies like Allouez, Arnold, and Atlantic.

* Official quotations Boston Stock Exchange. Total sales, 67,710.

INDUSTRIAL COAL AND COAL RAILROAD STOCKS.*

Table with columns for Company Name, Par value, and dates from Oct. 26 to Nov. 1. Includes companies like Balt. & Ohio, Ches. & Ohio, and Col. Fuel & L.

* Official quotations N. Y. Stock Exchange. Total shares sold, 285,554.

PITTSBURG, PA.*

Table with columns for Company Name, Location, Par value, Bid, Asked, and Sell price. Includes companies like Coal, Manheim & C., and N. Y. & C. Gas.

* Official quotations Pittsburgh Stock Exchange.

ST. LOUIS, MO., STOCKS.

Table with columns for Company Name, Location of Works, Company's Office, Par value, Bid, Asked, and Last Dividend. Includes companies like Central Lead Co., Con. Coal Co., and Doe Run.

STOCK QUOTATIONS.

DENVER, COLO.*

Week ending Oct. 26.

Table of stock quotations for Denver, Colo. listing companies like Addie C, Alamo, Amity, Anaconda, Aola, etc., with columns for location, par value, opening, high, low, closing, and sales.

*Official quotations Colo. Mining Stock Exch'ge. Total sales, \$0,250 shares.

LONDON.

Oct. 19.

Table of stock quotations for London listing companies like Americans, Alaska-Mexican, Alaska Treadwell, etc., with columns for country, product, capital stock, par value, last dividend, and quotations.

PHILADELPHIA, PA.*

Table of stock quotations for Philadelphia, Pa. listing companies like Bethlehem Ir., Bloom. C. & C., Cambria Iron, etc., with columns for location, par value, and sales.

* Official quotations Philadelphia Stock Exchange. Total sales, 6,785.

PARIS.

Week ending Oct. 18.

Table of stock quotations for Paris listing companies like Acleries de Creusot, Firmin, Pives-Lille, etc., with columns for country, product, capital stock, par value, and prices.

SALT LAKE CITY, UTAH.*

Week ending Oct. 25.

Table of stock quotations for Salt Lake City, Utah listing companies like Ajax, Alliance, Amer. Nat. Gas, etc., with columns for par value, bid, asked, and actual selling price.

* Special Report of James A. Pollock. † All the companies are located in Utah.

HELENA MONT.*

Week ending Oct. 19.

Table of stock quotations for Helena, Mont. listing companies like Am. Dev. & M. Co., Bail Butte, Benton Group, etc., with columns for location, company's office, par value, bid, asked, and price.

* Special Report of Samuel K. Davis.

DULUTH, MINN.*

Week ending Oct. 26.

Table of stock quotations for Duluth, Minn. listing companies like Adams Iron, Biwabik Mt. Iron, Lake Superior Con., etc., with columns for location, company's office, par value, bid, asked, and price.

* Official quotations Duluth Board of Trade.

SHANGHAI, CHINA.*

Oct. 4.

Table of stock quotations for Shanghai, China listing companies like Jieibu Mg. & Tra., Fungom Mg. Co. Ltd., etc., with columns for country, no. of shares, par value, paid up, last dividend, and price.

* Special Report of J. P. Bissett & Co. The prices quoted are in Shanghai taels.

VALPARAISO, CHILE.*

Week ending Sept. 11.

Table of stock quotations for Valparaiso, Chile listing companies like Arturo Prat, Caracoles, Descub. de Huantajaya, etc., with columns for name of company, capital, share value, last dividend, and prices.

* Special Report of Jackson Bros. Values are in Chilean pesos or dollars.

Table of stock quotations for Mexico listing companies like Amistad y Concordia, Angustias, Arevalo, etc., with columns for state, no. of shares, last dividend, last assessment, and prices.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES

Main table with columns: Name and Location of Company, Capital Stock, Shares, Par, Total Levied, Date and amount of last, Dividends, Total, Date & amount of last, Name and Location of Company, Capital Stock, Shares, Par, Total Levied, Date and amount of last.

G., Gold. S., Silver. L., Lead. C., Copper. B., Borax. * Non-assessable. † The Deadwood previously paid \$275,000 in eleven dividends and the Terra \$75,000. Previous to the consolidation in August, 1884, the California had paid \$31,320,000 in dividends, and the Cons. Virginia \$42,330,000. ‡ Previous to the consolidation of the Copper Queen with the Atlanta, August, 1885, the Copper Queen had paid \$1,350,000 in dividends. § Previous to this company's acquiring Northern Belle, that mine paid 400,000 in dividends against \$425,000 in assessments.