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The index to Volume LXII. is sent out to subscribers with the present number of the *Engineering and Mining Journal*. This volume includes the numbers from July to December, 1896, inclusive. A glance over it will show the extensive range covered by the articles and news given in our columns.

We are informed by Mr. John Stanton, who acts as statistician for the copper companies, that the actual exports of copper from the United States in December, were 12,980 long tons. This makes the total exports for the year 1896 no less than 125,605 tons, a quantity far in excess of that reported in any previous year, and about 1,000 tons greater than our estimate, made before the full statements were made up.

A new occupation has been opened for young men, since the introduction of electricity as a motive power in mining machinery. There has been a demand for men competent to install and maintain electrical machinery. This demand was at first supplied, to some extent, by the employment of those men who had been trained in the large factories making electrical appliances, but recently the work has been undertaken by graduates of some of the technical institutions of the country, who are in this way acquiring practical knowledge which will be of the greatest service to them later.

The use of liquid fuel has made greater progress in Eastern Russia than in any other country, the high cost of coal and the abundant supply of petroleum favoring it through all the region which can be reached by water or by a short railroad haul from the Baku District. The form of oil-fuel most generally used is *astatki* or residues from the petroleum refineries, though the crude oil is also employed to some extent. Arrangements are now being made to introduce the use of liquid fuel in the Russian Navy, and several ships are being supplied with fittings for this purpose. This has somewhat disturbed the English coal operators, who have heretofore sold a good deal of coal to the Russian Navy, and have also supplied the cities on the Baltic to a large extent; and the English papers are calling attention to the probable loss of an important trade.

Despatches from Salt Lake report that Capt. J. R. De Lamar has taken an option on the stock of the Mercur Gold Mining Company, having two months to run. The option is at the rate of \$7.50 per share, which would put the value of the property at \$1,500,000. An option was taken on the Mercur stock some time ago, but was allowed to lapse, and the transfer was not completed. Should the stock be taken now Capt. De Lamar will own in this district the Mercur and Golden Gate mines, the Gold Belt Water Company and the Mercur & Salt Lake Railroad, controlling a considerable area in the district, besides its transportation and its chief water supply. It is reported that his intention is to transfer the whole to a London syndicate, among the members of which are some of the men who have been prominent as owners of South African mines. Several prominent mining engineers are now examining these properties for the English-German syndicate, and it seems probable that the sale will be made. There are great possibilities in the district if it is properly worked.

The export trade of the United States in manufactured articles continues to grow, and the figures given by the Treasury Department show greater totals in 1896 than ever before. For the eleven months ending November 30th the total value of exports classed as manufactures was \$229,915,546, or 26.4 per cent. of the total exports, while for the corresponding period in 1895 the amount was \$181,902,395, or 25.4 per cent. of the total. The increase shown in 1896 therefore amounted to \$48,013,151, or 26.4 per cent. The figures perhaps require a little qualification, as the Treasury Department classifies under manufactures refined oil, in which the increase was \$6,841,306, and fine or ingot copper, which showed a gain of \$13,905,887. If we deduct these two items, however, we still have an increase in manufactured articles amounting to \$27,265,958, which is certainly a considerable advance, and which will probably be increased to \$30,000,000 by the December figures. Machinery and other manufactures of iron and steel contributed a very large share of the increase, while electrical appliances also made a great advance. This growth is encouraging, and ought to stimulate our manufacturers to making greater efforts to extend their trade abroad.

The English technical papers call attention to the comparatively slow growth of electrolytic work in that country, while much more rapid advances are being made in Germany, France and the United States. The electrolytic copper refining works do not compare in extent or importance with those of the United States. No aluminum is now made in Great Britain, and the works of the British Aluminum Company at the Falls of Foyers, begun over a year ago, are not yet completed. In chemical work, no less an authority than *Engineering* says that in Great Britain the electrolytic production of soda and chlorine has not yet reached any magnitude. Only one concern, the Electrolytic Soda &

Chlorine Trust Syndicate, at St. Helens, has commenced operations on a large scale, and these works had so many accidents with their turbines and dynamos in 1896 that they have been unable to place much electrolytic soda or bleach upon the market. Hargreaves' process for producing chlorate of soda is working satisfactorily at Northwich. The Castner-Kellner Works at Weston Point are progressing, but they have as yet produced no caustic or bleach.

This slow development compared with the advances made in other countries is attributed largely, so far as France and Germany are concerned, to the attention paid to scientific work; to the general employment of trained experts and the adoption of their suggestions. Cheap fuel and supplies of raw material may offset the possession of great water powers, but scientific fraining cannot be dispensed with. In these comments there are some points worth the attention of our own people.

The Arbitration Treaty.

The signing this week of the arbitration treaty between the United States and Great Britain is an event which should evoke, and in fact has already received, the unanimous congratulations of intelligent men in every civilized country, for it is a triumph of civilization over barbarism, and assuredly it is a precedent that, properly initiated by the two great English-speaking nations, will be followed by others in due time.

We attach no weight to the rumors that the United States Senate, guided by ignoble motives, may refuse to ratify the treaty, for such a course is incredible and would bring merited disgrace upon that assembly of able and, for the most part, patriotic men.

There can be no weighing in fine scales of the relative advantages which may result to the parties to the treaty, for each gains so enormously by the adoption of this rational and enlightened method of settling the disputes which will inevitably come up from time to time between, them that a difference in the advantages is infinitesimal. We gladly join in congratulations for this step forward in civilization, and we hope that the Senate of the United States, rising to the dignity and importance of the occasion, will heartily and enthusiastically ratify the treaty.

The California Coal Supply.

The manufacturing interests of California, and the mining industry also, where machinery is employed, have always been restricted and hampered by the high cost of fuel. No coal mines of importance have been discovered or opened in the State, and its fuel supply has been drawn almost entirely from outside its borders, and very largely from foreign countries. This supply must necessarily come by water, since the long and expensive railroad haul which separates California from the Eastern mines effectually prohibits any rail deliveries. Even the Wyoming and Utah mines, which are the nearest, are too remote to permit such traffic.

The coal receipts at San Francisco and the southern ports—Santa Barbara, Wilmington, San Pedro and San Diego—for the year just closed and for 1895, are reported as follows, in short tons:

	1895.	1896.
San Francisco, by sea.....	1,424,124	1,398,906
Mt. Diablo mines.....	80,494	52,529
Southern ports, by sea.....	199,199	154,875
Totals.....	1,703,808	1,516,319

This includes practically all the commercial supply of the State. Outside of the Mt. Diablo mines there are a few small collieries in California, but the output of these is taken by the railroads, and the total is not large. In 1895 the total output of coal in the State was 80,115 tons of 2,000 pounds. It will be seen that of the commercial supply California mines furnished in 1896 only 52,529 tons, or about 3.5 per cent., the remaining 96.5 per cent. coming into the State by sea. A very small quantity of Oregon coal, we believe, comes to Northern California by rail, but it is so little as to be hardly worth reckoning. The sections from which the San Francisco imports come are fully reported. Those for the Southern ports are not given, but it is understood that the receipts at those ports were from Washington and British Columbia in nearly equal proportions. The San Francisco statement may therefore be fairly taken as representative of the sources of supply. The receipts at that port were as follows in 1896:

	Tons.	Tons.	
Eastern U. S.....	18,256	British Columbia.....	445,345
Oregon and Washington.....	438,440	Australia.....	247,477
Alaska.....	1,400	Tonkin.....	1,487
Mt. Diablo (Cal.).....	52,529	Great Britain.....	153,501
Total domestic.....	510,625	Total foreign.....	850,810

Of the coal-mining sections of the Pacific Coast, Oregon and Washington on the one hand and British Columbia on the other contribute nearly equal amounts. The latter is able to keep up the competition, notwithstanding the duty levied, because its coal is of better quality than any yet mined south of the border; enough so to compensate for the ad-

ditional cost. It is harder and suffers less from handling. Most of the shipping mines in both sections are near the water, and are about equal so far as transportation is concerned. The coal mines of Alaska, about which we occasionally hear a great deal, do not seem to flourish. Occasionally some coal from them reaches a California port, but it is seldom that more than one cargo a year is reported. The Pacific Coast mines, it appears from this statement, supply about 65 per cent. of the total. British Columbia is increasing its production faster than Washington.

Outside the Pacific Coast the largest supply comes from Australia; it is chiefly from the collieries in and near Newcastle, in New South Wales. This coal is much liked in San Francisco, and brings as high a price as any in the market. It gets the advantage of cheap freights, as the heavy freight—grain, lumber and the like—going to Australia, furnishes a surplus of tonnage which would return empty and consequently increase the freight on our exports were it not for this coal. The Japanese, who have competed quite successfully with the Australian coal exporters in the Eastern markets, have threatened to come to California also; but they have not yet done so to any extent. The little Japanese coal which has been imported has not met with favor, and last year none was received. A single cargo, shipped experimentally from Tonkin by one of the French companies operating there, was received last year, but the results were not satisfactory, the coal being too soft to stand handling and arriving in poor condition.

The small amount of Eastern coal—1.2 per cent. of the total—might be expected; but at first sight it may seem singular that Great Britain should furnish over eight times as much. This is easily explained, however, by the lower freight rates. The greater part of California's wheat surplus goes to Great Britain, and there are always plenty of vessels going to the Pacific Coast after grain which are ready to take any freight offering at almost nominal rates.

The total commercial supply of coal in California, which does not include that used by the railroads, is not large; the total is less than two weeks' shipments of the Pennsylvania anthracite region. The quantity could be largely increased if supplies could be furnished at lower prices; and at the same time a great stimulus could be given to manufacturing in the State, and some reduction made in the costs of mining in many localities.

NEW PUBLICATIONS.

THE BY-PRODUCTS OF THE BLAST FURNACE. By A. Humboldt Sexton. Glasgow, Scotland; The Philosophical Society of Glasgow. Pamphlet, pages 16; illustrated.

This is a republication of a paper read before the society named and gives an account of several different kinds of apparatus used in Scotland in saving the by-products contained in the gases from the blast furnaces. The Scotch furnaces generally use raw coal and not coke, and the ammonium sulphate, tar, oils and other products saved are obtained from the waste gases from the furnaces and not from the coke ovens, as in Germany and Belgium. Some of the apparatus described are in use in many furnaces and the results have been an acceptable addition to their profits. The first plant of this kind was put up at Gartsherrie in 1880 and the number has increased steadily, improvements being introduced from time to time. At some of the furnaces the selling or commercial value of the by-products amounts to as much as 15% on the value of the iron made. In this country probably better returns could be obtained through the use of by-product coke ovens, but we cannot much longer continue to waste these products and any method of saving them is worth attention.

REGISTER OF ASSOCIATES AND OLD STUDENTS OF THE ROYAL COLLEGE OF CHEMISTRY, THE ROYAL SCHOOL OF MINES AND THE ROYAL COLLEGE OF SCIENCE IN LONDON. London, England; Hazell, Watson & Viney. Pages, 360; octavo. Price (in New York), \$2.75.

For some years past a record has been kept of the associates and old students of the Royal School of Mines and their professional lives, but this record was by no means systematic and was only done in a desultory way by the promoters of the old students' annual dinners. It was felt that the record should be more complete, and, therefore, a committee of the diners undertook the work of compilation, under the editorship of Mr. Theodore G. Chambers; the present book is the result. The list is naturally somewhat fragmentary, but after its publication the editor will have a better chance of filling up blanks than if he waited until completion before publication. Every old student in every part of the world should read the register and assist in enlarging it by communicating such history as is within his knowledge. The book also contains a history of the School of Mines and the College of Chemistry and a series of biographical notices of the professors, illustrated by capital portraits. The book is of interest not only to School of Mines men, but to all connected with mining and metallurgy.

THE MILLENNIAL HUNGARIAN STATE AND ITS PEOPLE. Edited and prepared by Dr. Josef von Jekelfalussy. Budapest, Hungary; issued by the Hungarian Millennial Commission. Pages 756.

This volume, which was prepared in connection with the great exposition which celebrated the one-thousandth anniversary of the establishment of the Hungarian State, is really a history of the country, prepared by various authors. The different chapters treat of the geography of the country, the political history, the race history, the systems of law, the people and their descent, the religion of the country, industrial organization, development and growth of agriculture and manufactures, the means of transportation, the mining industry, the dwellings, habits and occupations of the people, music and literature. Considerable space is devoted to the

mining and metallurgy, which date back to a very early period and have an interesting history.

The book is supplemented by the very complete catalogues of the various groups in the Millennial Exposition, which have been most carefully prepared and contain a great deal of information about the subjects in each group. Group VIII. A, including mines and furnaces, has a catalogue and introduction covering 90 pages, while the catalogue of Group VIII. B, the iron and steel industry, is a book of 42 pages.

REPORT OF THE BUREAU OF MINES OF COLORADO. By Harry A. Lee, Commissioner of Mines. Denver, Colo.; State Printer. Pages, 100.

This is the first report issued by the Bureau of Mines and covers the time from its establishment in May, 1895, up to November 30th, 1896. Of course some time was needed to organize the bureau, and some delay was caused by an attempt to question the legal status of the commissioner. The chief work done has been in the inspection of mines and the recommendation of measures to be taken to prevent accidents. A large number of accidents were also investigated and reports made on the causes. The report gives for 18 months a total of 288 accidents underground and 28 on the surface, making 316 in all. Of these, 154 were fatal and 162 caused injuries, but not death. The average number of men employed at the mines in 1896 was 25,545, of whom 15,924 were employed underground. The number of fatal accidents per 1,000 men employed underground in 1896 was 5.97, a very high average, which shows the need of inspection and some legislative regulation of the mines. Of the fatal accidents, about one-fourth were due to falls of rock and another fourth to carelessness in handling explosives. As the work covered by the report has been largely preparatory in its nature, it is hoped that in another year much can be done to secure greater safety in mining.

The *Official Market Report* of the New York Metal Exchange for January 11th gives a summary of the course of the metal and iron markets in New York and London for the year 1896, containing a number of valuable tables, showing the course of prices of copper, lead, tin and spelter, imports and exports of these metals and other statistics conveniently arranged for reference. Similar statistics are given for the iron market. Especial attention has been paid to the tinplate market with here and abroad.

The excellent annual review published by the *Tradesman*, at Chattanooga, Tenn., contains a great amount of information relating to the industrial interests of the South—mining, manufacturing, lumber, railroads and agriculture. It contains some excellent articles by well-known authors. The reviews of the coal mining industry and of iron and steel manufacture are especially worthy of attention. The *Tradesman* calls especial attention to the possible future for the South in building up an export trade. In this review it has still further strengthened its claim to be considered a worthy representative of the Southern industrial interests.

BOOKS RECEIVED.

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

- Boletin de Agricultura, Minería e Industrias.* Ano VI. Num. 2. Agosto de 1896. City of Mexico, Mexico; National Printing Office. Pages, 191.
- Carpologia Mexicana. Directorio General Sobre la Produccion de Frutas en las Municipalidades del Pais.* City of Mexico, Mexico; National Printing Office. 1895. Pages, 1,012.
- Manual of Irrigation Engineering.* By Herbert M. Wilson, New York; John Wiley & Sons. London, England; Chapman & Hall, Limited. 1897. Pages, 538; with illustrations. Price, \$4.
- Tenth Annual Report of the Inspector of Mines of Missouri, for the Year ending June 30th, 1896. Report on Lead and Zinc.* Francis A. La Grave, Inspector. Jefferson City, Mo.; State Printer. Pages, 182.
- Statistisches Jahrbuch des K. K. Ackerbau-Ministeriums für 1895. Zweites Heft: Der Bergwerksbetrieb Oesterreichs. Erste Lieferung: Die Bergwerks-Production.* Wien, Austria; K. K. Hof- und Staatsdruckerei. Pages, 163.
- List of Quarries (under the Quarries Act) in the United Kingdom of Great Britain and Ireland, and the Isle of Man, 1895.* Prepared by Her Majesty's Inspectors of Mines. London, England; H. M. Printers. Pages, 336.
- Geological Survey of Alabama. Report on the Valley Regions of Alabama. Part I. The Tennessee Valley Region.* Henry McCalley, Assistant State Geologist. Montgomery, Ala.; Printed for the Survey. 1896. Pages, 436; with illustrations.
- Thirteenth Report (Third Biennial) of the State Mineralogist of California for the two years ending September 15, 1896.* J. J. Crawford, State Mineralogist. San Francisco, Cal.; California State Mining Bureau. Pages, 726; with illustrations.

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.

"The Transvaal and the Revolt of the Uitlanders."

Sir: Under the head of "New Publications" you refer to a paper written by Dr. George F. Becker, on the subject of the "Revolt of the Uitlanders." I regret to say that Dr. Becker's statements are entirely at variance with the facts, and that he is by no means an unprejudiced observer. As a matter of fact the article was written according to preconceived ideas that Dr. Becker had on his arrival in South Africa.

I regret that I am not at liberty at present to discuss this subject at

greater length, but I believe the evidence that will be produced at the forthcoming parliamentary enquiry will show you how utterly unfounded are Dr. Becker's conclusions.

LONDON, Dec. 18, 1896.

JOHN HAYS HAMMOND.

Construction of Assay Furnaces.

Sir: Replying to A. C., in your issue of December 12th, perhaps my experience in constructing and using soft coal assay furnaces will be of some value. I consider the fume opening in the rear end of the muffles better as it permits a greater range of work. The muffles are supported their entire width by resting 1 in. at each end upon fire-brick supports. The draft to the chimney is over the center of the muffle. The chimney should have a height of at least 15 ft. above the grate bars; with a light damper below the grate bars there is nothing gained by a damper in the chimney. With two muffles scorification or cupellation can be conducted in the upper muffle while crucibles are being worked in the lower one.

The following are the principal dimensions of a very satisfactory furnace: Firebox, 16 in. long by 14 in. wide. Height of lower muffle above grate bars, 14 in. Width of firebox at bottom of the 9x15 in. muffle, 12 in. Width between muffles of furnace walls, 8 in. upper muffle, 5½ in. above lower muffle. Above upper muffle opening to chimney was 4 x 16 in. One foot above muffle chimney was 9 x 9 in. Space between rear end of muffles and furnace walks 2 in.

DURANGO, MEXICO, Dec. 23, 1896.

G. E. KEDZIE.

A Source of Danger to Zinc Roofing.

Sir: The letter of Mr. Hedburg recalling Professor Seamon's valuable articles in the last volume of the *Journal*, reminds me that Professor Seamon omitted one point in the consideration of the bearing of the chemical nature of zinc upon its practical application in roofing, which it would be well for roofers to know and remember. This is that the thin pellicle of hydrated carbonate of zinc is easily attacked by waters containing alkaline salts, and some of the soluble iron salts. Consequently, it is possible that bricks made from certain clays would be undesirable in juxtaposition with the zinc sheets. A European observer has reported this. (*Iron*, p. 36, 80; abstracted in *Journal of the Society of Chemical Industry*, November, 1890.) In that case in Berlin some zinc sheets supported on a brick wall were corroded near the bricks, and an examination of the latter showed 1.14% of soluble salts.

Perhaps the instance cited by Professor Seamon of the zinc roof removed from the residence of Governor Price, at Flushing, L. I., would be found to be a case in point. A little watchfulness around the mortar and brick joints and care in increasing the thickness of the sheet at such places, with perhaps the application of an asphaltum metal coating, should suffice to prevent any disappointment in the future use of the best material for roofing, economically considered, which has ever been offered to builders in this country.

NEW YORK, January 9th 1897.

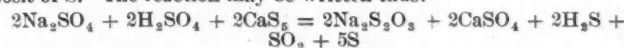
CHAS. F. MCKENNA.

Purification of Sodium Hyposulphite Solutions.

Dear Sir: I believe that some of your readers may be interested in a note on purification of Na₂S₂O₅·5H₂O solutions. The presence of Na₂SO₄ in sodium hyposulphite solutions doubtless has very deleterious influence on final results, in extracting silver by lixiviation. For this reason I consider of importance the easy way I have used to get over the inconvenience of its presence.

It is interesting in the reactions accomplished, the transformation of Na₂SO₄ into Na₂S₂O₅, when no more than formation of Na₂S could be expected if dilute solutions of Na₂SO₄ be precipitated by CaS₂ in the absence of an acid; and when, at the first glance, it seems an absurdity to pour so easily decomposable a compound as CaS₂ is, into an acid solution. It is known that the presence of Na₂SO₄ depresses the solvent energy of sodium hyposulphite solutions, for extracting silver from ores by lixiviation process. In certain conditions of practical work so much of that salt goes into stock solutions, that they very soon become worthless.

Especially for such cases, one of which I experienced in lixiviating old tailings of raw amalgamation, the following reactions have most importance: Dilute solutions of Na₂SO₄ do not precipitate with calcium salts; but they are completely decomposed by CaS₂, in presence of an acid, precipitating CaSO₄, with formation of Na₂S₂O₅, H₂S, SO₂ and deposit of S. The reaction may be written thus:



Consequently, sodium hyposulphite solutions containing Na₂SO₄ may be purified by over-precipitating them with CaS₂, just exactly as over-precipitations with Na₂S should be made to regenerate Na₂S from Na₂S₂O₆, formed in preparing extra solution; having in mind that reactions in the case of CaS₂ do not realize in alkaline or neutral solutions.

Only by practicing these over-precipitations with CaS₂, after every regular one of metallic sulphides with Na₂S, I could lixivate successfully the already mentioned old tailings from raw amalgamation, with which, under special conditions—not exclusive to them I believe—so much Na₂SO₄ entered into the lixiviating solutions that good extractions could no longer be obtained with them after a very few days' work, and the ore yielded so little that it did not pay to run stock solutions so often to waste.

CASAPALCA, Peru, Dec. 5, 1896.

A. R. P.

The Intrinsic Value of Gold.

Sir: Permit me to add a few lines to your reply to "C. H." in your issue of December 26th in regard to the "Intrinsic Value of Gold." In your reply you say, "it is what it will bring in the market," and, as this, though literally true, is scarcely a sufficient explanation, I beg leave to offer the following:

Gold has been chosen by our government as the standard of values, the unit, called a "dollar," consisting of 25.8 grains of standard gold,

nine-tenths fine, and, therefore, containing 23.22 grains of pure gold. The "intrinsic" value of gold cannot be expressed in terms of itself any more than the value of any commodity, or anything else, can be expressed in terms of itself; for the value of anything (whether it be houses, or lands, or wheat, or corn, or cotton, or silk, or iron, or copper, or silver, or gold, or labor, or brains) is its worth as expressed in terms of something else. But, for the convenience of trade (barter and exchange) it is customary to value everything in terms of a unit that has been chosen by the proper authorities for this express purpose. Since 23.22 grains of fine gold have been adopted by our government as the unit of value, and this has been called a "dollar" simply for convenience, an ounce of gold, or 480 grains, will have the constant value of as many "dollars" as 23.22 is contained in 480, or \$20.67138+. For a similar reason, if the government had adopted any other substance, such as copper, for its standard of values, and had designated 23.22 grains of this metal as its unit of value and had called this unit a "dollar," then an ounce (Troy) of copper would have been "worth" \$20.67138+. Again, if 371.25 grains of silver are called a "dollar" an ounce would be "worth" \$1.2929 + (480 ÷ 371.25).

But, in the markets of the world, these different metals would have the same relative values, subject, however, to such variations as might be brought about by the increased use of either of them for the purposes of money. To-day wheat is worth substantially (in New York) 90c. per bushel; corn, 30c. per bushel; cotton, 7c. per pound; copper, 11c. per pound, and silver, 65c. per ounce. A bushel of wheat, therefore, is "worth" 3 bush. of corn, or 12½ lbs. of cotton, or 8½ lbs. of copper, or 1½ oz. (664½ grs.) of silver, or 20.898 grs. of gold; and these different commodities are exchangeable for each other in the proportions given. Hence, a man owning, for example, 100,000 bush. of wheat may be said to be "worth" 300,000 bush. of corn, or 1,285,712 lbs. of cotton, or 818,181 lbs. of copper, or 138,461 oz. of silver, or 2,089,800 grs. of gold; though, in actual money, he might not have \$100; yet the "money" value of his wheat would be 90,000 "dollar."

The real, or intrinsic value of gold, therefore, is what a given weight of it will bring when it is exchanged for something else; for the stamp of the government mint adds nothing whatever to the value of the gold in a coin—it acts simply as a government assay certificate to certify that the piece so stamped contains a certain weight of gold, and it is the weight of the gold alone that gives the coin its exchange value, and, what is the same thing, its money value: the names "dollar," "quarter-eagle," "half-eagle," "eagle," or "double eagle" being used simply and solely to indicate that the coin contains 23.22 grains of fine gold, or multiples thereof. And, in proof of this, it seems only necessary to add that if a gold coin is of "light" weight because of mutilation, or abrasion from use, it is not exchangeable at its face "value."

W. DE L. BENEDICT.

NEW YORK, Dec. 26, 1896.

A RAPID AND PRACTICAL METHOD FOR DETERMINING CARBON IN IRON.

Written for the Engineering and Mining Journal by J. George Heid.

The carbon in iron is generally determined either by the Ullgren method, which is to separate the carbon by means of copper ammonium chloride, heat it with chromic acid, absorb the carbonic acid generated by potash lye, weigh the latter and thus calculate the carbon; or the iron is heated directly in a current of oxygen as is ordinarily done in an organic elementary analysis. In order to determine the carbon in an iron sample rapidly so as to be at the same time accurate enough for technical purposes, the following method is respectfully recommended:

1. *Total Carbon.*—Dissolve a weighed portion of the iron sample in copper ammonium chloride, thus separating the total carbon, filter through an asbestos filter; after the precipitate has been washed well with warm water, wash a few times with alcohol and at last with ether; place the asbestos filter in a Rose crucible and dry at 120° C. After the crucible with its contents has been weighed, cover it with a triangular lid and heat it over the Bunsen burner and steadily pass a current of oxygen into the crucible; in three to five minutes the process is ended. Cool the crucible in a desiccator and weigh it a second time. The difference in weight gives the amount of total carbon.

2. *Graphite.*—To separate the graphite, dissolve a weighed portion of the sample of iron in dilute hydrochloric acid, collect the carbon thus liberated on an asbestos filter, and proceed with the rest in the same manner as in the determining of the total carbon. The combined carbon, as a matter of course is obtained by the difference of the total and graphitic carbon.

Leasing the Elba Iron Mines.—An English consular report gives the following as the terms which the Italian State Council is about to submit by public tender in January for the leasing of the mines on the Island of Elba: 1. Lease of the mines for 20 years, with power of extension for a further term of five years if approved by the government. 2. Obligation of working for three years the Follonica Smelting Works, which give an average loss of 90,000 fr. per annum. 3. Deposit, before tendering, of 100,000 fr. 4. Payment, as a security for the working of the mines, of 1,000,000 fr. 5. Limitation of the exports of mineral to 250,000 tons per annum. 6. Reduction of one-third of the yearly rent after extraction of 2,000,000 tons of mineral, and of one-half after extraction of 4,000,000 tons. 7. Obligation to sell not less than 40,000 tons of mineral per annum to Italian industries, for which the government will receive, as rent, only 50 centimes per ton.

The above conditions are much more favorable than those of the preceding contracts, on account, in the first place, of the much longer period of the lease, which will permit a better working of the mines and the use of more machinery. In the second place, the reduction of one-third of the rent after eight years' working, and of one-half after 16 years, which is intended to compensate the lessee for any eventual increase of expense in the extraction of the mineral, should this in future become more difficult, will fully turn to his benefit if these difficulties do not arise.

THE PARIS MINING STOCK MARKET IN 1896.

Written for the Engineering and Mining Journal by Asote.

The year which has just ended has been a better one than its predecessor, for in it we have seen the fair beginning of a new period of active trade, though in some directions speculation has suffered. It has been speculation only, however, and real trade has increased largely.

In 1895 we saw the height of the South African fever. For two years our people had been investing in Transvaal gold stocks, and believing all the wild stories which had been set afloat in London and Johannesburg. These stocks had risen to great prices, and we had come to believe that there was no limit to the gold production of the Transvaal. In a few years it had risen from nothing to more than 200,000,000 fr. a year; why should it not be 300,000,000 fr. in another year, then 500,000,000 fr., even a milliard in 1900?

The speculation had passed the extreme point, and the decline had begun when the attempt of Rhodes and Jameson to seize the Transvaal and the "revolt" of the Uitlanders came.

What the result has been we all know. The political disturbances served for some months as an excuse; but they passed over, labor was reorganized, the mines were all at work, and still production did not increase. At last those who think began to see that perhaps it could not increase—that perhaps the best had been done and that the great growth promised was a promise only, never to be realized. As this belief gained ground, people began to sell their stocks when they could. Month after month prices dropped, and there would have been a real crash but for the caution of certain leaders, who did their best to support the market and check selling whenever they could. Thanks to this and to the conservatism of our holders, there was no sharp crisis.

It was a gradual descent, not an avalanche.

This Kaffir affair, however, though it was in measure a discouragement, did not prevent the rest of the market from doing well. The strongest section all through the year was found in the metallurgical shares. And with reason, for these companies have done and are doing better than for a long time. For several years there have been complaints of low prices and of the competition of the Belgian and the German iron masters. In 1896 the complaint was of delay in filling orders, of the difficulty of getting raw material fast enough. The blast furnaces and the forges could not turn out their products in quantity sufficient. The rise has been marked; Creusot, which opened 1,650 fr., went to 2,000 fr.; Firminy from 1,500 to 1,723 fr.; Fives-Lille from 640 to 800 fr.; Longwy from 600 to 890 fr.; Acieries de la Marine from 8.1 to 1,025 fr. And in nearly every case the close was at the highest price.

The coal shares naturally gained also. Thus, for instance, Anzin, which opened at 4,125 fr., closed at 1,500 fr.; Bruay rose from 18,800 fr. to 23,500 fr.; Courrières from 4,200 to 4,589 fr.

Copper, like iron, was in great demand by the workers, and the price was well maintained through the year, in spite of the great quantities which your mines sent to our markets. The copper shares were consequently strong, and Rio Tinto went up from 390 to 630 fr. Boleo opening at 1,170 fr., closed at 1,380 fr.; Tharsis rose from 117 to 155 fr.

The stocks of the lead and zinc companies also improved very much. Malfidano rose from 799 to 1,018 fr., and Laurium from 588 to 670 fr. Vielle Montagne went up from 431 to 660 fr., but dropped to 505 fr. at the close. Huanchaca suffered less from misfortune, and shows at the close a price of 85 fr. against 75 at the opening. Nickel varied considerably, going up to 200 fr. at one time and down to 135 fr. at another; it closed at 169 fr. Penarroya, in spite of general depression in Spain, closed at 1,640 fr., 540 fr. above the opening price.

The Russian coal and iron stocks were especially in favor and have shown very good quotations. Dombrowa, Donetz, Bransk, Huta-Bankowa all show gains and were bought largely for investment. I hear that the number of these stocks will be increased in 1897 by those of several gold-mining companies.

American stocks have not been in favor here for several years. Only two showed many dealings in 1896. Fraser River, which opened at 31 fr., went at one time to 53 fr., but dropped again to 32 fr. at the close. Rebecca, a Cripple Creek stock, opened at 27 fr.; it reached the highest at 34 fr., but closes low at 7.50 fr.

Upon the whole the market—outside of the Transvaal—was strong and the speculators for the rise had the best of it nearly all through the year. In November and December a growing scarcity of money, causing higher rates for loans and for carrying stocks, did discourage speculation a little, but had no marked effect on quotations. Some exports of gold were made, and for the first time since 1890 the gold reserve of the Bank of France showed decreases. This movement is now at an end; but the demand for money in trade and in manufacturing is so large that we may say we have seen the end of 2% loans for a time.

Of questions a little outside the stock market, much attention has been given to the renewed of the charter of the Bank of France, to the proposed changes in taxation, and to acquisition of Madagascar.

There is a movement on foot to reorganize our Bourse and to give the *coulissiers* some of the official standing which now belongs to the *agents de change* only. It will probably succeed after some delay.

Political matters have affected the market by causing several alarms and by diverting speculation to international securities. The Eastern question is always with us, but especial attention has been called to it this year by the Armenian slaughters, the Cretan and Macedonian troubles. There is some prospect now that the *entente* between France and Russia may help to settle this question.

Egypt has been a vexation rather than an alarm.

The Chinese question is settled for the present by the controlling influence of Russia, and France may derive some advantage therefrom in trade.

The Italian defeat in Abyssinia has caused some trouble. The weakest case politically is in Spanish securities. The inability of Spain to control her revolted colonies and her fast-approaching bankruptcy have been matters of anxiety. Apparently we are to hear of nothing better until Cuba is transferred to your care and the Philippines to Japan.

Upon the whole 1896 has been a good year for us and leaves us with still better prospects for 1897. While we salute the year that is gone we greet the new, in which we hope for great things.

MINING IN GILPIN COUNTY, COLORADO, IN 1896.

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

At the close of the year it may be of interest to briefly summarize the results of the year's working in this, one of the oldest and most permanently productive mining districts in the United States. Generally speaking, there has been no very important new discovery of mineral, or new departure in methods of treatment. Nor, in view of the exceptional smelting facilities consequent on the proximity to Denver, are the latter likely to undergo much change in the immediate future, excepting as to the extended use of preliminary concentration for many of the low-grade ores. The output for 1896 will show a material increase as compared with 1895, notwithstanding that a great many of the main producing veins were idle. By far the largest part of the output, however, comes from the numerous small mines, most of them worked by local pools. With one exception, that of the Gold-Coin Mines Company, of New York, no really considerable profits were realized by any Eastern or foreign corporation, nor was any very important development work done to earn them. It should be borne in mind that the subjoined notes refer only to mines which are, or have been, extensive shippers; the district contains a host of small prospects, more or less promising, which do not call for special mention.

Commencing with the district around Black Hawk, in view of the fact that the five greatest producing veins, the Gregory, Bobtail, Fisk, Bates-Hunter-German and Buell, have all been practically idle, it is hardly surprising that times have not been brisk. These five veins have between them contributed a notable percentage of the total gold output of Colorado, none of them is as yet worked to any great depth; and sooner or later, given vigorous working and sufficient consolidation of the many divided and often conflicting interests to justify the outlay of capital, it is certain that they will again become important producers.

The Gregory-Bobtail group has for some years past been leased by the New York owners to a Denver syndicate, which from various causes has been unable to keep the mines drained, or to carry out the important development work, without which they cannot regain their old position. It is now understood that this lease, which expires at the end of the year, will not be renewed, and negotiations are in progress which, if successful, will result in the mines being taken over by a strong group of New York capitalists, who have recently also taken a lease and bond on the Buell.

No work was done during the year on the Bates-Hunter, excepting at the western end of the German, which local parties took up on lease and bond a few months ago. Their output is at present probably about \$1,500 per month.

The Fisk, with the Sleepy Hollow on the same vein further east, have had their bottom levels flooded all the year, and no new ground has been opened up. A large number of tributaries have, however, been working in the upper levels and the output has been by no means inconsiderable. At the Americus, between the Fisk and the Sleepy Hollow, the shaft has been sunk to a total depth of 800 ft. without opening up much valuable ground. All of these mines are drained by the Gregory incline, and it is greatly to be wished that some permanent arrangement could be come to, either for consolidation or for joint handling of the water.

In Chase Gulch several mines, notably the First Centennial, Robert Emmett, and Queen of the West, have been profitable producers on a small scale, and useful development work is being done on the Gettysburg and Wain. The Carr and the Belmont, two small mines worked by pools of leasers, have each maintained a monthly output of from \$1,000 to \$2,000, which should in each case leave a fair profit.

The only important work on the Mammoth vein has been at the Packard Mammoth mine, where some 500 or 600 ft. of the vein have been pretty thoroughly explored. Much of this length is barren, and of the pay-shoots the grade is usually low. They seem, however, to be continuous and this property will probably be a large producer of low-grade ore next year. The whole is of interest in its bearing on the probable future for mining on this, the largest and strongest vein in the county.

The old Galena mine was restarted during the summer, but so far the developments have not been very successful and the same may be said of the Corydon. On the Gunnell, since the legal difficulties with the Concrete, the output has greatly lessened; probably at present the shipments do not exceed 30 to 40 tons per day. The Concrete is now equipped with a good hoisting and pumping plant. It is now one of the large shippers of the camp and although little is known as to the grade of the ore-shipsments, there is every reason to think that this is now a profitable mine.

The year 1896 proved a prosperous year for Nevada, where the Gold-Coin and Vendome properties each give employment to a large force of men. The former has kept up its output of \$25,000 per month with unflinching regularity. Developments on the Kansas and Indiana have been kept well ahead, and although no very important discoveries are known to have been made on the latter, there is reason to hope that the Kansas will be in shape to ship largely by the time the great Hidden Treasure pocket has been exhausted. Not much is known as to the present position and output of the Vendome properties, the principal of which are the Hubert and the Shafts. It was stated early in the year that the output of these two mines was too large for treatment in their own mill, and a new 30-stamp rapid-drop mill was built near by. It has, however, now been found necessary to shut down the old Hubert Mill for the winter, from which it may be surmised that the output is not likely to show a great increase for the present.

Little or no work has been done on the California this year. It is to be regretted that the English owners of this great property do not make up their minds to reopen it in proper shape. It is currently asserted in Nevada that great changes will soon take place respecting this property and the Hidden Treasure, but I do not know that these reports have any real basis.

At the Phoenix mine Messrs. Sykes & Hoffman are working on lease and bond claims on the Burroughs and Kansas veins, which here approach one another closely. Work has been prosecuted with great vigor, and the output in December of milling and smelting ore was over 1,500 tons, which makes this mine the largest shipper in the county, with one exception, in quantity, although not by any means in value of output. The Ophir-Burroughs and Alps, both worked by local leasing

pools, have produced large quantities of good ore. The latter, however, showed signs of giving out toward the end of the year.

In Russell district the outlook is not so bright. The Crown Point mine shows a greatly diminished production, as also does the Terror, which in the early part of the year shipped large quantities of low-grade ore. The Pewabic, one of the great old mines of the country, remains closed down. The Topeka, which two or three years ago was a large shipper, has resumed work; but as yet little is being done. Among the smaller mines, the Missouri produced over \$20,000 during the year; but the shipments have now fallen off somewhat. The Niagara commenced work with considerable éclat, only to shut down three months later. The Aduddle, worked by Ed. Rogers & Company, continues to ship considerable quantities of low-grade smelting ore. The sinking of a new shaft and other development work is contemplated in the near future.

The Hazeltine, in Willis Gulch, was started up for a few months in the summer, but the enterprise soon came to an inglorious end. The Two-Forty, a small mine, worked by a party of miners, is yielding them fair returns, and bids fair to develop into a good mine. The Saratoga has now been unwatered, and most of the levels cleared; while the shaft is being sunk to open up new ground. At present the output is small, owing to the usual Gilpin County custom of leaving nothing behind which would possibly pay to remove, but with sufficient development work there is no reason why this mine should not again become a large producer. On the north side of Russell Gulch the Nottoway has been worked by leasers, who have now sold out to a Chicago company. At the close of the year more or less work is being done on three different portions of this vein.

The year was on the whole a gloomy one for the Black Hawk custom mills, the capacity of which is still well in advance of the output. Two or three of them practically monopolized the business and did well; the remainder must have worked at a steady loss. The new concentrator handled considerable ore with more or less success, but it was not until the last months of the year that its output had become large enough to appreciably affect the railroad shipments. It seems pretty certain that this process, while remarkably efficient on some types of ore, will not supplant amalgamation on the bulk of the output of the county. With regard to the so-called "rapid-drop" stamp mills, of which several have been built during the last two years, it seems clear that, excepting possibly on a few exceptionally free-milling ores, their saving is considerably inferior to that of the typical Gilpin County stamp mills, and that this defect is only partly made up for by the slightly lower cost of milling. Present indications seem to point to the use either of concentration milling pure and simple, or of the fine crushing and slow amalgamation usually associated with Gilpin County practice. The rapid-drop mills are somewhat of a compromise, which is not satisfactory in either direction. Of course it need hardly be said that, with the remarkable smelting and freight facilities possessed by this district, ores of a value of from \$15 per ton and upward are generally shipped to most advantage direct.

A good deal of prospecting has been done at Yankee, Pine Creek, Elk Park, Lump Gulch and other outlying parts of the country, and a vigorous attempt was made to create a "boom" at Pine Creek on a somewhat slender basis. A still more barefaced endeavor to boom up the camp of Cottonwood, based largely on false statements and fake specimens, failed completely. Considerable work has been done at the Perigo mine, one of the old-time bonanzas, with fairly encouraging results. Good accounts are received from prospectors at Elk Park, Moon Gulch and other localities, but none of these outlying districts has as yet passed beyond the prospecting stage, and of Pine Creek itself it cannot be said that it is among the more promising of these localities. A great deal more work in proportion to talk is necessary before any of these districts will merit serious attention from outside investors.

With regard to the outlook for 1897, it can only be described as most cheering. There is no reason to anticipate a falling-off from any of the important mines; several new producers are already coming to the front; and if the Gregory-Bobtail and Buell mines are reopened, as seems probable, in an energetic manner and with ample capital, there is reason to look for a considerable output from each of them by the end of the year. The future of Gilpin County rests largely with the consolidation of interests along the main veins, so as to warrant laying out the mines on a definite and predetermined plan, with provision for the efficient handling of water and ore, in place of the slipshod and haphazard working which has too often characterized Gilpin methods in the past.

MINING IN NOVA SCOTIA IN 1896.

During the year 1896 mining in this Province has been prosecuted steadily but quietly, with no extraordinary developments. In Cape Breton the coal trade has shown a decided increase, estimated at 300,000 tons gain during the first half of the year. In Pictou County the coal mines were not operated more than half time in the early part of the year, but their fall business improved on the strength of railroad contracts. In Cumberland County the Springhill mine was actively worked and gained 50,000 tons in the first six months of 1896, as compared with the corresponding period in 1895. Work at the Joggins was dull. Mr. Edward Gilpin, Jr., government inspector of mines, who also furnishes us with the other statistics quoted below, states the total coal output of the Province in 1896 at 2,300,000 tons (of 2,240 lbs.).

The Londonderry and Ferrona furnaces were running. The Steel Company of Canada, owner of the latter works, has made satisfactory shipments to it from their Newfoundland iron ore mine. The total iron ore mined in Nova Scotia in 1896 was 56,334 long tons.

Gold-mining continues quiet. There were many inquiries for Nova Scotia gold properties, but mainly in the line of large low-grade deposits. A new district has been opened at Cow Bay, near Halifax, which yielded satisfactory trial crushings. A chlorination plant was put up in Queens County to work tailings, as well as some large bodies of low-grade ore. The total gold output of the Province in 1896 was about 25,000 oz.

Plaster shipments from Windsor have been brisk; and the total gypsum output of the Province was 135,000 long tons during the year. Manganese mining was dull, although much prospecting was done to find supplies for

use in steel making. The whole production of manganese ore was only 125 tons during the year.

Other mineral products in 1896 were as follows: Stone, including stone for grindstones and building stone, \$55,000; limestone flux, 26,000 long tons; copper ore, 19 long tons only; graphite shale, 175 long tons. About 60,000 long tons of coke were made.

THE GERMAN IRON MARKET IN 1896.

Written for the Engineering and Mining Journal by E. Schroder.

During the year 1896 the activity which began in 1895 continued. The mills and furnaces were everywhere busy, and the results of the year were generally satisfactory to the producers.

The demand for pig iron was so great that the furnaces, in spite of an increased capacity and working with full force, were unable to supply the steadily increasing demand, and a scarcity of pig iron was frequently felt. As early as March the total production of the blast furnaces was disposed of for the second and third quarters, and that for the fourth quarter was in large part contracted for. There have been no stocks of pig iron at the furnaces since the beginning of summer. The pig iron syndicate, which was re-established during the course of the year upon

only a short time ago they had great difficulty in disposing of their enormously increased production, in 1896 consumers were compelled to hurry in their orders. Sales of future supplies extend far into 1897. This increased consumption is due to the greater domestic demand and not to the fluctuating conditions of foreign markets.

Since the demand for billets in the German market could not be met at times, and since a want of material was frequently experienced by the rolling mills, it is but natural that the exports should have decreased somewhat; for the first 10 months of the current year they were 42,113 tons, as against 51,163 tons during the similar period of the preceding year.

The finished products of the iron industry have not fully participated in the general increase; the situation of the wire mills especially was not what it should have been. Business was throughout fairly active at advanced prices for wire, but was less favorable for wire products. The imports and exports of wire and wire products during the first 10 months of the current year were as follows, in metric tons:

	Imports		Exports	
	1895	1896	1895	1896
Iron wire, raw.....	4,042	5,155	95,036	95,054
" coppered, galvanized, etc....	394	605	72,664	77,250
Wire nails.....	30	31	51,619	48,489
" rope.....	133	152	1,567	1,580

For plates, however, business was very good during the whole year at

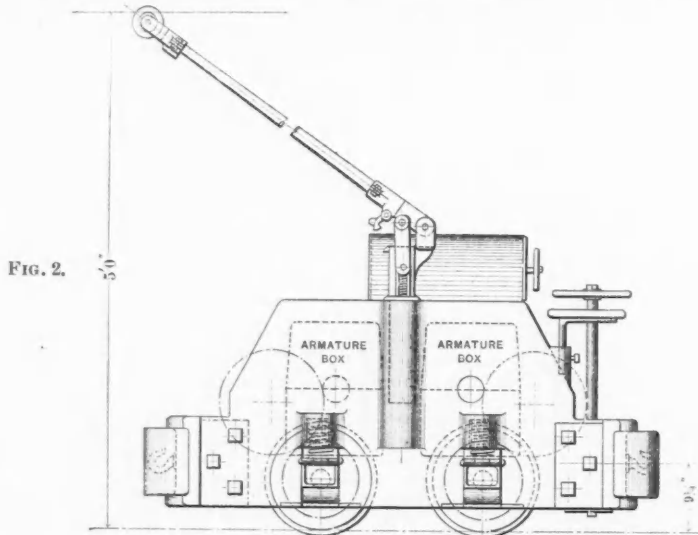


FIG. 2.

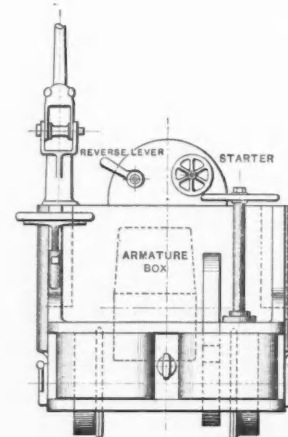


FIG. 4.

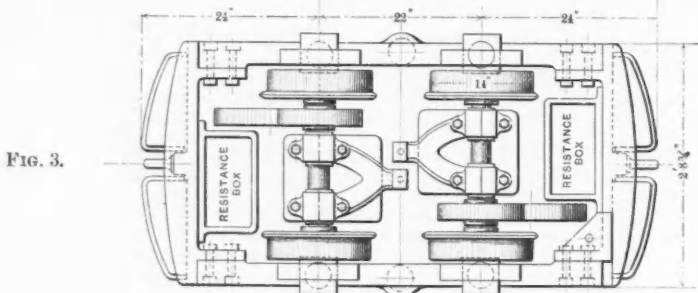


FIG. 3.

THE THOFERN ELECTRIC MINING LOCOMOTIVE.

an improved basis, raised its quotations to correspond to the advanced prices of all raw materials, and found ready takers for its production. There was at the same time an increase in the imports of pig iron; in the 10 months ending October 31st it amounted to 243,342 metric tons, against 152,792 tons during the similar period of the preceding year; the exports, however, were 123,110 tons as compared with 105,664 during the first 10 months of 1895.

The production of pig-iron during the eleven months to November 30th, 1896, amounted to 5,808,263 tons, of which 3,012,028 tons came from the Rhenistan-Westphalia district: the increase over the similar period in 1895, which was 5,278,393 tons, was 10%. The prices for pig-iron were as follows:

	January.	April.	July.	October.	December.
	Marks.	Marks.	Marks.	Marks.	Marks.
Foundry No. 1 and hematite	65	65	65	66	67
Foundry No. 3.....	56	57	57	58	60
Forge pig No. 1.....	51	52.53	54	57.58	58.59
Luxemburg forge pig iron..	44.80	44.80	44.80	47.20	48.80
Thomas iron.....	52	56	56	57.20	59.80
Spiegeleisen 10 to 12% m.....	55	59	63	64	65

The following table shows the number of blast furnaces in operation during the year: Upper Silesia, 29; Wurtemberg, 1; Bavaria, 3; Central Germany 8 (including charcoal); Rhenish Westphalia, 52; Central Rhine, 9; Siegerland, 28; Dill and Lahn District, 6; Saar District, 19; Lorraine, 29; total, 184. There were 44 reported out of blast.

In the Rhenish Westphalia District there are four new blast furnaces of large capacity in the course of construction, two by the Deutscher Kaiser Company, which are approaching completion, and two by the firm Fried. Krupp, of Essen, which are to be in operation by October 1st, 1897. Both these will be run in connection with basic steel plants. In Stettin a blast furnace for Swedish ores and English coal is in course of construction.

For blooms and billets the conditions of the market were the same as for pig iron; the products of the steel plants met with rapid sale, and while

advanced prices, and the rolling mills will be busy for some time to come. Quotations were as follows:

	January.	April.	July.	Oct.-Dec.
	Marks.	Marks.	Marks.	Marks.
Boiler plate, wrought-iron..	160@175	165@175	175	177-50
" plate, steel.....	125	140	150	152-50
Fine plate.....	130@140	145@150	145@150	145@155

The exports of plates were, during the first 10 months: 1896, 113,441 tons; 1895, 102,361 tons; the exports, 1896, 1,922 tons; 1895, 3,234 tons.

The bar iron market for all sorts was exceedingly brisk, and activity increased from month to month, until late into the fall, so that the rolling mills were compelled to extend their time of delivery.

There was a lively demand also for all other kinds of bar steel, as well as wrought iron. The price for ordinary bar iron, which at the beginning of the year was 108 marks, raised by April to 120 marks, and has since attained to 131 marks per ton. The exports of bar iron during the first 10 months, 1896, were 221,609 tons; 1895, 236,058 tons; the imports, 1896, were 19,208 tons; 1895, 15,405 tons.

Railroad material of all kinds is in brisk demand. Contracts for large quantities of rails and wheels for South Africa and the Dutch East Indies were placed at the beginning of the year, to which were added in the spring the very important quantities required by the State roads. Beside these, builders of railroads gave out contracts, so that the mills had plenty to do during the whole year. The exports of rails during the first 10 months, 1896, amounted to 105,345 tons; 1895, 94,314 tons, being an increase of almost 12%.

The iron foundries and machine shops had plenty of work throughout the whole year, and part of them were compelled to stipulate for late term deliveries. The demand is still very brisk, and nearly all the foundries have plenty of orders on their books for a long time to come.

The total imports and exports of iron products were as follows for the first 10 months, in tons:

	1895.	1896.
Imports.....	247,731	376,455
Exports.....	1,791,003	1,439,964

Coal.—The coal and coke market was in an excellent condition during the entire year, and demand kept increasing steadily. Last summer the export figures attained a point as high as usual in the busiest periods of winter. At present, since the advent of the colder season, the mines are no longer able to comply with the constantly increasing demand, although their production is almost 10% greater than last year.

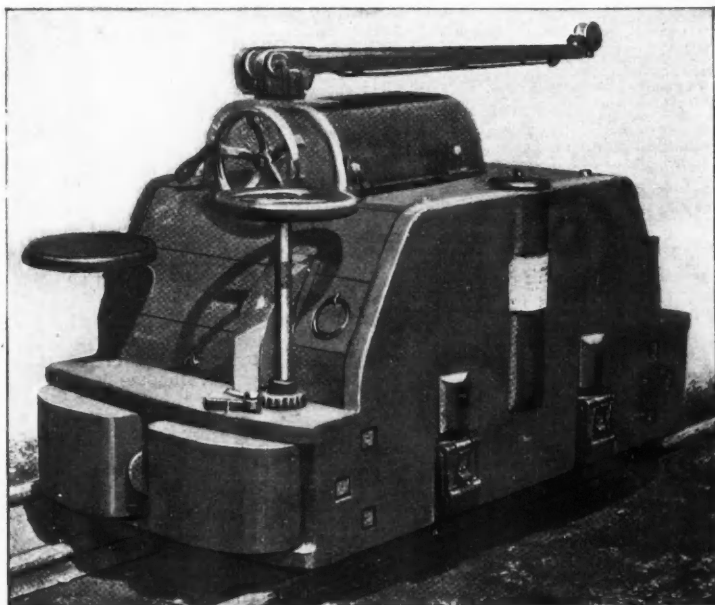
The importations of coal amounted in the first three quarters to 4,048,533 tons (1895, 3,630,623 tons); exports were 8,341,248 tons (1895, 7,186,410 tons).

Iron Ore.—Inquiry in the ore market was extremely brisk, especially for spathic iron ore, so that almost the whole of next year's production is already disposed of. In consequence of the great demand, prices advanced from 9.50 to 10.50 marks in January to 13.00 to 13.50 marks in April, and 14.40 to 16.00 marks in July. The latter price still obtains. The demand for red hematite ores was also very lively.

THE THOFERN ELECTRIC MINE LOCOMOTIVE.

Written for the Engineering and Mining Journal.

A very compact and powerful little electric locomotive for use in mines and workshops was some time ago suggested by Mr. Hermann Thofern, the well-known consulting engineer and expert in electrolysis. This loco-



THE THOFERN ELECTRIC LOCOMOTIVE.

motive presents some excellent features; its construction is shown in the accompanying illustrations, taken from two now employed in the refinery of the Anaconda Copper Mining Company.

These locomotives were installed some three years ago for conveying the copper from the railroad cars to and from the different charging points and for transporting the refinery slimes from the tanks to the silver mill. In this way they handle a large quantity of material every day without any trouble and to the entire satisfaction of the company. The General Electric Company has recently constructed two more locomotives of the same type with a draw-bar pull of 1,000 lbs., to be operated by an electric current of 120 volts. These locomotives are now at work in the mines of the Anaconda Copper Mining Company at Anaconda, Mont.

The locomotive is less than 6 ft. in length, is built entirely of iron, and can pass through a tunnel 4 ft. high by 3 ft. wide. It can be operated at small expense, as it does not require a special electric plant to generate the power, an ordinary incandescent light plant being able to furnish the needed current. The low voltage makes the locomotive entirely inoffensive externally, while on the other hand the sensation felt when touching the contacts or the trolley wire is sufficiently disagreeable to call for caution. The danger of fire in wet mines where this locomotive may be employed is also very small in consequence of the low voltage.

In the illustrations Fig. 1 is a general view of the locomotive from a photograph; Fig. 2 is a side elevation; Fig. 3 a plan and Fig. 4 an end elevation. The drawings show the construction and dimensions very fully. To sum up, the gauge of these locomotives is 20 in. and the wheels are 14 in. diameter. The voltage is 120 volts and the draw-bar pull 1,000 lbs. Besides passing through a tunnel 4 x 3 ft., these engines can run over a curve of 8 ft. radius, the wheel-base being only 22 in.

Slag Heaps as Quarries.—One of the special features of the returns made by the inspectors under the new Quarries Act in Great Britain is the quantity of slag worked from the heaps of cinders due to the operations of blast furnaces in former times. Under the new act such slag deposits, if of a certain size, are treated as quarries, when worked for road metal, etc. The returns made under the Quarries Act for 1895 show that about 50,000 tons were worked in Staffordshire, 36,512 tons in Monmouthshire, and 13,082 tons in Durham.

NOTES ON SOME OF THE MINING DISTRICTS OF BRITISH COLUMBIA.

Written for the Engineering and Mining Journal by Wm. Hamilton Merritt.

If any one glance at the map of North America he will see that the mountain ranges which furnish the mines from Mexico through California, Colorado, Utah, Wyoming, Idaho and Montana continue uninterruptedly north into British Columbia, and that there these mountain ranges have actually a greater length than in the United States territory to the south. Mr. Dawson, the present director of the Geological Survey of Canada, pointed this fact out some years ago.

It was inevitable that those who had developed the southern part of this area should be the first to continue finding the metalliferous ranges to the north, and that the development, which some day will extend to a greater or less extent over this great northern area, should have its commencement in the south. Therefore it was no surprise when the prospectors of Montana commenced to make discoveries across the international boundaries on British soil.

It is not many years since the first important mineral outcrop was located in the East Kootenay by the Hall Brothers, who ran across a rich outcrop of copper-silver on Toad Mountain while hunting for their horses. This property has developed into the Silver King, now worked by an English company, which has its line of wire tramway to the smelter situated at Nelson, B. C. Many other claims were taken up in all directions about this part of the country and among them the Poor-man, a free-milling gold claim, west of Nelson, is still being worked successfully. The next development was on the opposite shore of Lake Kootenay. A number of silver-lead veins were there located and in this camp the No. One dry silver ore mine is still working and the Dellie and others are being developed. These silver lead occurrences were followed into the Lardeau and Slocan, where higher grade silver-lead has been located than in any other part of British Columbia, running as high as 300 oz. to the ton of ore. The Toad Mountain deposits are in a schist, altered diabase, with dolomite crystals, and the west side of Kootenay Lake has its deposits at the junction of limestones and schists for the most part, and as the granite area is approached dry ores are more plentiful. In the Slocan district the ore is largely associated with copper values and red silver ore is not uncommon; a very coarse-grained galena, however, is the prevailing ore and it contains a surprisingly high percentage of silver. Several concentrating plants are being operated in the district.

One property is worthy of mention through the novelty of operation, namely the Wonderful, on which a stream has been turned into a gorge 400 ft. long by 30 ft. wide and 40 ft. deep, and some \$60,000 of silver ore has been taken out so far.

The ore exported during the present year from Slocan, up to the end of October, reached over 15,000 tons of high-grade silver ore, and about 20,000 tons of lower grade silver-lead were treated in the smelter at Pilot Bay on Lake Kootenay.

It might be noted that the northern continuations of these silver-lead ranges were first discovered on the line of the Canadian Pacific Railway near Illecillewaet, where the preliminary development was not satisfactory, but where some properties are now being opened up on a more extensive scale by an English syndicate, represented by Mr. Horne Payne, of London.

The most recent, and one might properly add, the most fashionable, metal mining camp in British Columbia, is very close to the boundary line, to the west of the Columbia River. Here, at Rossland, a cupriferous pyrrhotite is found to carry a considerable amount of gold in places. The ore occurs in a diabase or gabbro, and it resembles the Sudbury nickeliferous pyrrhotite to such a degree that in most instances it would be impossible to separate the two. The Rossland ore, however, contains a good deal of calcite in streaks through it, and at some of the mines it is stated that the gold values are very intimately connected with this calcite. In Sudbury, quartz virtually takes the place of the calcite in the ore, and this is about the only difference physically which one can notice between the two.

As at Sudbury, the Rossland ore is smelted into a matte, and as the present charge for conveyance and smelting reaches \$11 per ton, only the higher grade material can now be handled. The estimated output for the Rossland district in 1895 was \$1,800,000, and for 1896 \$3,000,000.

The output for the month of October shipped to the Trail smelter aggregated 5,037 tons; the Le Roi 3,400, War Eagle 1,240, Evening Star 27, Poorman 120, Josie 225, and miscellaneous 25 tons.

The War Eagle, as an example of the deposits, shows a distinct fissure vein, with well defined walls, varying from 1 ft. to 20 ft. and over in width of solid ore matter. Faults are not uncommon, varying from small distortions to a throw of some distance.

At the Le Roi it is stated that at 450 ft. the ore was 60 ft. in width, 20 ft. of which was said to run \$100 in gold and copper, and 40 ft. \$25. Some of the claims are opened up by tunneling, and have a great advantage in mining cheap. Wages in the camp are reasonable, and the ore can be readily extracted from \$2 to \$3 per ton in the big mines.

It might be of interest to note that the product of the smelters for the year 1896 to the middle of October has been:

Nelson (Hall mines), copper silver matte.....	1,923 tons.
Pilot Bay, silver lead bullion.....	1,012 "
Trail smelter, copper gold matte.....	2,516 "
Total.....	5,451 "

East of the Rossland district the copper contents in the veins appear to increase, and in the Boundary camps some important copper veins are being developed, as an example of which the Mother Lode claim is stated to have from 100 to 150 ft. width of iron sulphide, with gold and silver and a large percentage of copper extending for 1,000 ft. on the claim, the foot-wall being limestone and the hanging porphyritic rock.

To the west of this again free-milling gold ores occur in granite and in schistose quartzite alongside of the granite. One of these veins on the Cariboo claim in Camp McKinney has been milled with profit in a 10-stamp mill for the last several years. The Fairview Camp in this district also has some well defined veins, which in places carry pay-shoots of free milling ore.

In the northern part of British Columbia, reached by the old Cariboo road, the development up to the present has been chiefly alluvial, one hydraulic mine, the Cariboo, having cleaned up \$120,000 during the past season. A number of alluvial mining enterprises are under way, and there is little doubt that the Cariboo, which has produced a very large amount of gold from its placers, will still be a large factor in the gold output of Canada.

Quartz veins occurring in Cariboo, in the Cariboo schists, are very numerous. In some cases they are extremely irregular and in others well defined veins can be traced for long distances, the former, however, being the characteristic condition. Owing to freight expenses, prospecting and development have almost been entirely confined to placers. The quartz veins so far exposed carry their values in the sulphurets, a very small proportion of the values only being free-milling. Some attention is now being paid to the quartz in the Cariboo, and it is inevitable that paying propositions will be developed. A railroad is very badly needed into the country, and only gilt-edged properties could stand the present expenses.

Nearer the railroad, also to the north, an immense deposit of quartz of a free-milling grade is being developed in Lillooet, and the general opinion of those interested is that there is enough ore in sight for a very large mill. Specimens from the deposit show much free gold.

On the west coast and on Texada Island many prospects show very favorable samples of copper which is said to carry gold in some instances. A sample of tin ore (a cassiterite crystal with copper pyrites) was shown me by Mr. Pellew Harvey at Vancouver as a forerunner of tin on the coast.

Dredging for the sand on the lower reaches of the Fraser is also receiving some attention, and the failures with suction type of dredging will likely lead to the adoption of the Center bucket dredge which is being so successfully used in similar operations in New Zealand.

On Vancouver Island development of refractory gold ores has been carried on in Alberni District, and is reported to have been successful in some instances. Hydraulic gold washing is also reported to be successful in the same district.

The East Kootenay District has not yet been opened up, and owing to difficulties of transportation it is almost impossible to have any satisfactory development, though free milling gold, copper and silver lead ores are reported to exist to a very considerable extent in the different camps where prospecting has been carried on. One mine, however, the North Star, has opened an immense body of silver-lead, and, notwithstanding the great expense of shipment, has been able to work with considerable profit. Most of the claims are depending largely upon the building of the Crow's Nest Railroad, which will not only open a means of direct communication but will bring coke from the Crow's Nest Pass coal fields to smelters in East and West Kootenay.

The coking coal is also known in two other fields in, or adjacent to, British Columbia. In the Nicola a 5-ft. seam of excellent bituminous coal is known to make a good coke, and there is also a deposit on the line of the Canadian Pacific Railway in the Northwest Territory which could furnish coke for the eastern part of the province tributary to the main line of the railroad.

The promise of a speedy development of great mineral wealth in British Columbia seems to exist, and the next few years will see a great advance and marked changes in the province. Canadians in general have not been a mining people, and until the last few months it may be said that the people in Eastern Canada were entirely indifferent to mineral development. As a natural result they are therefore the most inviting ground for wild-cat speculations, and the number of undeveloped, and possibly unknown prospects that have been put upon the market is almost incredible, and we only fear the reaction, occasioned by the inevitable loss through them, may act as a decided damper to our Eastern investors. Canadians with their limited capital can do better work toward prospecting and preliminary development companies, and until we learn more about mining as a people leave the formation of the mining companies and the mining development to English and American capital which has had long years of schooling in the business.

Carborundum Production and Use.—The Carborundum Company reports to us that its works have produced during the year 1896, in round numbers, 1,191,000 lbs., of 595 tons of crystalline carborundum. Consideration at the present is given to the production in crystalline form only, but another important industry into which carbide of silicon promises to be a valuable adjunct, will naturally increase the usefulness of the material. Some mention has been made of the experiments showing that carborundum can be used, and will, in all probability, take the place of ferro-silicon in the manufacture of steel. Professor Luehrmann, of Germany, recently wrote an article on this subject, indicating that in the use of carborundum there will be in Germany alone, approximately, 2,500 tons consumed annually, provided its cost would not exceed 6c. per lb. It may be used for this purpose in an amorphous form, and the Carborundum Company is prepared to furnish it at a price slightly under this figure.

Deep Mining in Cornwall.—Mr. Bennett H. Brough, in an interesting paper, recently read before the London Society of Arts, on "Mining at Great Depths," said that deep mining in Cornwall is well within the range of possibility, as is shown by the energetic action taken of late by the owners of the Dolcoath mine. The deepest of the existing inclined shafts at Dolcoath is the new sump shaft, on which the principal Cornish pumping engine is erected. This shaft is now being sunk by two rock drills below the 440 fathom level, and, allowing for the depth of the adit—about 30 fathoms—has reached an inclined depth of 480 fathoms, or a vertical depth of over 2,400 ft. Toward the end of 1895 a new vertical shaft of 18 ft. diameter was commenced, and is expected to intersect the main lode at a depth of about 3,000 ft. At the Basset mines, too, a new vertical shaft, 16 ft. 6 in. diameter, is being sunk at the present time. Both the Dolcoath and the Basset new vertical shafts are to be fitted with the best and most efficient winding and pumping machinery obtainable.

ABSTRACTS OF OFFICIAL REPORTS.

Harquahala Gold Mining Company, Limited.

This company now has two widely separated interests. In view of the probable failure of its mines in Arizona it bought property in Western Australia, which is now being explored. The last report covers the year ending June 30th, 1896.

The revenue account for the year shows the following statement: Receipts from bullion, etc., Harquahala mines, £30,290; interest, transfers, exchanges, etc., London office, £448; total receipts, £30,738. The payments were: Charges in Arizona, £16,555; charges at Kalgoorlie, Western Australia, £10,337; charges in London, £2,282; total, £29,174. This leaves a balance of £1,564 for the year, which added to £1,756 from the previous year, leaves a total balance of £3,320 at the close of the year.

In Arizona some prospecting was done, but with little result. The mill was run a short time, chiefly on ore taken out by tributors. In all, 1,715 tons were crushed, the amount of bullion realized being \$25,663. This was \$12.26 per ton, or 77% of the assay value. The chief work done at Harquahala was in treating the old tailings by the cyanide process. The plant was run through the year, and treated 42,730 tons of tailings, from which the bullion realized amounted to \$108,190, or \$3.21 per ton. This was a saving of 76%, the assay value of the residues being \$0.99 per ton. About 30,000 ton of tailings are still to be treated, and operations will then probably close, though a little ore is still being taken out from the mine under leases.

The cost of the cyanide treatment of the tailings is given in detail in the following table:

Supplies.	Per ton, cents.	Labor.	Per ton, cents.
Cyanide of potash.....	26.63	Superintendent and foreman.....	7.29
Fuel.....	12.87	Experts.....	3.32
Lime.....	4.40	Shift boss and helpers.....	8.04
Zinc.....	0.61	Assayer and melter.....	3.92
Sundries.....	1.55	Mechanic and engineers.....	8.59
Tramway and engine repairs.....	1.18	Firemen and mine pumper.....	5.63
Packing, waste and lubricant.....	0.65	Carmen and crushermen.....	5.35
Assay office.....	2.42	Signals, tailings and scrapermen.....	7.06
Freight and express.....	3.34	Stables, watchmen, blacksmith and woodpiler.....	5.38
Telegrams and postage.....	0.76		
Stables.....	5.06		
Total.....	59.98	Total labor.....	51.58
Add water supply.....	9.87	Add supplies.....	79.85
Royalty.....	10.00	Legal expenses.....	1.73
		Taxes and insurance.....	4.45
Total.....	79.85	Total cost.....	140.61

As the total yield was \$3.21 per ton, this would leave a profit of \$1.80 per ton of tailings worked.

The company's property in Western Australia comprises two leases, 27 acres in all, in the Kalgoorlie District. On this three shafts have been sunk 215 ft., 150 ft. and 125 ft. respectively, and about 1,260 ft. of cross-cutting and drifting done, but so far nothing of any value has been found.

A NEW MINING TRANSIT.

Written for the Engineering and Mining Journal by C. L. Berger.

Responding to many solicitations to make a transit for mines containing magnetic ore, similar in style and accuracy to their complete transit-theodolite, Messrs. Buff & Berger, of Boston, have designed the instrument herewith illustrated. Its principal features are that to be light and portable it is of the same size as their No. 2 and No. 6 transits, but that, owing to the omission of the compass, the standards can be cast in a single piece, affording greater lateral stiffness, with increased capability to withstand rough treatment. Though thoroughly adapted to the complex conditions prevailing in underground work and offering every facility for conducting this work with ease and speed, it is of necessity very simple in style and manipulation. It possesses all the advantages as regards accuracy of division, highest permissible telescopic power and sensitive spirit levels—characteristics generally found only in the larger instruments.

With the interchangeable auxiliary telescope added, for use in steep sighting, either on top or on the side of the main telescope, as the case may be, in measuring horizontal or vertical angles, it becomes an excellent instrument for solving any of the more perplexing tasks, where otherwise special instruments and methods become necessary to arrive at correct results. In this respect it is claimed to be second only in accuracy to the universal mining transit with duplex telescope bearings, but without the latter's restrictions as a special instrument for special work. When the auxiliary telescope is detached this instrument is just as applicable to the common work in the mine or on the surface as the regular engineer's and mining transits.

The U-shaped standard frame of the telescope is made of aluminum, and to avoid expensive exterior finish, is covered with a fine dark Japan not affected by moisture, etc. The plate levels, of standard character and length, are mounted directly upon the vernier plate, where they are easily accessible for the purpose of adjustment and ready observation, but are fully protected from falling bodies. The principal plate level is situated right under the eye end of the telescope. To place these levels below the upper plate and within the space formed by it and the graduated circle, as is the practice in some instruments of minor grade and in some surveyor's compasses, has the disadvantage of partly obscuring them from view. Such levels are also too small in diameter and length to be of standard character, and are apt to lose their adjustment, while they cannot be reached in case of required treatment. But the most serious objections are that the two large openings required in the upper plate of a transit to afford a full view weaken the latter to such an extent as to jeopardize the stability of the superstructure, and with it the permanency of the adjustments depending on this, in case of rough treatment.

The two opposite verniers of the horizontal circle are in line of sight with the telescope, and are protected from dripping water by cemented glass covers. The circle is of the single reading kind, with one row of figures from 0° to 360°, in the direction of the hands of a watch; or pro-

vided with two rows, from 0° to 360° in opposite directions, with double verniers to correspond to them. The vertical circle has its vernier situated, as shown in the cut, so as to be nearest the eye when the telescope is in the main position. It is a double vernier, to enable the operator to read angles of elevation and depression with equal facility. There will be but one row of figures, from 0° to 180°, each way from zero on this circle. If desired, double opposite verniers can be placed on the vertical circle when the figures of the graduation will run from 0° to 90° each way and back, as in the regular surface instruments. This circle is provided with an aluminum guard, which carries the vernier, and this latter is so arranged that it can be readily adjusted to reach zero.

For best results inverting telescopes are used. In this instrument the line of collimation of the main telescope, once properly made for a distant object, will also prove correct for very near and intermediate distances. This is secured by the newly-patented device, in a way never before

the line of collimation of its principal wire (which is the vertical one when used as top and becomes the horizontal wire when used as a side telescope) will be so nearly parallel to that of the main telescope, as to be practically correct in most cases.

The other style No. II. with the trivets (not shown here) can be adjusted so that the line of collimation of both of its wires will be truly parallel to those of the main telescope. No solar telescope, on top or on the side of the instrument, as is the case with their solar attachment, rigged up for vertical sighting can meet these requirements, unless the work is of the most trivial character.

The auxiliary telescope can be attached or detached on top or at the side of the cross axis of the transit at will and readily ranged into line with the main telescope, by means of the two milled-headed screws nearest the eye end. It is then securely fastened to the instrument and not liable to accidental change in direction. The eccentricity of the telescope is the same in both positions. One counterpoise will be sufficient in both cases.

To use it in measuring horizontal angles it is only necessary to bisect with the vertical wire of the main telescope as distant a point as can be found in a mine, then by means of the milled-headed opposing screws of the auxiliary telescope, and by slightly revolving the transverse axis of the main telescope, the vertical wire of the auxiliary one must also be made to bisect the same point.

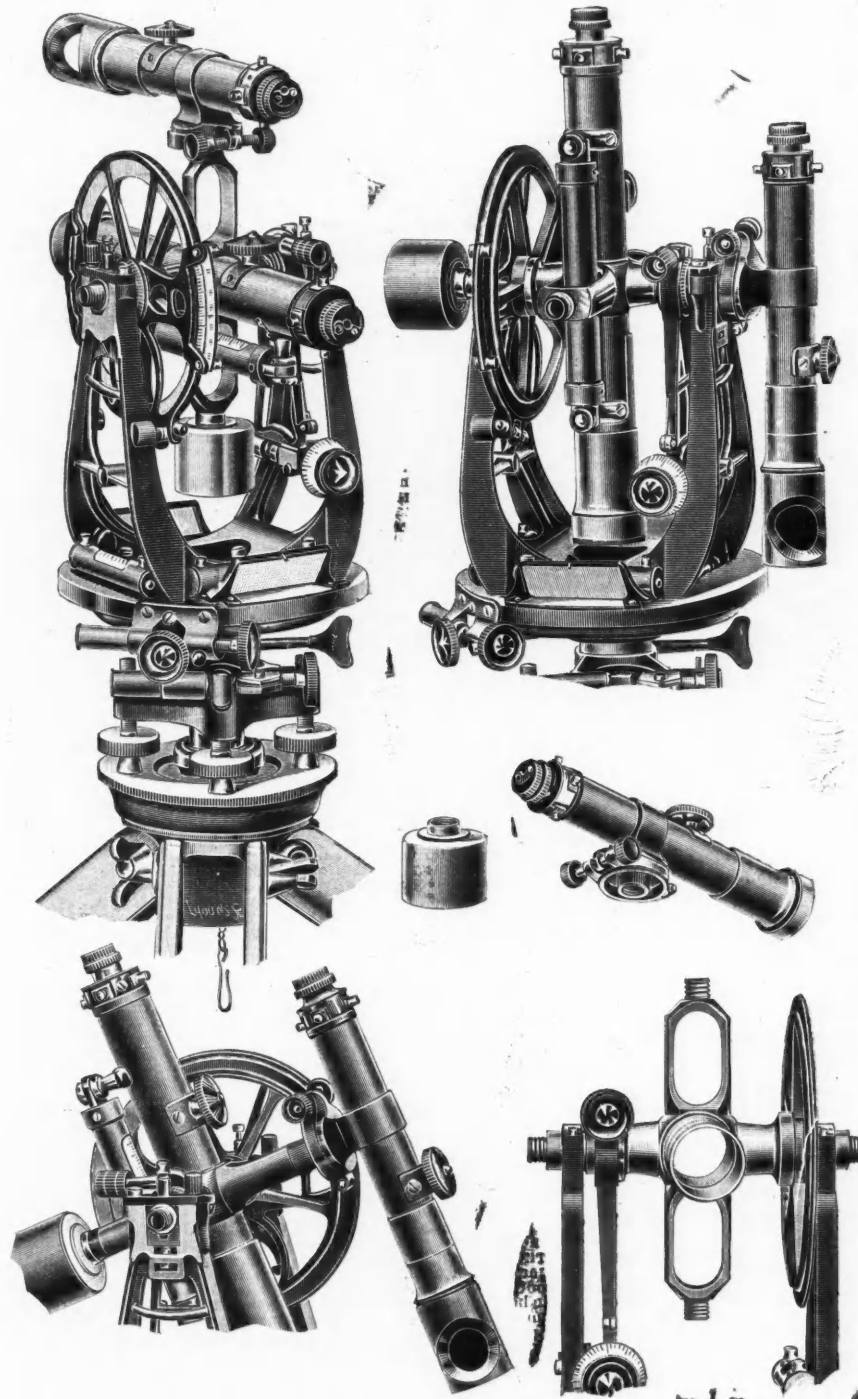
To use it as a side telescope for vertical angles the procedure is exactly similar to the above, and differs only in so far as the now horizontal wire of the auxiliary telescope must be made to bisect a point previously bisected by the horizontal wire of the main telescope. This is done by slightly turning the vernier plate on its vertical axis and by making use of the same milled-headed tangent screws.

The instrument, after the auxiliary telescope is detached, is free from any incumbrance and can be used like the transit for ordinary work.

For greater compactness and less weight the instrument is packed to lie horizontally in its mahogany box. All graduations read to minutes, the sensitiveness of the plate levels being so related that one division of their graduations is equal to one minute of arc, while one division of the telescope level is equal to 15 minutes of arc.

The weight of the instrument is 11 lbs.; that of the auxiliary telescope 12 oz., and with counterpoise 1½ lbs. The power of the inverting telescopes are 21 and 14 diameters and the apertures 1¼ in. and 1 in. respectively. All of the principal features of this instrument are secured by patents.

Credit is due in working out the feasibility of using the top and side telescope interchangeably, to Mr. D. D. Scott, and to Prof. F. H. Denton, University of Minnesota, for several valuable suggestions gathered from their experience and needs in mine work.



BUFF & BERGER'S IMPROVED MINING TRANSIT.

attained. When this adjustment is once made it needs no repetition, except after a severe accident requiring extensive repairs at the hands of a maker. This is an important feature, as it will enable the operator to read an angle but once—though the foresights differ in distance; this will at once be correct within a fraction of the vernier reading. Two or more repetitions of the same should be made, however, chiefly as a check to verify the first result.

This instrument is supplied with the interchangeable auxiliary telescope. The cuts representing one style, with counterpoise attached, are self-explanatory. This style has no trivet, as will be seen, and therefore is non-adjustable, but it has been so much improved that

Sault Ste. Marie Canal Traffic.—The United States canal at Sault Ste. Marie closed December 8th, and the Canadian canal, which was held open for local traffic, closed two days later, on the 10th. By combining monthly statements of the two canals it is found, says the *Cleveland Marine Review*, that the total number of vessel passages to and from Lake Superior during 1896 was 18,615, against 17,956 in 1895 and 14,491 in 1894. The number of tons of freight moved was 16,239,121, against 15,062,580 1895 and 13,195,860 in 1894, and the registered tonnage of vessels was 17,249,418, against 16,806,781 in 1895 and 13,110,366 in 1894. Thus the freight tonnage of 1895 is exceeded by 1,176,541, while the excess of registered tonnage is only 442,637. It will thus be seen that with deeper draft in the Lake Superior trade the increased carrying capacity of the big freighters is again making up for the difference that existed last season between registered and freight tonnage. The coal business of the canal showed a considerable increase, the reports for this year giving 395,210 tons of anthracite coal and 2,626,130 tons of bituminous coal, being a total of 3,023,340 tons, against a total of 2,574,362 tons for the season of 1895. Contrary to expectation, iron ore shows but a very slight decrease, the total this year having been 7,909,250 net tons, against 8,062,209 tons in 1895 the decrease being only 152,959 tons. The iron ore shipments which passed through the canal in 1894 were only 6,548,876 net tons. The quantity of copper this year was 116,872 net tons, as against 107,452 tons in 1895. How much of this was fine copper is not stated.

Scandinavian and Russian Exhibition in Stockholm, 1897

—The first great Scandinavian exhibition took place in Stockholm in 1866, the second and third at Copenhagen in 1872 and 1882, and now Sweden is preparing for the fourth exhibition at Stockholm in 1897. The exhibition grounds are situated in the beginning of the Djurgården, the great pleasure park of Stockholm. It is a great park, largely in a natural state, surrounded by water on all sides, with fine promenades, romantic rocks and sunny meadows. The exhibition grounds can be reached by land, and by water on any of the numerous steam launches plying between them and the city. They are only about 15 or 20 minutes' walk from the center of the city. The exhibition will open on May 15th and will close October 1st, 1897. A special exhibit of iron and steel products will be made.

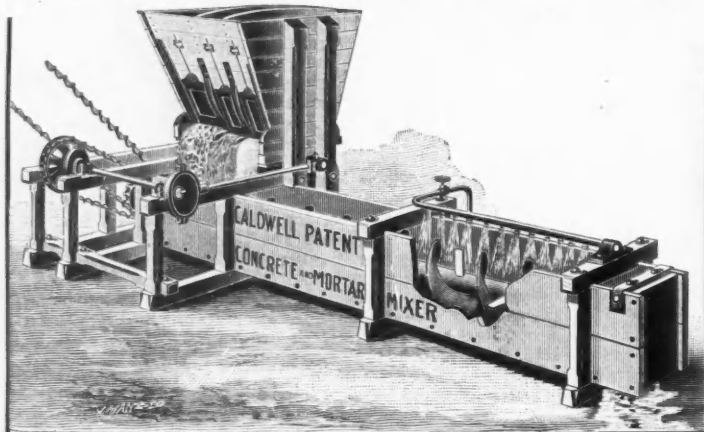
RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Special ly Reported for the Engineering and Mining Journal.

DUTY ON NATURAL GAS.—By the latest decision, just made public, natural gas is declared to be a mineral for all the purposes of the statutes and customs laws of the United States. The court affirms the decision of the United States Circuit Court for the district, which affirmed a decision of the Board of General Appraisers declaring that gas piped from Shirkstown, Canada, into Buffalo, N. Y., was not subject to duty, as it comes within the definition of crude minerals. The Collector of Customs had assessed the gas as dutiable at 10%, under Section 4 of the McKinley Act, as a "raw, unmanufactured article not enumerated or provided for." The Buffalo Gas Company insisted that natural gas is, under Section 651 of the Act, a "mineral crude or not advanced in value or condition by refining or grinding or by other processes of manufacture, not specially provided for in this Act."—Buffalo Gas Company vs. Collector of the Port of Buffalo; United States Circuit Court of Appeals, New York.

THE CALDWELL MIXER.

The increasing use of concrete work in engineering has created a demand for machinery for the mixing of the different materials. The usual type of concrete mixer operates by mixing a batch or certain quantity of the material, the machine being stopped to deliver one charge and take in another. The device shown in the illustration has the peculiar merit of being continuous in its operation, thus securing great capacity and economy. The use of the Caldwell spiral conveyor for mixing purposes has been well known and successful for many years, the first large engineering work in which it was thus employed being the building of the concrete subway for the South Side cable railroad in Chicago. In



THE CALDWELL CONCRETE MIXER.

this instance, and also in the building of many other cable roads, the machine was mounted on the car tracks, so that it followed the work as it progressed. In addition to cable road construction, the device has been extensively and successfully used in many engineering works where large quantities of concrete or mortar were employed, among which may be mentioned the sea wall at Lincoln Park, Chicago; reservoir work at Nashville and Milwaukee; concrete walls of Farwell Building, Chicago, and in culverts and bridge work.

The spiral conveyor thoroughly mixes the sand, cement and stone, and the water is added to the mixture near the delivery end of the conveyor, the result being a saving of cement and a perfect bond. The device illustrated is novel in the addition of the proportion meter shown. This consists of a hopper with compartments for holding cement, sand and stone. Forming the bottom of the hopper is a table, which is given a rapid reciprocating motion by means of eccentrics. Each lateral movement of the table delivers a certain amount of each ingredient to the mixer. The feed of the different kinds of material is regulated by the raising and lowering of the throat gates shown.

The device is covered by patent, and is manufactured and sold by the H. W. Caldwell & Son Company, of Chicago, Ill.

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.

WEEK ENDING DECEMBER 29TH, 1896.

- 573,873. MACHINE FOR ROLLING METAL TUBES. Hugh O. Harris, Brooklyn, N. Y. Assignor to the Seamless Structural Tube Company, New York, N. Y. The combination of a reciprocating draw-head with radially adjustable slides that form the draw-hole, and a mandrel secured to and longitudinally movable with the draw-head.
- 573,877. MACHINE FOR ROLLING METAL TUBES. Emil F. Holmgren, Brooklyn, N. Y. Assignor to the Seamless Structural Tube Company, New York, N. Y. The combination of a revoluble head with radially-movable slides, reducing-rolls and contact-rollers secured to opposite ends of the slides, a mandrel extending between the reducing-rolls, a flaring ring engaging the contact-rollers, and means for shifting such ring.
- 573,900, 373,901 and 373,902. HOT-BLAST STOVE. George W. McClure, Pittsburg, Pa. The combination of an exterior cylindrical shell; a dome; a smaller interior concentric, cylindrical shell extending substantially from the

level of the stack-flue to the lower edge of the dome a stack-flue in the base of the stove; three combustion-chambers arranged within the interior cylinder, the chambers communicating with each other at the base but independent from thence upward, an independent air inlet for each combustion-chamber and a series of concentric, annular, vertical, flues extending around the stove between the inner and outer cylinders.

- 573,937. METAL ROOFING. William W. Turner, Chicago, Ill. A roof plate comprising a body having oppositely inclined diagonal grooves with a central trough into which the grooves open.
- 573,938. ACETYLENE-GAS GENERATOR. John H. Waite, Rock Falls, Ill. Assignor to Judd Decker, Sterling, Ill. The combination of a cylinder formed of a stationary part and a movable part, the collar embracing each cylinder; apertures penetrating the movable part and collar and the cover engaging the movable portion of the cylinder.
- 573,956. AMMONIA GAS GENERATOR. Louis H. Bachmann and Oscar R. Sulzer, Louisville, Ky. The combination of a vessel, a stand-pipe in the upper part or section thereof, a series of rectifying pans within the stand-pipe, an exhausted liquor coil around the stand-pipe, a steam pipe in the lower part or section of the vessel, an automatic regulator connected with the lower section or part of the vessel, and a valve applied to the regulator and having pipe connection with the coil in the upper section of the vessel and with the lower section or part of the vessel.
- 573,957 and 573,958. PROCESS OF AND APPARATUS FOR MANUFACTURING GAS. Francis G. Bates, Philadelphia, Pa. The process consists in passing pre-heated air, superheated steam and hydrocarbon vapors together, through a producer-chamber wherein an elevated temperature is maintained by the combustion of carbonaceous matter, and in which is maintained a pressure in excess of 42 lbs. per square inch or over. The combination in a gas apparatus of an air-compressor, an air-heater, a gas-producer, a steam-generator heated by the waste heat given out by the gas, a passage for compressed air leading through the air-heater into the gas-producer, a steam-pipe leading from the generator into the gas-producer, a steam-engine and a steam-pipe from the generator to the steam engine, whereby the waste heat of the gas is utilized to generate steam both for making gas and for driving the steam-engine as an auxiliary source of power.
- 573,964. PROCESS OF PURIFYING AMMONIUM NITRATE. George Craig, Glasgow, Scotland. The extraction of nitrate of ammonium from mixtures containing it, by percolating or digesting the same with anhydrous or high-strength ammonia to dissolve out the nitrate of ammonium, and obtaining it in the solid state therefrom, by evaporating off the solvent.
- 573,988. CONVEYOR. Christopher W. Levalley, Milwaukee. A detachable chain link having a round end bar, upright side bars with inserting flanges adjacent to the end bar, necks or webs connecting the end bar and flanges, and a hook-bar with upright front face adapted to register with the flanges of the preceding link of like construction.
- 573,989. PROCESS OF AND APPARATUS FOR MANUFACTURING GAS. Maurice Lorois, Nantes, France, and Francis G. Bates, Philadelphia, Pa.; said Lorois assignor to said Bates. The process consists in pumping air and water together, whereby the air is compressed and the water takes up the heat from the air, forcing the water thus warmed through a steam generating passage, superheating the steam therefrom, heating the compressed air, commingling the hot compressed air and superheated steam, passing the commingled air and steam under pressure through incandescent carbonaceous matter to convert them into a fixed producer-gas, then circulating the hot gas into contact with a superheater and a steam-generator, and through an air-leater, whereby it is cooled and its heat is economized.
- 574,041. HOT-BLAST STOVE. George W. McClure, Pittsburg, Pa. The combination of a shell inclosing the combustion-chamber, flues, etc.; a vertical cross-wall dividing the shell into substantially two equal parts and extending down to the stack-flue; an independent combustion-chamber and semi-circular vertical flues on each side of the wall; a stack-flue in the base of the stove and connections between the combustion-chambers and their respective vertical flues and between the vertical flues and the smoke-stack.
- 574,085. HOIST-DRUM. Herbert B. Denton, Lake View, Minn. The combination of a bin provided with a discharge-opening, a discharge chute pivoted in front of the opening, a winch for raising and lowering the chute, an equalizing-sheave composed of a grooved frustum joined at its smaller base to the smaller base of another grooved frustum, the grooves being mutually continuous, with a single continuous cable connected to the chute and passing over the winch and also passing over the frustums of the equalizing-sheave to a counter-weight.
- 574,089. PROCESS FOR MAKING SODIUM BICARBONATE FROM ROASTER-ASH. Josef Hawliczek, Liverpool, England. Assignor to the United Alkali Company, Limited, Widnes, England. The method consists in converting the sesquicarbonate of soda known as "roaster-ash" into hydrated roaster-ash, and then treating the latter with carbonic acid gas.
- 574,172. MEANS FOR MAKING ARTIFICIAL STONE. Ferdinand J. Rünitz, Müglitz, Germany. Patented in Germany December 21, 1894, No. 83 600; in Austria May 4, 1895, No. 45/1,592, and in Belgium December 16, 1895, No. 118,879. The combination with a mold for receiving the cement, mortar or concrete, having slots in its upper edges, of a strike iron having projecting teeth corresponding in position and depth with the slots in the upper edges of the mold and means connected with the mold for guiding the strike-iron over the mold.
- 574,237. BLOWPIPE APPARATUS. Maurice D. Brown and Dennis J. Griffin, Waterbury, Conn. The combination with a gas-valve and an air-valve, each having an inwardly-projecting hub, of gas and air inlet and outlet connections for the valves, a blow-pipe, means for connecting the outlet connections therewith, a rock-shaft interposed between the valves, and rigidly connected with their inwardly-projecting hubs for the simultaneous operation of the valves, foot-power connection with the shaft in the other direction.
- 574,241. APPARATUS FOR CONCENTRATING, GRADING, OR CLASSIFYING CRUSHED ORES, ETC. William H. Coward, London, England. An apparatus for grading ores, the apparatus having a casing with openings in two opposite sides and with interior partitions forming compartments, a series of conical shells of varying sizes, the shells being rigidly connected with each other and having spaces between them, and one shell being projected through one opening at the side of the casing, and an additional shell of conicality opposite to that of the first-named shells, the additional shell being connected to the shell contiguous to the remaining opening and being passed through the opening.
- 574,272. ORE ROASTING FURNACE. John Roger, Denver, Colo. The combination of an outer circular wall, an inner circular wall concentric to the outer wall, a roof extending from one wall to the other, circularly-arranged concentric hearths between walls, the hearths having a space separating them from each other, the space terminating in carriage-chamber, spaces separating the walls of the carriage-chamber from the inner and outer concentric walls of the furnace, a down-curved extension carried by the roof directly over the space between the hearths, a carriage adapted to travel within its chamber, and a circular shield carried by the carriage and resting and rotating upon shoulders of the roasting-hearth, and adapted to closing the opening separating the hearths.
- 574,273. ORE-CRUSHER. John Roger, Denver, Colo. The combination of a crushing-roller journaled in stationary bearings, movable cylinders formed with bearings, and having upper and lower conduits communicating between the cylinders, a crushing-roller journaled in the bearings of the cylinders, and stationary pistons in the cylinders having hollow stems, opening respectively above and below the piston-heads, whereby the elastic medium is delivered into the cylinders above or below the piston-heads.
- 574,368. COAL-DRILLING APPARATUS. Warren C. Johnson, Oskaloosa, Ia. The combination of the following elements, a suitable sleeve cast complete in one piece and having trunnions on its sides and a boss near one end, a straight axle screwed into the boss, a bevel-wheel rotatably mounted on the axle, a crank secured to the hub of the gear-wheel, a hub designed to enter the sleeve, and having annular grooves on its exterior and a feather on its interior designed to enter a groove in the bevel-shaft, a bevel gear-wheel on the end of the hub in mesh with the bevel-gear and a Babbitt-metal filler placed between the sleeve and hub to permit a free rotation of the hub and prevent its longitudinal movement in the sleeve.

PERSONAL.

MR. R. W. MARSHALL, President of the Marswada Gold Mining Company, of Sheridan, Wyo., is in Chicago, temporarily.

MR. WINTHROP W. FISK, mining engineer, has left Boston, Mass., for De Lamar, Idaho, where he will remain for some time.

MR. LUTHER WAGONER, civil and mining engineer of San Francisco, Cal., has returned to that city, after a few days' visit in New York.

MR. L. M. STERRETT, until recently in charge of operations at the Sunrise Mining Company's property near Stone Station, is now located in Butte, Mont.

MR. ROBERT DUNCAN, JR., manager of the Alaska-Treadwell Gold Mining Company, of Douglas Island, Alaska, is in San Francisco, Cal., on a short visit.

MR. ISAAC JENNINGS, superintendent of the Star mine, who has been in Salt Lake City, Utah, has returned to Hailey, Idaho, to resume operations at the mine.

HON. A. W. McCUNE, of Salt Lake City, Utah, has gone to the Kootenay country, in British Columbia, where he has large and valuable mining interests.

COL. JOHN W. DONNELLAN has returned to Salt Lake City, Utah, after inquiring into mining property at Central City, Colo., where he operated many years ago.

MR. HOWARD C. WALTERS, of the Canadian Gold Fields Company, has left Rosslund, B. C., for an extended trip through the Eastern States and provinces.

MR. EDMUND KENT, master mechanic of the Anaconda Copper Mining Company's properties at Butte, Mont., has resigned that position to engage in other business.

MR. D. W. HIGGINS, Speaker of the British Columbia Legislature, who is largely interested in Trail Creek mining properties, is visiting the Eastern States and provinces.

MR. F. C. WHITNEY, secretary and treasurer of the Orphan Boy mine in the Big Bend country north of Revelstoke, B. C., is in San Francisco, Cal., on a pleasure and business trip.

MR. E. L. TEWKSBURY, of Elmira, N. Y., is at present in Chicago, where he is having tests of ores made at the laboratory of George H. Ellis. Mr. Tewksbury will leave shortly for Sheridan, Wyo.

MR. H. R. COCKER, who was recently elected president and general manager of the American Developing and Mining Company, has arrived in Butte, Mont., from St. Paul and assumed the duties of his new office.

MR. GILBERT GURNEY, mining engineer from Topia, Mex., is at present stopping at the Auditorium Hotel, Chicago. Mr. Gurney will shortly go to Culiacan, State of Sinaloa, Mex., where he will take charge of a large mining plant.

MR. KENNETH ROBERTSON has resigned his position as superintendent for the receiver of the West Superior Iron and Steel Company, of West Superior, Wis., to accept the post of manager of the Antrim Iron Company, of Mancelona, Mich.

MR. W. P. THORNBURG, of Columbus, O., general manager of the Columbus & Sandusky Railway, has been elected general manager of the Shelby Steel Tube Works to fill the vacancy caused by the resignation of COL. D. L. COCKLEY, January 1st.

MR. SAMUEL D. WARRINER, who for the past seven years has been mechanical engineer for the Lehigh Valley Coal Company, has accepted a position as superintendent of the Calumet & Hecla copper mine, and will take charge February 1st.

MR. H. L. SIMMONS (late of Helena), of the firm of Bowes, Scott & Company, mining engineers, London, England, is now on his way to British Columbia, where he proposes to make a lengthened stay for the purpose of investigating the mining resources of that country.

MR. J. H. WEDDEL, of the Arkansas Valley Smelting and Refining Company, of Leadville, Colo., was in Salt Lake City recently on business for the company, the most important of which was to look after the yearly contracts for the Silver King, Eureka Hill and Swansea ores, which will soon be let.

LIEUTENANT-COMMANDER E. S. PRIME, who was assigned to the Ordnance Works of the Bethlehem (Pa.) Iron Company some time ago, has been detached from duty there and has gone to Harrisburg. He will inspect government work for the Navy, which is under way at Harrisburg, Steelton and Reading.

COL. H. G. HEFFRON, who, while superintendent of the Niagara mine at Bingham, Utah, commenced a series of experiments by which it was demonstrated that the low grade gold ores of Bingham could be profitably handled by the cyanide process, has decided to go upon the Mother Lode in California in a short time.

MR. JOHN FULTON, mining engineer, has been engaged by a Pittsburg, Pa., syndicate to examine

and report upon the coal in a body of over 8,000 acres, in the Monongahela region, as to the value of the coal for the manufacture of coke, with the physical properties of the coke for blast furnaces and other metallurgical uses.

DR. CHARLES F. CHANDLER, professor of chemistry at Columbia University, New York, has not resigned from the faculty of that institution as had been reported, but has resigned as Dean of the School of Mines. This he has found advisable because of the great amount of chemical work that requires his attention.

MR. MICHAEL FARRELL, for two years assistant superintendent of the Anaconda Copper Mining Company, resigned several weeks ago, and is now making a tour of the Pacific Coast, after which he will go to the Sandwich Islands. MR. AUGUST CHRISTIAN, for some time civil engineer in the employ of the company, succeeded Mr. Farrell.

MR. W. R. STIRLING, who resigned the position of first vice-president of the Illinois Steel Company last spring to take charge of the affairs of the Universal Construction Company, has now resigned the presidency of that company, intending to associate himself with another line of business. Before doing so, however, Mr. Stirling intends to make a trip to Europe.

MR. JOSEPH E. SCHWAB, recently superintendent of the 28-inch mill of the Homestead Steel Works, has been made manager of the Upper Union Mills. MR. JOHN PARKS, of the chemical department, was made superintendent of the 28-inch mill, and MR. J. A. NICOLL was promoted to the position of manager of the chemical department.

OBITUARY.

J. A. CRIST, superintendent of the Berwind-White Coal Mining Company, of Du Bois, Pa., died recently at that place.

EDWARD O. MACFARLANE, superintendent of the Barclay Railroad, the Long Valley Coal Company and president of the Citizens' National Bank, died January 6th, at Towanda, Pa., aged 48 years.

DR. CHARLES HUSTON, a well-known manufacturer and philanthropist, of Coatesville, Pa., died at his home on January 5th. He was in his 76th year, and was president of the Lukens Iron and Steel Company, one of the first mills to make boiler plates in America.

SIR JOSEPH HICKSON, ex-general manager of the Grand Trunk Railway of Canada, died January 4th at Montreal, Canada. He was born in England in 1830, went to Canada in 1861, and steadily worked his way from the post of accountant to that of general manager of the road. He was knighted in 1891.

JOHN A. GRANT, mining engineer, died of typhoid fever on January 9th, aged 31 years. He was assistant superintendent of the Mahanoy division of the Lehigh Valley Coal Company, having six collieries under his charge, and was also superintendent of the Primrose colliery, near Mahanoy City, Pa., one of the six collieries.

BERTRAM WODEHOUSE CURRIE, the well known banker and writer on financial topics, died in London, December 29th, aged 69. Mr. Currie was a partner in the banking firm of Glyn, Mills, Currie & Company, Limited. He was greatly interested in the opposition to bimetalism, and took a leading part in the formation of the Gold Standard Defence Association in London. He was appointed as a representative of Great Britain at the Brussels International Monetary Conference, was a member of the Indian Coinage Committee, and of the Committee on the Financial Relations between England and Ireland, and was one of the gentlemen appointed to examine into the affairs of Baring Brothers at the time of the crisis in 1890. He served as a member of the India Council from 1880 to 1895, and the closing of the Indian mints to silver coinage in 1893 was largely due to his energetic and persistent advocacy of the measure. He was a man of large fortune, but of great industry, and he had much influence in English financial circles.

SOCIETIES AND TECHNICAL SCHOOLS.

LUCKHARDT'S COMBINED ASSAY OFFICE AND SCHOOL OF INSTRUCTION.—This institution was incorporated in San Francisco, Cal., December 28th, 1896. Directors are: L. A. Pellett, Fred. S. Ewer, A. E. Hawson, F. R. Luckhardt and William Walker.

WEST VIRGINIA SOCIETY OF CIVIL ENGINEERS AND ARCHITECTS.—The second annual meeting of this society is announced for February 10th and 11th, 1897, at Point Pleasant. The officers are: A. L. White, president; W. H. Howard, first vice-president; E. B. Franzheim, second vice-president; J. F. Burley, third vice-president; William Steenbergen, secretary and treasurer.

SCHOOL OF ASSAYING, CHICAGO.—The school in connection with the laboratory of Geo. H. Ellis, has been very successful in its enrollment of new students since the opening of the year. A number of students from Mr. Ellis' laboratory have availed themselves of the advertising want columns of the *Engineering and Mining Journal*, and in conse-

quence are holding good positions at the present time.

OHIO SOCIETY OF SURVEYORS AND CIVIL ENGINEERS.—The eighteenth annual meeting will be held in the Y. M. C. A. building, Columbus, on January 18th, 19th and 20th, 1897. The business of the first day will be the reading of reports, election of members and the delivery of the address of the president, John B. Davis, of Cleveland. On the two following days a large number of papers on engineering subjects will be read.

CIVIL ENGINEERS' SOCIETY OF ST. PAUL, MINN.—A regular meeting was held January 4th. The annual election resulted in the following list of officers for the year 1897: President, K. E. Hilgard; vice-president, Oliver Crosby; secretary, C. L. Annan; treasurer, A. O. Powell; librarian, A. W. Münster; representative on the board of managers of the Association of Engineering Societies, E. E. Woodman. Mr. L. W. Rundlett read a paper on the "Centerville Extension of the St. Paul Water Works," exhibiting maps, drawings, specimens of material, etc. The detail of conduit construction, the locations of mains, artesian wells and pumping stations and statements of quantities, cost, etc., were given.

ENGINEERS' CLUB OF ST. LOUIS, MO.—The 446th meeting was held January 6th, 1897, at 1,600 Lucas place. A paper by Mr. F. F. Harrington entitled "A New Testing Machine and the Cross Breaking Test of Vitrified Brick," was read. It was illustrated by lantern slides, drawings, photographs, and broken specimens of paving brick. The testing machine was described, and the methods of calibrating the machine and determining its friction were explained. A number of tests of vitrified paving brick were also given. In conclusion, standard method for making the cross-breaking test of vitrified brick were proposed.

THE LEHIGH UNIVERSITY.—Mrs. Coxe, wife of the late Eckley B. Coxe, of Drifton, Pa., has given the technical library of her late husband to this university. Mr. Coxe had brought together a collection of books on engineering, mining, metallurgy, mathematics, physics, chemistry, etc., which is well known among scientific men, and which was frequently consulted by engineers. The collection also contains the library of Julius Wiesbach, whose pupil Mr. Coxe was at Freiberg, and whose work on mechanics Mr. Coxe translated some years ago. The total number of volumes is about 8,000. This gift to the University is welcomed as a memorial of Mr. Coxe, who, as a trustee of the university, was its benefactor and a trusted counsellor in her educational progress.

INDUSTRIAL NOTES.

The Colorado Fuel and Iron Company contemplates an addition to its Pueblo rolling mills in the shape of a plant to manufacture structural iron and steel. The estimated cost is something like \$400,000.

The Pennsylvania Nut and Bolt Works, at Lebanon, Pa., which has been idle in several departments, started in full operation on January 11th. The resumption furnishes work for about 1,600 men and boys.

Mr. Ward Raymond, commission dealer in machinery, tools and supplies of all kinds, has opened an office in the Havemeyer Building, New York City, and is prepared to furnish supplies of every description.

The Titusville Forge Company, of Titusville, Pa., has been granted a charter of incorporation with a capital stock of \$30,000. The incorporators are J. D. Hanley, J. Y. Dillen, and J. G. Bentin, all of Titusville, Pa.

The Cambria Iron Company's No. 1 rail mill, the 12 and 16-in. mills, and the scrap mill resumed operations January 11th, giving employment to many idle men. The Cambria steel mill was put in blast January 10th.

The New Jersey Zinc and Iron Company has started up its works in Newark on full time with 300 men. For four months work has been irregular there, and quarter time, half time and sometimes no work at all was the rule.

The American Engine Company, of Bound Brook, N. J., during the month of December shipped two 60-H. P. American-Ball engines, eight motors varying from 100 H. P. to 3 H. P., and five dynamos varying from 75 K. W. to 9 K. W.

The Catasauqua Manufacturing Company's four rolling mills and 59 houses at Catasauqua and Fullerton, in Lehigh County, Pa., were recently sold by the sheriff to C. B. Taylor, of Philadelphia, attorney for the bondholders, for \$64,000.

The Baldwin Locomotive Works, at Philadelphia, recently completed and shipped to Japan 44 locomotives of improved design. They were built for the Nippon Railroad, the order including 24 passenger engines and 20 for freight service.

The Montpelier (Ind.) Sheet and Tinplate Mills were sold January 9th by the Sheriff, to the American Tinplate Company, of Elwood, for \$50,000. The mills are finely equipped and will be made ready to start January 25th. They will give employment to 156 men.

The Granite City Steel Works, on the Illinois side of the river, opposite St. Louis, Mo., resumed operations January 11th, after an idleness of several months, and will run day and night. Employment will be given to about 500 workmen, and the company claims it has contracts enough to keep the works going until next July.

The Los Angeles Iron and Steel Company, of Los Angeles, Cal., has been obliged to close down for want of sufficient capital to properly carry on the works, and has gone into the hands of a receiver. The company is trying to raise capital to build an open hearth furnace, which would save about \$6 a ton and make it entirely free from the Eastern billet makers and permit it to compete successfully with Eastern mills.

The Wheeler Projectile Company, of Pittsburg, Pa., was granted a charter on December 28th. The capital is \$350,000, and the charter grants the right to manufacture armor and armor piercing projectiles. The directors are: Charles W. Mackey, New York; James D. Rowland, Franklin; James H. Willock, Pittsburg, and Austin A. Wheelock, New York. It is given out that the new company will manufacture armor plates as soon as possible.

The Jeffery Manufacturing Company, of Columbus, O., now has its main office at No. 844 Equitable Building, Denver, Colo. This office is in charge of Mr. Frank R. Field, as special representative of the company, and he is engaged in introducing the well-known mining machinery and electrical appliances of the company in Colorado and other parts of the West. We have already referred in our columns to several plants constructed by them.

The American River Land and Lumber Company's saw mill, which is located close to the power house at Folsom, Cal., of the Folsom-Sacramento Power Transmission, was started successfully on December 1st, cutting 50,000 ft. of lumber per day. The saw mill is the first in the country and indeed in the world, which is operated by electricity. The current is three-phase taken from the power house at Folsom, and the motors are all of the induction type, the installation having been made by the General Electric Company. The motors employed are one of 75 H. P., one of 50 H. P., both running at 720 volts, three of 30 H. P. and one of 5 H. P. operating at 200 volts.

The Consolidated Canal and Lake Company was incorporated January 11th with the Secretary of State of New York to build for its own use, charter and navigate steam, sail or other boats on the Great Lakes, Erie Canal, Bay of New York and Long Island Sound. The capital is \$50,000, the limit allowed by law for canal companies, and the directors are: Charles A. Pillsbury, of Minneapolis; Bradford C. Church, of Duluth; Elbert A. Young, of St. Paul; all in the State of Minnesota; George H. Raymond and Frank Beadle, of Buffalo; Samuel B. Hard, of Englewood, N. J.; Franklin Edson, John A. Cormack and Erastus Wiman, of New York.

Mr. Dwight Furness having withdrawn all his interests and connection with the Furness & Lewis Company, a new corporation has been organized, to date from January 10th, under the name of the Lewis Company. This company will have its office in the City of Mexico. The capital stock is \$250,000 gold, and the officers are as follows: W. B. Lewis, president; C. B. Lewis, vice-president and manager; J. B. Cottle, treasurer; F. W. Lewis, secretary; A. J. Rawlings, auditor. The new organization will continue the branches situated in Oaxaca, Pachuca, Guadaluajara, Zacualpan, Tamascaltepec, Toluca, Guanacavi, Inde, Barranca del Cobre, Tlalpujahu. The company will continue to deal in dynamite and all classes of explosives, in soda, caustic soda, copper sulphate, quicksilver, and other supplies used in treating ores, and generally in all mining supplies.

Mr. W. Crouch, member of the Institute of Civil Engineers, residing in Glasgow, and associated with some of the largest enterprises of Great Britain, was sent over some time ago to examine and make a report on the South Gila Company, which is building the enormous dam at Sentinel, Ariz. The report is interesting. That portion of it referring to the method of construction reads as follows: "A Lidgerwood cableway is stretched across the canyon on which a trolley runs, and by it the stones are picked up and deposited wherever required on the work. This appliance is a very ingenious one, and has been successfully used in the construction of similar work in the States, and for rapidity of handling material and depositing it on any part of the work, is, in the circumstances in question, undoubtedly superior to any system of railways or tramroads that could be devised." J. F. Ward was the chief engineer of the dam.

TRADE CATALOGUES.

The Conover Manufacturing Company, New York, builder of independent belt and steam-driven air and circulating pumps and condensers, has issued a small pamphlet illustrating and describing the various forms manufactured by it. The company announces that its aim has been to supply the most efficient condensing apparatus, and at the same time reduce the power required to operate it to a minimum, and to obtain that power from the most economical source available in each individual instance.

The Philadelphia Engineering Works, Limited, at Philadelphia, Pa., engineers, manufacturers and constructors, are builders of the Philadelphia Corliss engine, condensers, air-pumps, feed-water heaters, gas and air compressors, water tube and tubular boilers, iron tanks, standpipes, steel buildings, blast-furnace equipment, etc. They have just published the third edition of catalogue E., which is on the subject of steel-plate chimneys, of which they have erected quite a number, among them the one at the Ridgewood pumping station, in Brooklyn, N. Y., 217 ft. high, said to be the tallest in the country.

F. E. Brandis, Sons & Company, Brooklyn, N. Y., have published the twelfth edition of their illustrated and descriptive catalogue and hand-book of instruments of precision for civil engineers, surveyors and astronomers. Price, 50 cents. The book contains 236 pages, about half of which is matter that is more apt to be found in the text books on surveying, but which finds a quite proper place in this hand-book. In fact, we note several articles not usually found in text books which would be useful additions there. The volume is a very convenient book of reference for many purposes, and engineers will find it an acceptable addition to their library of books on surveying.

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.

ALASKA.

ALASKA-TREADWELL GOLD MINING COMPANY.—This company reports the clean-up for the month of December, as follows: Period since last return, 30 days; bullion shipment, \$43,096; ore milled, 13,736 tons; sulphurets treated, 416 tons; of bullion there came from sulphurets, \$17,338; unable to state gross expenses for period. The average yield was \$3.14 per ton of ore milled.

ARIZONA.

YUMA COUNTY.

GOLDEN CROSS.—There have been shipped from this mine, near Yuma, three bars of gold bullion aggregating 1,374 oz., and valued at 20,000. This represents a 20 days' run, the daily output of the mine being \$1,000. Last month's clean-up netted \$26,000 and the preceding month \$29,000. The bullion is shipped to Los Angeles, thence to San Francisco.

CALIFORNIA.

AMADOR COUNTY.

(From Our Special Correspondent.)

BLUE LAKES WATER COMPANY.—The articles of incorporation of this company have been amended with the consent of the majority of the stockholders. The change in the articles is intended to enlarge the scope of the operations of the company in Amador and Calaveras counties. The number of directors has been reduced from 10 to 5 and the following gentlemen are now on the Board, viz.: W. Frank Pierce, Cyrus S. Wright, John Flourney, Robt. McF. Doble and Jesse Lillienthal. The main office of the company is located in San Francisco. This company owns valuable water rights and an unlimited supply of water from mountain lakes and is now engaged in constructing an electric-power transmission line, which will furnish power and light to the mines from Plymouth, in Amador County, to Altaville, in Calaveras County.

CALAVERAS COUNTY.

(From Our Special Correspondent.)

EMERSON.—At this mine the double compartment shaft has reached a depth of 100 ft. There are two separate veins about 100 ft. apart, one 8 and the other 12 ft. wide, the shaft being sunk between the two. The intention of the management is to sink 1,000 ft. and then crosscut both veins. The latest improved machinery for sinking is on the ground.

GWIN.—At this mine, three miles west of Moke-lumne Hill, the lead at the 1,400-ft. level is over 14 ft. in width. The latest report from the mine is that Superintendent F. F. Thomas has just tested some samples from the gouge on this level and finds that the ore is very rich. The 46-stamp mill is running steadily and sulphurets are being shipped.

MOTHER LODE ELECTRIC POWER COMPANY.—This company, incorporated with a capital of \$200,000, was formed to erect an electric power plant on the Stanislaus River.

PELLATON.—This mine, on Tunnel Ridge, near Moke-lumne Hill, has been bonded by C. H. Pfeiffer for one year to San Francisco parties, who are making arrangements to sink a shaft. The claim comprises a large channel of rich gravel through which a 5-ft. ledge of quartz passes. The quartz prospects well in free gold and sulphurets.

SOUTH PALOMA.—Under the superintendency of M. B. Kerr this mine, about 3 miles west of Moke-lumne, is being worked in a very systematic manner. The shaft is down over 330 ft. At the 600-ft. level a station will be cut, and the work of cross-cutting the vein commenced, but it is the intention to continue the shaft to the 1,000-ft. level. The mine is well equipped with modern machinery, and 10 men are employed.

KERN COUNTY.

(From Our Special Correspondent.)

RAND GROUP.—This group of mines, comprising the Olympus, Trilby, Rand & Yellow Astor mines at Randsburg, is in litigation again. William J. Langdon on December 29th filed a suit in the Superior Court against Patrick Reddy, F. M. Mooers and wife, C. A. Burcham and wife, John Singleton and others, claiming that he owns a three-quarters interest in the group. Some months ago Patrick Reddy was given a quarter interest in these mines in consideration of services rendered to the original owners by winning a suit brought against them by parties to force them to stand by an option on the mines given by one of the partners.

NEVADA COUNTY.

BRUNSWICK CONSOLIDATED GOLD MINING COMPANY.—The newly appointed superintendent, Mr. C. H. Mallen, telegraphs the manager as follows, under date of January 5th: "The mill is running 12 hours per day since the first. The ledge is improving." This ledge is on the 900-ft. level, and is a fine character of ribbon rock.

PLACER COUNTY.

(From Our Special Correspondent.)

EUREKA.—This gravel mine, on the Forest Hill Divide, has a tunnel in 1,785 ft. At 1,325 ft. they cut into about 18 ft. of what seemed to be the gouge material of a quartz vein, then they ran through 450 ft. of quartz carrying some sulphurets which assays over \$2 per ton. The great width of this ledge is remarkable, although it does not carry much value.

SHASTA COUNTY.

(From Our Special Correspondent.)

QUARTZ HILL GOLD MINING COMPANY.—The differences between this company and the Calumet Mill Company have been amicably adjusted. The probability is that electric power will be taken to the Calumet Mill and that trolleys will be put on the railway for the transmission of ores and electricity will be used for running drills, etc.

TAXAS CONSOLIDATED.—R. G. Hart, the owner of this mine, about 6 miles northwest of Redding, is making arrangements to put in an electric power plant.

SISKIYOU COUNTY.

(From Our Special Correspondent.)

ELLEN.—At this mine, in Hull Gulch in Quartz Valley, the pumps and hoisting works are operated by compressed air. The shaft is down 85 ft. and will be continued to the 200-ft. level. A small stamp mill is kept busy.

TUOLUMNE COUNTY.

(From Our Special Correspondent.)

BELLEVIEW.—This mine, eight miles northeast of Sonora, employs 20 men. The 20-stamp mill has been running steadily during the year. The report of the superintendent shows a net profit of \$36,000 for the year.

BONANZA.—Mr. S. Williams, formerly of the Star mine, has been elected superintendent of this pocket mine at Sonora, and preliminary work necessary to put the mine in working condition is now being done. The mine has been a large producer.

CONFIDENCE.—At this mine, $4\frac{1}{2}$ miles northeast of Soulsbyville, the new mill building is ready for the new 20-stamp mill. Louis Schwitzer has been appointed superintendent.

GOLDEN GATE.—This mine, one mile southeast of Sonora, now employs 73 men. The gold is contained almost exclusively in the sulphurets. The vein varies from a small seam to 20 ft. in width. No information can be obtained from the management in regard to the output, but it is estimated to be large.

COLORADO.

EL PASO COUNTY.

JOHANNESBURG.—Smith Brothers have sold this mine, on the east slope of Trachyte Mountain near Gillett, to a Colorado Springs syndicate for \$25,000 cash. This is the first important sale made in the locality. The ore is free milling and is said to run nearly \$300 per ton.

MINING TUNNEL.—Grosbeck & Baker, of Denver, have begun work on a 500-ft. tunnel almost within the corporate limits of Gillett. The mouth of the tunnel is on a school section just west of the Cripple Creek pipe line reserve and extends directly into the base of Pike's Peak. The tunnel will be driven with air drills. The project is backed by Boston capitalists, who propose drifting into the peak 10,000 ft.

RAILROAD DEAL.—It is reported from Denver that the Florence and Cripple Creek and Midland Terminal Railroads will be sold on March 1st to an English syndicate that is heavily interested in mines in the Cripple Creek District. The exact figures have not been announced. Last fall President H. H. Colbran, of the Terminal, resigned and sold his stock, and went to Corea to look after his in-

vestments in gold mines of that country. His place was taken by D. R. C. Brown, the millionaire owner of Aspen, who, with W. K. Gillette, is now at the head of the road. W. P. Johnson, the chief stockholder of the Florence and Cripple Creek Road, is now in Europe closing up the sale.

EL PASO COUNTY.—CRIPPLE CREEK DISTRICT.
(From Our Special Correspondent.)

MILL TREATMENT CHARGES.—The attempt made on the part of millmen to raise the price of treatment has not been very successful as yet, consequent on the lack of unanimity on how much the treatment charges should be raised. The mills claim they are not making money, and the smelters are not anxious to come to the rescue of the mill-owners, and thus the treatment charges are unchanged.

BRODIE CYANIDE MILL.—During the month of December this mill treated 1,117 tons of ore, yielding 927 oz. of gold. The mill was idle 14 days on account of improvement and repairs, one pair of new 36-in. rolls were put in place and new shells were added to all the other rolls.

Mr. Bertram Hunt, the manager of this mill since October, 1895, and who has been with the MacArthur Forrest Company since 1889, left the past week for California to assume the general agency of both California and Nevada. While Mr. Hunt had charge of the mill its capacity was doubled, new drier and new tanks, and also a Pierce turret furnace were added and many minor improvements made until now the Brodie Cyanide Mill stands in public favor second to no mill in the camp. Mr. Hunt has shown himself to be an able metallurgist. He is succeeded by Mr. Forbes, formerly assistant manager, who has been engaged at the mill for two years.

ELKTON CONSOLIDATED.—A dividend of 2c. a share has been declared payable on January 20th, leaving a balance in the treasury of \$177,000, and still there are three cars of high-grade ore at the smelter. The new pumps are working very satisfactorily.

MOUNT ROSA MINING, MILLING AND LAND COMPANY.—This company, which formerly owned the ground on which the town of Victoria is now built and the Gold Coin claim, which it recently sold for \$60,000, is not likely to have all smooth sailing. A petition was forwarded to the Secretary of the Interior, Washington, D. C., on December 16th, 1896, asking to have the Mount Rosa Placer set aside on the ground "that a deliberate agreement was entered into between the Mount Rosa Mining, Milling and Land Company, and the owners of the St. Patrick and Providence lode claims to defraud the government by having the lode claims entered as placer at the price of \$2.50 per acre, instead of \$5.00, as would have been necessary for lode claims." The Mount Rosa Company has already engaged counsel, and there is in the treasury between \$35,000 and \$40,000.

PHARMACIST.—The estimated output of this mine for the year 1896 was \$50,000. A shaft was sunk 250 ft. which will soon be recognized as the working shaft. A new steam hoist and a large shaft house have been erected. A rumor was circulated recently that the ore had played out, which was at once denied by the president and manager, and an opportunity was given to every stockholder to examine the property. The shareholders who availed themselves of such an opportunity, instead of seeing a pinched out vein, saw a vein fully 8 ft. wide.

VINDICATOR CONSOLIDATED MINING COMPANY.—This company, owning the Vindicator, C. O. D. No. 2, Trotter and Wallace claims on the south slope of Bull Hill, made a good showing last year, under the superintendence of W. P. Crandall. The output is estimated at \$70,000, which, considering its first year, may be classed as good. A shaft has been sunk vertically 300 ft., three levels have been driven northwest on the west vein and two levels have been extended northwest 240 ft. on the east vein; crosscuts have been driven from the shaft to intersect the veins from 10 ft. to 80 ft. in length. The west vein has an average width of 6 ft. and the east vein an average width of 10 ft. where the stoping has been carried. During November a profit was made of \$4,000, the labor cost amounting to \$2,600. The stockholders have not been asked to contribute toward the development of the year, as the mine has been liberally self-supporting from what may be termed development.

LAKE COUNTY.—
(From Our Special Correspondent.)

CYANIDE MILL.—This plant closed down a few days ago. I learn, however, that the mill is not likely to remain closed long, and that resumption will occur just as soon as the results of the experiments made with the ore are definitely known.

KANSAS CITY SMELTING & REFINING COMPANY.—This smelting plant, better known in this section as the Arkansas Valley Smelting Company, is one of the largest and best equipped smelters in the West, but at the same time the company is continually making improvements. Preparations are now under way which go to show that these people expect a big business during 1897. It is the intention of the management to commence the construction at an early day of a new mechanical furnace known as the Ropp Straightline furnace. A number of other improvements are also contemplated. The smelter is now handling 540 tons of ore a day and is employing 450 men. Six furnaces are in blast.

LEADVILLE BASIN.—While it has been given out positively that the mines of the Leadville Basin (the downtown properties) are to be started up very soon, there appears to be a hitch somewhere in the proceedings, and operations have not yet been resumed. A number of the leading mine managers have been in conference for the past few days in Denver and it is stated that some new complications over the pumping arrangements have arisen, but that these will soon be settled, when work will be commenced. From what can be learned, it is the opinion of the "downtown" managers that the long idleness of the pumps has given the water such sway that it will be more expensive than was first supposed to pump it out. A conservative estimate is from three to six months.

OUTPUT FIGURES.—Careful figuring of the output in 1896 shows conclusively that the loss to the Leadville camp by the strike is probably 30%. This is an extraordinary showing, considering that for three months all of the big mines of the camp were totally closed down. A remarkable fact in connection with the output is the increased tonnage of the mines over 1895. In that year the tonnage, as shown by the smelters, was 394,700 tons; in 1896, 360,000 tons. In 1895, as shown by the mines, 351,000 tons; in 1896, 395,000 tons. An examination of the table of production, as published in the *Engineering and Mining Journal* of January 9th, will indicate how the properties shipped as much in 1896 as was shipped in 1895, and all this in spite of the serious labor trouble. In the first place the downtown mines all show an increased production; in 1895 the Coronado Company, working through the Sixth street shaft, produced 7,500 tons; in 1896 these shafts together produced 14,100 tons. The Last Chip and Turbot in 1895 produced 1,200 tons, and in 1896 7,000 tons. The output of the Bohn for 1896 is about the same as in 1895, despite the fact that it has not been operated for over five months. There is only a small difference in the tonnage of the Smith-Moffatt group, and not a wheel has been turned by these mines since July 1st. The Small Hopes does not show a very serious decrease, being 10,573 tons in 1895 against 9,900 tons in 1896. The Mikado shipped only 300 tons in 1895, but in 1896 it shipped 25,000 tons. The Catalpa-Crescent in 1895 shipped 3,600 tons, while in 1896 it shipped 23,000 tons. A heavy falling off in shipments is noted in the Ibox Company's properties (the Little Johnny).

The shipments for 1896 by this company were 35,000 tons, to 47,360 shipped in 1895. The Resurrection shows an increase of 4,000 tons, the Lillian 1,200 and the Mahala 17,000. There was a loss on the A. Y. and Minnie of 25,000 tons. Thus it will be readily seen that some wonderful work was done by the mines of this camp for the first six months of the year, and that the output, had it not been for the strike, would have been nearer \$14,000,000 than \$7,000,000.

LARIMER COUNTY.

LONGVIEW MINING COMPANY.—Edward C. Keyes has sold to this company the Longview tunnel and tunnel site in the Camp Carter District for \$10,000. This tunnel is designed for the development of the following named mines: The Longview, Rosecomb, Buttonhole, Emma and Mt. Morris.

OURAY COUNTY.

(From Our Special Correspondent.)

CAROLINE MINING COMPANY.—The difficulties between employers and employees seem to have been amicably adjusted, at least for the present, and the Revenue has again started up with a force of about 100 men. Only a portion of the old force, however, resumed their places, a large majority having departed for new fields immediately after the strike in December. The present force is being augmented daily, but it will be several months before the output reaches its former standard, as most of the work now going on consists of repairing the tunnel and preparing for an increased output during the summer. The Virginus shaft, which connects with the Revenue tunnel, is also being repaired. The coroner's inquest over the killing of five men by the falling of a cage down the Virginus shaft recently, resulted in censuring the foreman and engineer for neglect of duty.

CONGRESS.—This property, at Red Mountain, is shipping high-grade ore, but will close soon for the winter. The mine will be started June 1st with an increased force.

DANIEL BONANZA.—Two tons of very high-grade ore were shipped during the week of January 4th. The lessees have 2 ft. of valuable mineral extending from the surface to a depth of 20 ft.

FOURTH OF JULY.—D. M. Powers recently struck several feet of high-grade ore in the crosscut, but owing to danger of snowslides was obliged to discontinue operations without having gone through the ore body.

GRIZZLY BEAR MINING COMPANY.—Considerable difficulty is experienced in keeping the trail open for ore shipments, which will probably be suspended with the next heavy fall of snow. The output consists of very high-grade ore, silver and gold predominating.

LODER PYRITIC REDUCTION COMPANY.—Negotiations still hang fire, the company not yet having secured leases and contracts for treating ore sufficient to warrant them in the construction of an extensive plant.

O. & N. TUNNEL COMPANY.—Bunk and boarding

houses are to be erected soon to accommodate the large force now employed. The recent strike is more than satisfactory, and the ore is increasing in value.

WEDGE.—Development continues steadily and high-grade ore is being shipped daily. The force has been somewhat reduced since January 1st.

SAN MIGUEL COUNTY.

(From Our Special Correspondent.)

ALLEGHANY.—This property, half a mile from Telluride, until a few weeks ago was supplying a 20-stamp mill with ore which ran on an average \$15 in gold per ton on the plates, and in addition yielded a quantity of concentrates which ran \$30 per ton. A short time ago the mill was closed down pending the completion of an upraise which is being driven from the workings to the surface for ventilation. Improved machinery will be put into the mill in the meantime. The Alleghany vein varies from 2 to 6 ft. in width, and all matter between walls is treated with the above results. A tunnel is being driven on the lead into the mountain to open up an ore body 2,000 ft. in depth. The mine and mill are now being operated by the mining department of the Missouri, Kansas & Texas Trust Company, with Mr. J. M. Dikeman as its resident agent.

AMERICAN.—In this mine, in Ophir district, owned by Greig Jerrett, of Ophir, the vein was recently cut with a crosscut at a depth of 300 ft., and carries from 8 to 10 in. of gray copper which contains good values in gold and silver. A force of men is upraising to the surface and 150 ft. has been driven.

BELLE CHAMPION.—This mine, in Saw Pit district, of which J. Albert McKays is general manager, with post office address at Telluride, is installing new machinery. A crosscut tunnel 570 ft. in length was recently completed which has been in progress just one year. It started in on the south slope of the mountain to tap the limestone contact with which the ores of the Saw Pit district is associated. The tunnel was driven on a level for 300 ft., but finding that it would run under the contact, it was driven on an upward incline 210 ft., when the ore chute was uncovered at the bottom of the upper workings. Drifting on the vein is in progress and a chamber is being blasted out to receive the drum of a gravity tramway which will be operated in the inclined tunnel. The ore of this mine is of a carbonate character, running well in gold, silver and lead, and the blanket vein is from one foot to several feet in thickness. The manager expects to ship a car per day when fairly started.

BUTLER.—This mine, owned by F. P. Mogenssen, of Ames, Colo., is shipping several carloads of \$70 to \$90 ore per month. The ore runs principally in silver and lead but also carries about \$7 in gold per ton. The Butler is an extension of the Silver Bell, which ceased shipments the first of the year to prosecute development work the rest of the winter. The Silver Bell has been under lease to E. E. Bassett, of Ophir, for a number of years. The character and value of the ore of both properties are the same.

MICHIGAN.

COPPER.

CALUMET & HECLA MINING COMPANY.—This company has declared a regular dividend of \$5 per share and an extra dividend of \$10 per share, both payable February 1st to stockholders of record on January 13th. The dividend of \$15 per share will require \$1,500,000 for its payment, and will make the total amount paid by the company in dividends \$48,350,000. With four dividends of \$5 each already paid, that just declared will make a total of \$35 per share, or \$3,500,000 paid during the company's current fiscal year.

CENTENNIAL MINING COMPANY.—The directors of this company have authorized the issuance of the following circular: "At a meeting of stockholders on July 10th, your directors were instructed to pass the following: 'Resolved, that the subscription to the capital stock of the company to the amount of \$2.50 per share be called and collected at such times and in such manner as this board may hereafter determine.' The balance of the assessment of July 10th (50c.) per share, which is now called in, must be paid on or before February 1st, 1897, after which date all unpaid shares will be sold at public auction according to the mining laws of Michigan. Your directors have deferred calling for the additional assessment of 50c. per share, levied July 10th, until the treasury stock, which represents the number of shares which did not assent to the reorganization in the fall of 1895 had been sold, and this they could not accomplish with advantage until within a few days. The proceeds of this sale together with the amount received from the 50c. assessment and the cash now in hand will give us sufficient funds, first, to carry out the first proposition in your president's report of September 25th, 1896, and, second, to largely reduce or wholly remove the mortgage of \$70,000 which was given Mr. Hoyt by the reorganization committee last July in final settlement. The \$2 subscription paid to the Old Colony Trust Company, for reorganization purposes, was regarded as an assessment on the shares of the reorganized company, and all shareholders who deposited their stock and paid this assessment received Old Colony Trust Company receipts, therefore, and were made shareholders in the reorganized company. These receipts can be exchanged for certificates of Centennial Copper Mining Company at

the office of the company on or before January 18th, and will be stamped '\$2 paid and 50c. due.' After that date no trust receipt will be exchanged unless 50c. per share is paid at the time of the exchange. Orders sent to begin active operation at the No. 6 shaft according to proposition No. 1 of your president's report of September 25, 1896."

The proposition referred to in circular reads: "To unwater No. 6 shaft, extend the fifth level say 50 ft. into the coppery ground; drive through it to discover its dimensions; sink a winze on the foot-wall down say 100 ft.; then drive north and south at that depth, and if we continue to find copper as we did on the levels above, we shall have an established mine on the great Calumet conglomerate."

MINNESOTA.

(From Our Special Correspondent.)

The Auditor of State, in his annual report, recommends that the title to the Mountain Iron mine, now held by the Carnegie-Oliver syndicate, under lease from the Lake Superior Consolidated mines, be investigated with a view to its reversion and return to the State. As understood by those who knew of the circumstances of the title to the Mountain Iron lands, which became the property of the Merritts, the predecessors of the Lake Superior Consolidated, in 1888, the situation is about as follows: In 1883 several lists of lands situated on the Mesabi Range were selected by the State for its school fund in lieu of regular school lands that had been diverted to other purposes. Among these tracts was that on which is now located the Mountain Iron mine. In 1888 the Merritts were surveying for a railroad from Duluth to Winnipeg through the Mesabi Range, and C. C. Merritt, who is now dead, found traces of iron on section 3, town 58-18, where the Mountain Iron mine is now located. He hastened to Duluth, acquainted his brothers of the fact, and they sent one of their number to the State capitol, and to interview the then State Auditor, who had power over selections of school and other State lands. In a brief time selections of State lands, including that covering this property, were relinquished by the auditor, and other lands taken in their place. As soon as the relinquishment was made the Merritts and those interested with them took the lands under the general laws. It has always been supposed that the then State Auditor was one who profited largely by the transfer, but this has not, to my knowledge, been confirmed or investigated. Now the present State Auditor makes the claim that the relinquishment was made without legal warrant, the Governor being the only person entitled to make such transfer, and that the land is now just as much state property as when it was first filed in 1883. It will be investigated by the State legislature, but it is not likely that anything else will result.

IRON—MESABI RANGE.

(From Our Special Correspondent.)

ADAMS IRON COMPANY.—At this mine, operated by the Consolidated, the shaft and shaft house were burned out last week, entailing a loss of about \$6,000 and throwing 90 men out of work for the present. The shaft will be repaired as soon as possible. It is expected that on account of the sale of the Mountain Iron the Adams will be operated extensively next season.

CINCINNATI IRON COMPANY.—Orders have been received from Cleveland to increase the force at the mine, and some 250 men will be employed, stockpiling ore for next year's shipments. A considerable sale is said to have been made.

LAKE SUPERIOR MINES.—At both the Hull and the Ruat mines about 450 tons are being hoisted daily, and extensive developments are under way.

MISSOURI.

JASPER COUNTY.

(From Our Special Correspondent.)

JOPLIN ORE MARKET.—The weather is fine, the output has largely increased, and the purchasers of zinc ore are more active. The agents for Martherson & Haigler, who have been out of the market for five weeks, were buying during the past week, and advanced the price 50c. per ton. The sales of zinc ore were increased 43 carloads over the preceding week, which was a gain of 14 carloads over the corresponding period of last year. The lead sales increased 5 carloads over the previous week, and amounted to within 2,000 lbs. of the output during the corresponding period of 1896. The highest price paid for last week's delivery of Joplin zinc ore was \$21.50 per ton, but some ore was purchased at \$22 for this week's delivery. At Webb City the top price paid was \$21 per ton, and at Galena, Kan., \$20 per ton. Lead ore brought \$16 per 1,000 lbs., delivered all week. The following was turned in from the different camps: Joplin zinc, 1,202,796 lbs.; lead, 225,010 lbs.; value, \$16,219. Carterville zinc, 727,240 lbs.; lead, 224,130 lbs.; value, \$10,859. Webb City zinc, 788,190 lbs.; lead, 39,290 lbs.; value, \$8,509. Galena, Kan., zinc, 2,690,000 lbs.; lead, 532,980 lbs.; value, \$32,738. Aurora zinc, 360,000 lbs.; lead, 20,000 lbs.; value, \$2,250. Oronogo zinc, 44,100 lbs.; lead, 5,300 lbs.; value, \$567. Alba zinc, 123,330 lbs.; value, \$1,295. Stotts City zinc, 53,850 lbs.; value, \$566. Gramby zinc, 188,500 lbs.; value, \$1,508. District totals for the week: Zinc, 6,178,200 lbs.; lead, 1,048,620 lbs.; value, \$74,511.

BIMETALLIC MINING COMPANY.—This company has eight acres on the Joplin Brewing Company's lease on the Kellar ground, southeast of Joplin. At

115 ft. the drill passed through 7 ft. of lead-bearing dirt and into zinc-bearing dirt from 122 ft. to 175 ft. They have pebble jack in open ground and lots of water. They will sink a shaft soon.

HARMONY MINING COMPANY.—This company is an incorporated stock company composed of Eastern and English capitalists. They are operating at Carterville. On one lot a shaft is down 187 ft., and a drift has been started on a face of zinc-bearing rock that will pay. Steam drills for cutting the drift have been ordered. On another lot they have a shaft 107 ft. deep, and have let a contract to sink it 80 ft. deeper.

LA TOSCA MINING COMPANY.—This company operates a lease of 22 lots of the Gramby Mining and Smelting Company's land at Oronogo. Three 8-hour shifts of cutters work the ground to supply the steam concentrating plant with enough dirt for one 9-hour shift, while opening new drifts 68 tubs of dirt were tested one day and 13 wheelbarrow loads of zinc ore were cleaned, amounting to 7,000 lbs. of rich ore. At present they are easily making a carload of ore weekly that sells at the top price and when the new drifts are widened out from the shaft they can make two carloads a week.

TRIPLE ALLIANCE COMPANY.—This company has a lease of 50 acres of the West Joplin Company's land in Upper Chitwood Hollow. The lay of the land is all right, and the cuttings from 120 ft. to 140 ft. were half zinc ore. A shaft that is being put down to develop the ore discovered by a drill is about 100 ft. deep.

On this lease Gramble, Clark & Company have four lots. They have a shaft down to 117 ft., going 90 ft. through limestone. At 107 ft. they struck a water course that brought in zinc ore, and have it at the bottom of the shaft. They have an 8-in. lift pump.

MONTANA.

MADISON COUNTY.

(From Our Special Correspondent.)

MAYFLOWER.—It is stated by one of the owners of this mine that the workings went through the rich ore body into poor ore at a depth of 70 ft. This mine was purchased less than six months ago for \$150,000 cash, with practically no work done on it. It is reported to have produced since then \$390,000 at a cost of \$11,000. The company was lately incorporated with a capital of \$100,000.

SILVER BOW COUNTY.

(From Our Special Correspondent.)

ALICE GOLD AND SILVER MINING COMPANY.—This company has declared a \$20,000 dividend. Their ground has been worked principally by lessees during the past year, sufficient ore being extracted to keep the 60 stamp mill well supplied, although they treat considerable quantities of custom ore at the mill and sell their own high-grade ore to the smelters.

ALTOONA COPPER MINING COMPANY.—The work in progress at the Altoona mine, in Horse Canyon, about a mile and a half southeast of the Silver Bow and Glegarry mines, is watched with unusual interest by owners of ground in that vicinity. Miners are divided in their opinion regarding the continuance and value of the great copper-silver bearing veins in that direction. At present the work consists of crosscutting at the 360-ft. level. The water is very troublesome, taking about 10 cords of wood daily to generate steam for the pumps. It is said that the operators have spent about \$60,000 in opening up this property.

ANAONDA COPPER MINING COMPANY.—The J. S. C. is shut down, the pumps have been taken out, and the surface machinery hauled away. This mine was working the same vein as the Glegarry, with a shaft now 600 ft. deep, but the ore is apparently too narrow, or too poor, to justify further operation. At the Modoc a crosscut is being run to connect with the High Ore No. 2 shaft. It is well advanced and when completed will be about 1,500 ft. long. The High Ore No. 1 is already connected to the Anaconda by a crosscut about 2,500 ft. long.

GOLDSMITH.—This silver mine, which has been shut down for about two years, has again been started. A contract has been let to crosscut from the shaft to the south vein, on the 400-ft., which it is expected to cut in about 400 ft.

HOMESTAKE.—It is stated that the Glass brothers, who have been operating this mine for about a year under lease and bond, have relinquished their option. The mine is located in Park Canyon, about two miles east of the Colusa.

LEO MINING COMPANY.—This company has quit work on the Major Budd claim, after sinking the shaft 300 ft. below the tunnel through extremely hard rock, crosscutting to the vein and drifting on it.

PARROT COPPER MINING COMPANY.—At the Hesperus the shaft is down nearly 200 ft., with sinking still in progress. The Parrot and Moscow furnish the smelter with 400 tons of ore daily. The company employs over 500 men in the mines and smelter at Butte and 200 men at their new smelter, which is in course of erection on the Jefferson River, about 25 miles from the mines. The new plant will cost more than \$1,000,000. It will not be ready for business for some months. The amount of copper produced during 1896 is estimated at 14,000,000 lbs.

VULCAN SILVER MINING COMPANY.—It is rumored that this company is about to start up its

mines, which have been idle for three years. They are known to contain rich ore, but it is all under water at present.

WASHOE COPPER MINING COMPANY.—The Poulain mine, which was shut down a few months ago, is again working with the water all out. During the time the mine was idle the water rose 600 ft. in the shaft. It was speedily drained with two 500-gal. tanks, making a trip each in three minutes. The shaft is down about 1,175 ft., and it is said will be sunk to 1,200 ft. before crosscutting.

W. A. CLARK'S PROPERTIES.—At the Butte Reduction Works the capacity of the concentrator and smelter has been doubled, which will make them capable of treating from 500 to 600 tons daily. The number of men employed is 275; this number will be doubled when the improvements under way at present are completed. Copper product for 1896 is about 4,000,000 lbs.

NEW MEXICO.

GRANT COUNTY.

MOUNTAIN KEY.—Work is soon to be commenced on the lower levels of this mine, at Pinos Altos. Last year the mine was not worked below the 300-ft. level, but as soon as the water can be pumped out of the lower levels work will be resumed as far down as the 700-ft. level.

NEW YORK.

ONEIDA COUNTY.

ROME FACTORY BUILDING COMPANY.—Drilling for natural gas is proceeding at this company's plant night and day. On January 7th a new vein was struck which showed a pressure of over 40 lbs. to the square inch. The pressure has steadily increased, and, although it is difficult to measure it accurately, it is now estimated at from 60 to 80 lbs. to the square inch. Experts say the flow is more than sufficient to run the boilers of the Rome Manufacturing Company. The well is 625 ft. deep, and will be continued through the limestone, which is believed to be 250 ft. thick.

OHIO.

COLUMBUS & HOCKING COAL AND IRON COMPANY.—The Central Trust Company of New York, on January 10th filed a suit in the United States Court, at Columbus, against this company, to foreclose a mortgage securing \$910,000 of the company's bonds held by the Trust Company. There is also due an unpaid interest on the bonds to the amount of \$50,000. Several weeks ago the property was put in the hands of J. O. Moss, of Sandusky, as receiver, on the application of the receivers of the Baltimore & Ohio Railroad Company, who claim \$60,000 freight charges from the company.

OREGON.

BAKER COUNTY.

NORTH POLE CONSOLIDATED MINING COMPANY.—This company's property is at Bourne, the center of what is known as the Cracker Creek District, in which are located such mine properties and producers as the North Pole, Eureka and Excelsior, Ohio and Columbia. The North Pole mine, of which Thomas Evans is superintendent, is developed 3,000 ft. or more, one tunnel being 1,700 ft. in length. An upraise of 500 ft. in height is about completed. In the lower or Baring gold tunnel, the ore vein is 6 ft. in width in the face and the ore is of high grade and concentrating in character. In the stopes the vein is 8 ft. in width. In the upper levels the vein varies from 6 to 12 ft. in width. The mill and furnaces are kept running constantly. Recently Mr. Baring purchased the Ten Strike, an adjoining claim, and that is to be consolidated with the North Pole mine.

PENNSYLVANIA.

ANTHRACITE COAL.

LEHIGH & WILKES-BARRE COAL COMPANY.—After being operated more than 30 years, planes Nos. 2, 3 and 4 in the Empire colliery, at Wilkes-Barre, are likely to be ruined by a general "squeeze," which has approached alarming proportions. The "rib" and roof in the mines are chipping off, and the owners regard the "squeeze" as dangerous. Forty-two men and boys have had to lay off until the "squeeze" in the mine has abated. So far nearly 150 men have been affected by the trouble.

BITUMINOUS COAL.

ALPS COAL COMPANY.—After being shut down for over two months the mines of this company, at Roscoe, were put in operation January 11th. The company employs 100 men, and the wage question has been adjusted by the operators agreeing to \$1 per 100 bush. "run of the mine."

SOUTH DAKOTA.

USTER COUNTY.

DEMEREAU MINING COMPANY.—Near Pringle, on the line of the Burlington & Missouri River Railroad, this company has struck a fine face of ore, the tunnel being in 300 ft. Numerous assays show a good average value, and it is free milling. Every miner who has a claim in the vicinity has attended to his assessment work for the year.

LAWRENCE COUNTY.

DACEY SHAFT.—A rich strike is reported in these mines, in the Ragged Top District. The ore is said to be running over \$150 per ton. A drift was started on the fissure and the ore discovered within 10 ft. The owners are Kilpatrick Brothers & Collins.

TENNESSEE.

RHEA COUNTY.

DAYTON COAL AND IRON COMPANY.—The blast furnaces of this company at Dayton recently went into blast. Beginning with this month, 50 new coke ovens are going to be built, and the new \$10,000 machine for washing slate out of coal is now up and in running order at the company's mines.

UTAH.

JUAB COUNTY.

AJAX MINING COMPANY.—Work in the Ajax mine was resumed January 3d, with about 50 men, and the exploration of lower levels will be resumed. The company has yet explored little than the upper levels of the mine, and although the gross output last year reached \$250,000, it was procured from drifts above the 400 ft. level. The intention of the management now is to secure depth.

SAN JUAN COUNTY.

(From Our Special Correspondent.)

MIDNIGHT MINING COMPANY.—Senator Francis Carney and J. L. Murphey, representing this company, a corporation existing under the laws of Utah, have sent men to operate 120 acres of valuable placer ground on the Colorado Grande River, in Southern Utah, adjoining the famous California placer. The ground is said to abound in flake and fine gold, but no machines have yet been found competent to save a sufficient percentage of the flake gold to insure a profitable margin. Extensive preparations are being made, however, to put in several "one-man" machines, one above the other, in connection with a large flume and powerful arrastra for disintegrating the gravel with the view of separating the dirt from the gold, before the bulk is turned into the machines.

SUMMIT COUNTY.

ANCHOR SILVER MINING COMPANY.—Operations have been resumed in the Anchor mine with a force of 23 men. Developments will be confined to the exploration of ore bodies in sight and in opening up new ones.

TOOELE COUNTY.

JUMBO.—This mine, at Sunshine, in Camp Floyd District, is owned by Alex. Gammel and five associates. Not long ago a strike was made in tunnel No. 3, which is now in about 25 ft., 12 ft. of which is said to be solid milling ore, and the further wall has not yet been cut.

MERCUR GOLD MINING COMPANY.—A dispatch from Salt Lake City under date of January 10th states that it is officially announced that a bond has been given on the properties of this company, in Camp Floyd District, to Capt. J. R. De Lamar, of New York, the amount involved being \$1,500,000, or at the rate of \$7.50 per share. The option runs to the middle of March, and Mr. De Lamar has paid \$25,000 as forfeit. The Mercur properties are now being examined by Charles Butters and a corps of other mining engineers. It is understood that the foreign syndicates which employ Mr. Butters will take the Mercur option from Captain De Lamar, and also purchase the latter's Golden Gate group, the Mercur & Salt Lake Railroad and the plant of the Gold Belt Water Company, the entire deal involving about \$5,000,000.

(From Our Special Correspondent.)

BUCKHORN.—This old property, in Ophir, has been operated under lease and bond by Salt Lake parties for the past four months, and in the main tunnel an important new ore-body has been cut. The foot-wall has not yet been reached, but there is 5 ft. of ore from which samples have been taken carrying good silver and copper values.

LA CIGALE.—A great deal of activity is prevalent around this property, the Omaha and Daisy, all of which are on the west dip of the Mercur vein. Your correspondent is informed that there is now a practical rush to this new part of Camp Floyd District, and that the supply of vehicles for transportation of men and materials from the railroad terminus is inadequate to the demand.

WASHINGTON.

SMELTER RETURNS.—During the past year the Tacoma smelter produced 22,581 oz. of gold, 438,504 oz. of silver, 5,012,000 lbs. of lead, and 223,026 lbs. of copper, of the total value of \$921,994. During the same period the Everett smelter produced in gold, silver, copper and lead \$1,255,000.

SNOHOMISH COUNTY.

HELENA.—In this group, in Silvertown District, a tunnel is now being driven to crosscut the ledge at a depth of 720 ft., which is in 124 ft. This ledge has one 8-ft. pay streak that is said to assay \$52 in gold and copper, and a 30-ft. streak that goes \$45.

MONTE CRISTO DISTRICT.—This district, which suffered severely from floods, is rapidly recovering. During 1896 the Mystery turned out over 30,000 tons, while the new Discovery mined 5,600 tons.

STEVENS COUNTY.

JAY GOULD.—This mine, situated 1½ miles east of Chewelah, is developed by more than 400 ft. of shafts and drifts. At present they are cutting from the hanging to the foot wall at a depth of 50 ft. in the new level. They are in a good grade of ore which is said to carry a large per cent. of gray copper and a good per cent. of lead. The vein at this point is 20 ft. wide. There are 300 tons of concentrating ore on the dump now and the mine is in shape to stop

20 to 30 tons of ore per day. Some of the high-grade ore will be shipped soon, and early next spring a concentrator will be put on the property. A double shift will be kept developing and taking out ore all winter.

LITTLE GIANT.—This property, in the Pierre's Lake District, on the reservation, 15 miles north of Bossburg, has a well-defined vein of iron pyrites and copper pyrites, carrying a liberal quantity of silver. The ore body is 4½ ft. in thickness, exists in a granite formation, and extends over the entire length of two claims. The first carload of ore is sacked and ready to go to the smelter. The work on this mine consists of nearly 100 ft. of shafting at various points along the vein, and at the depth of 35 ft. the deepest shaft exhibits a full width of ore.

WEST VIRGINIA.

(From Our Special Correspondent.)

FAYETTE COUNTY.

MCDONALD COLLIERY COMPANY.—This company, at the head of Loup Creek, has lately put in an endless rope haulage system. The engines and boilers were furnished by the Covington Machinery Company, Covington, Va., and the grips by the Pittsburg Steel Foundry.

MCDOWELL COUNTY.

(From Our Special Correspondent.)

EUREKA COAL AND COKE COMPANY.—This company, at Eckman, in the Pocahontas coal field, has just completed the installation of a plant for the crushing of coal for coking purposes. The plant is driven by rope transmission; the engines and crushers were furnished by Jno. Mullin & Son, Shamokin, Pa., while the Atlas Engine Works, Indianapolis, Ind., erected the boilers. There is, and will continue to be, a demand for crushing machinery in this region.

PEERLESS COAL AND COKE COMPANY.—This company recently placed two Porter compressed air locomotives in its mine at Vivian, in the Pocahontas coal field. These locomotives are some recent additions to the large number of steam locomotives already in this field.

WYOMING.

FREMONT COUNTY.

A sale of mining property is reported in the Miner's Delight mining district, and includes the mines of the Diamond Development Company and the Miner's Delight Company. The sale was made by E. C. Bartlett, a mining promoter, to Omaha and other Eastern investors, the consideration being \$200,000.

FOREIGN MINING NEWS.

BRAZIL.

OURO PRETO GOLD MINING COMPANY.—For the month of November this company reports 4,164 tons ore crushed, 4,094 tons being from the Passageur mine and 70 tons from the Raposos mine. The product was 1,518 oz. gold, an average of 0.36 oz. per ton.

BRITISH COLUMBIA.

(From Our Special Correspondent.)

LILLOOET, FRASER RIVER & CARIBOO GOLD FIELDS COMPANY.—The annual report of this company was recently adopted at the annual meeting, held in London, England. The company owns 81 claims in the province, principally in the Slocan and upper country. In the Rossland camp it owns the City of Spokane, which is at the head of what is known as the Center Star Gulch, on which are situated many of the leading mines of Rossland, also the North Star, a mile and a half away on the slope of Columbia and Kootenay mountains.

CARIBOO DISTRICT.

(From Our Special Correspondent.)

MAUD HYDRAULIC COMPANY.—The company met recently in Vancouver and decided to accept an offer from New York for their hydraulic claims, namely, \$100,000, paying down \$5,000 and the balance in six months' time. The completion of this transaction will give an amount for pro rata distribution of \$21 per share gross to the stockholders (shares were \$5 paid). They are now held firm at \$15.

ROYAL FIVE GOLD MINING COMPANY.—This company has been incorporated under the limited liability act of the province. The property is near Christina Lake, about 30 miles west of Rossland, and comprises five distinct mineral claims, viz., Royal Oak, Nos. 1 and 2, Circassian, Gloucester and Atlas. The ore on veins Nos. 1 and 2 of the Royal Oak is described as a massive pyrrhotite of iron and copper, with bodies of magnetite. The ore of the Circassian is a massive quartz, containing oxides of iron with copper and iron pyrrhotite. The Gloucester is described as a magnetite with some pyrrhotite of iron and copper. The Atlas is yet a prospect. The provisional officers of the company are Ross Thompson, of Rossland; Hon. D. W. Higgins, Speaker of the Legislative Assembly, Victoria, B. C.; John Y. Cole, President of the White Bear Mining Company; S. Thornton Langley and John M. Repass. Of the above, Ross Thompson is president, D. W. Higgins vice-president, J. M. Repass treasurer, and S. Langley secretary. Mr. E. W. Lillegrain is superintendent.

SMELTER RETURNS.—Up to the middle of December the Trail Creek smelter had treated about 19,200

tons of ore, and the ore exported is given by customs officials at 92,100 tons, the total valuation being about \$1,250,000. The Nelson smelter treated 29,099 tons of ore carrying gold, silver and copper. The total value from the Slocan, locally treated and exported, is given at \$3,500,000, up to the same date. These figures confirm those given a few days ago comprising the total output for 1896, which will be close to \$5,000,000.

GERMANY.

CONSOLIDATED GERMAN PETROLEUM WORKS COMPANY.—This company, according to German exchanges, has at last met with a little success on its lands in the northern part of Hanover. It has just completed its first well in the Luneburg forest, obtaining 100 bbls. a week. This success is not due to mere chance, but to geological science, for from previous soundings and other observations the existence of petroleum at that place could be assumed with confidence. The well is 211 ft. deep, was completed within three weeks, and cost only 700 marks (about \$170) to drill. The oil has been sold on contract to a party at Hamburg, who works it up into lubricating oil for fast running electrical and other engines, for which purpose it is well adapted. A second well is now drilling. There is already a strong flow of gas, and another good oil producer is expected. The gases are being utilized for heating the pump boilers.

ALSATIAN PETROLEUM COMPANY.—This company, organized at Amsterdam, with a capital stock of 2,000,000 florins, has bought the wells and refinery formerly owned by the Rudolf-Biblisheim Wallburg Company, in Alsace, and intends to enlarge the scope of operations. This concern is the second largest oil producer in Alsace, being exceeded only by the Pechelbronn works, which have been operated very successfully since 1889. The purchase includes 30 wells, with a capacity of 300 barrels a day.

NEW SOUTH WALES.

BROKEN HILL PROPRIETARY COMPANY.—For the four weeks ending December 10th this company's statement shows 30,964 tons ore worked. The output of the refinery included 355 oz. gold, 535,349 oz. silver, 1,524 tons soft lead and 45 tons antimonial. In addition the furnaces produced 311 tons copper matte, the estimated contents of which were 54 tons fine copper and 32,537 oz. silver.

NOVA SCOTIA.

INVERNESS COUNTY.

(From Our Special Correspondent.)

CAPE BRETON.—Great excitement has prevailed here for the past few weeks on account of the discovery of alluvial gold on the Cheticamp River. As a result, over 3,000 mining areas have been acquired from the government. Mr. W. R. Ross, mining engineer, writing from this camp, states there is a very large area containing from 25c. to \$50 per square yard; \$5 per day can be made by any man with an ordinary rocker. Much of the detritus is a red syenite heavily charged with iron pyrites, and the general formation being very similar to that of the Fraser River, British Columbia.

ONTARIO.

RAT PORTAGE AND LAKE OF THE WOODS DISTRICTS.
(From Our Special Correspondent.)

LOCATION 30L.—This is a property lately opened up in the Manitou District for a Winnipeg syndicate. "Billy" Caldwell, one of the oldest prospectors in the Lake-of-the-Woods District, is in charge of operations, and writes your correspondent as follows: "Since my arrival here I have built a good camp. The shaft is down 20 ft. with vein 4 ft. wide, which pans all across. Two shifts are at work."

NEEPAWA MINING COMPANY.—A limited number of shares has been placed on the Winnipeg market by this company, the greater portion of the stock being owned in Neepawa and Brandon. The directors are D. H. Harrison, B. R. Hamilton, John A. Davidson and Alex. Trotter, all of Neepawa. The company has acquired mining location McA. 28 in the Manitou District. Upon one of the veins a shaft has been sunk to a depth of 40 ft. and cross-cutting has begun.

RAT PORTAGE MINING COMPANY.—The Master Jack property, secured by the Bullion Mining and Development Company, is now owned and operated by this company. The shaft is down 75 ft., with two drifts, each about 30 ft. long. Developments have revealed a body of ore 8 ft. in width, averaging throughout \$12 to the ton. Shares in this property are being taken up in Rat Portage and the West.

SULTANA.—This is the best-known and most fully developed property. Lately a despatch from Toronto was received here through the Winnipeg papers, announcing that an offer of \$1,250,000 had been made for it by an English syndicate. On the same day a rich strike occurred on the property. Two gentlemen, Mr. Angstrom, of Toronto, and Mr. Ross, of the Empress mine, happened to be visiting the mine when the strike occurred, and informed your correspondent that they had never before seen anything so rich in gold as the sample of the new strike. One million and a half is said to be the figure the property is held for, and the general opinion is that the price will yet be forthcoming. A notable feature of the operations of this mine is the fact that its proprietor, Mr. John F. Caldwell, is an old Winnipeg druggist, who prosecuted its development against the entreaties of his friends and the advice of the local "experts." His manager, Mr.

Matt Hunter, is an old real estate man, or something of that sort; and no really experienced mining man has been permanently employed on the works from the grass roots to its present depth and extent.

YUM-YUM.—Another of the Shoal Lake group of mines, the property also of an Ottawa syndicate, is turning out remarkably well under development, under the supervision of Mr. Burley Smith.

SUDBURY DISTRICT.

(From Our Special Correspondent.)

BALFOUR MINING COMPANY.—On Lots 6 and 7, Con. 1, of the township of Balfour, about 15 miles to the west of Sudbury, there is a very peculiar deposit of ore. It occurs in the Cambrian slate belt that lies between the two main nickel ranges of the district. The surface of the bed is heavily covered with gossan, and the ore is a combination of zinc blende, copper, silver and gold. Some American capitalists have bonded the property at quite a high price, and Mr. Maxime Schuman, a Colorado mining expert, has been sent here to open it up. He is building cabins and getting ready to commence sinking test shafts.

DEAL IN NICKEL PROPERTIES.—A number of European capitalists have been negotiating for some time for the purchase of several large nickel properties in this district, and a report was received here last week to the effect that the deal was likely to be consummated soon after the new year.

TRILL MINING AND MANUFACTURING COMPANY.—This is the new name for the old Chicago Nickel Company that has been operating in the township of Drury for the past six years, but never doing very much, for one reason or another. The cableway from the works to the railway station at Worthington will soon be completed and the company will then be prepared to begin shipments of matte.

SOUTH AFRICA.

CAPE COLONY.

DE BEERS CONSOLIDATED MINES.—Dispatches from Kimberley announce a dividend of 20% for six months ending December 31st. The revenue for the half year, including diamonds on hand, is £1,951,000, and the expenditure £647,000, leaving gross profit £1,304,000, and, after providing for interest on debentures and obligations, a net profit of £1,211,000. These figures are exclusive of the amount carried forward in the balance sheet of June 30th last. There has been a slight decrease in the stock of blue ground on the floors.

SOUTH AMERICA.

ECUADOR.

PLAYA DE ORO MINING COMPANY.—The annual meeting of this company, a Kentucky corporation, operating gold mines in Ecuador, South America, was held at Versailles, Ky., January 12th. The company's capital stock is \$10,000,000. In the course of the meeting County Attorney Davis served notice on the company to pay State and county taxes on its franchise, which is assessed at \$1,000,000. The tax claimed for five years is \$35,000. The company will resist payment. It has never paid any taxes in Kentucky. William H. Young, of New York, was elected president. The other members of the company elected were Secretary N. McHarvey, of New York; directors, James A. Jane-way, C. E. Daugherty, O. S. Gage, Charles Snow Kellogg, Charles Franklyn, Joseph B. Bancus and S. A. Coates, of New York; Seymour Van Noston, of New Jersey, and D. C. Stapleton and Charles Hunter, Jr., of England.

TASMANIA.

MT. LYELL MINING COMPANY.—For the four weeks ending December 17th, there were treated in the company's furnaces 6,415 tons of ore. The product was 493 tons of matte, containing 1,106 oz. gold, 15,059 oz. silver and 269 tons copper. This is an average of 4.05% copper, 0.17 oz. gold and 2.35 oz. silver per ton of ore treated. The matte averaged 52.2% copper.

LATE NEWS.

PETROLEUM EXPORTS.—Mineral oils to the amount of 86,353,163 gals. were exported from the United States during the month of December. For the year 1896 these exports are reported by the Bureau of Statistics as 931,785,022 gals., against 853,126,130 gals. in 1895, an increase of nearly 9.2%.

The exports for the month of December, 1896, were distributed as follows: Crude, 11,879,662 gals.; naphthas, 1,542,275 gals.; illuminating oils, 68,364,376 gals.; lubricating and paraffin, 4,560,052 gals.; residuum, 798 gals.; total, 86,353,163 gals., which compares with 80,585,246 gals. a year ago.

ALEXIS JANIN died in San Francisco, January 14th aged 50 years. The cause of his death was fatty degeneration of the heart. He was a mining engineer, a graduate of the Freiberg School, and had had extensive experience on the Pacific Coast and in Mexico. He was a brother of the well-known mining engineers Louis and Henry Janin, and worked very largely with them. The news reaches us just as we go to press, and we hope to publish a more extended notice hereafter.

BY TELEGRAPH.

(From Our Special Correspondent.)

CRIPPLE CREEK, COLO., January 14th.—It is reported that the lessees of the Smuggler mine, owned

by the Isabella Mining Company, to-day shipped 38,125 lbs. of gold ore, sampling close on to \$4,000 per ton.

BY TELEGRAPH.

(From Our Special Correspondent.)

LEADVILLE, COLO., January 15th.—Your correspondent has it from most reliable sources that there is great danger of the big pumps at the Maid shaft closing down. For over nine months the Small Hopes and Mahala companies have been trying to keep the pumps going so as to avoid drowning the mines. Now I learn that the Small Hopes people will give notice to-morrow that they will no longer pay their share of the pumping expenses. Should this be true, the Mahala people will not stand the expense alone and the pumps will be pulled out. This action is looked upon as a terrible blow to the mining interests of Leadville, since it is the general belief that the stopping of these pumps would mean the drowning out of all the mines in the surrounding low country. No official information will be given out by the respective managers at this time.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Jan. 15.

Statement of shipments of anthracite coal (approximated in tons of 2,240 lbs., for the week ending January 9th, 1897, compared with the corresponding period last year:

Pennsylvania Railroad.....	1897.		1896.
	Week.	Year.	Year.
	75,318	137,770	125,912

PRODUCTION OF BITUMINOUS COAL in tons of 2,000 lbs. for week ending January 9th, and for years from January 1st, 1897 and 1896:

Shipped East and North:	1897.		1896.
	Week.	Year.	Year.
Allegheny, Pa.....	43,009	80,314	91,641
Barclay, Pa.....	1502	502	2,600
Beech Creek, Pa.....	150,999	50,939	60,952
Broad Top, Pa.....	7,715	8,624	19,728
Clearfield, Pa.....	69,013	127,653	217,014
Cumberland, Md.....	77,487	77,487	93,296
Kanawha, W. Va.....	653	6,159	1,860
Phila. & Erie.....
Poconong Flat Top.....
Totals.....	249,878	351,718	487,091

† For week ending January 7th.

Shipped West:	1897.		1896.
	Week.	Year.	Year.
Monongahela, Pa.....	19,635	39,420	33,616
Pittsburg, Pa.....	33,493	69,019	74,867
Westmoreland, Pa.....	35,471	69,966	94,362
Totals.....	91,599	178,405	202,845
Grand totals.....	340,977	530,123	689,936

Production of coke on line of Pennsylvania Railroad for the week ending January 9th, 1897, and year from January 1st, 1897, in tons of 2,000 lbs.: Week, 85,459 tons; year, 112,542; to corresponding date in 1896, 172,485 tons.

Anthracite.

Little that is new can be said about the hard coal trade at this time, though much could be written as to the possibilities if certain conditions existed or could be brought about. The little "if" has grown into a giant that is a formidable obstruction in the path of improvement of trade conditions. It appears to be the general opinion that there will be no meeting of presidents of coal carrying railroads, similar to that of almost a year ago, at which the agreement was arrived at under which the trade has labored so heavily ever since. That is to say, no actual gathering and putting together of heads at a particular time and place will occur. However, it is thought that the same results will be reached by a general calling of one upon the other, by the use of the telephone, by mail correspondence and the like, which amounts to the same thing in the end. What the result will be can, of course, be only conjectured, though certain changes are rumored which are quite reasonable possibilities.

From one source we hear of an improvement in trade within the last few days, not a demand for one certain size of coal, but an all round betterment. From another source we learn that a better demand has sprung up for pea coal—in fact for all sizes smaller than chestnut. In still other directions we learn that unusual concessions in prices by certain producers had created for them a more active business.

Stocks of coal on hand are generally conceded to be large, and the tonnage to be mined, both on this account and because of the poor demand, is to be limited to 2,500,000 tons for January, according to the more recent efforts of some of the producers. Or, if this cannot be altogether accomplished because some interests may have already arranged to mine on a basis of 3,000,000 tons for this month, the output for January and February together is to be limited to 5,000,000 tons. Undoubtedly, such a restriction, though not as conservative as it might be, would materially assist in bettering trade conditions.

As far as prices are concerned, conditions are no better than before. One object to be attained by the "new agreement" is the adoption of means by which the July circular of prices can be obtained. The circular issued in that month was \$3.75 for broken, \$4 for egg and chestnut and \$4.25 for stove, which is now being very much shaded.

Bituminous.

The Atlantic seaboard soft coal trade continues to be very dull. Business consists of some few contracts still being shipped on, and what little transient trade can be picked up. Tonnages, however, keep up fairly well, much to the surprise of most people.

There is not much coal going east of Cape Cod, and the demand from Sound ports continues to fall off, if anything. New York harbor trade remains quiet.

All-rail trade holds its own in tonnage fairly well, though some demands are being made for reductions in prices which are resisted. In some territories there seems to be an effort made to push business in certain coals, which is really the only activity in the market. There is a report of a meeting of the trade in Philadelphia early next week.

Transportation from mines to tide is good, coal running through about on schedule time. Car supply continues up to all demands.

The coastwise vessel market shows few vessels available for a charter, but the demand being still slight, the only effect is to harden rates. It is understood that a larger number of vessels than usual is lying up this winter.

We quote current rates of freight from Philadelphia as follows: To Boston, Salem and Portland, 80c.; Providence, New Bedford and other Sound ports, 70c.; Portsmouth, 85c. Five and ten cents above these rates are asked from Norfolk, Newport News and Baltimore.

The association prices remain as follows: F. o. b. Philadelphia, Norfolk and Newport News, \$2.35; Baltimore, \$2.28; New York Harbor shipping ports, \$2.80 allslide; New York Harbor, \$3. There is a 20c. differential in favor of Clearfield and Beech Creek coals.

NOTES OF THE WEEK.

The Receivers of the Baltimore & Ohio Railroad Company have denied the statement which has been in circulation for some days to the effect that the Baltimore & Ohio had been manipulating rates on coal shipments, and that a rate war would probably ensue between the railroads which handle that traffic.

At the annual meeting of the stockholders of the Philadelphia & Reading Coal and Iron Company, held January 11th, the various exhibits relating to the business of the company for the past year were approved and adopted, and the following gentlemen were elected to serve for the ensuing year: President, Joseph S. Harris; Directors: John Lowber Welsh, C. H. Coster, George F. Baer, Thomas McKean, George C. Thomas, Charlemagne Tower, Jr. At a meeting of the board of directors the following officers were elected to serve during the ensuing year: Treasurer, W. A. Church; secretary, Franklin P. Kaercher; assistant secretary, Henry C. Russell.

Coal receipts at San Francisco and other California ports are estimated as follows for the year ending December 31st, in tons:

	1895.	1896.
San Francisco, by sea.....	\$1,424,124	\$1,308,906
" " Mt. Diablo mines.....	80,494	52,529
Southern ports, by sea.....	199,190	154,875
Total.....	\$1,703,808	\$1,516,310

The receipts at San Francisco by sea in 1896 were from the following sources: Eastern, anthracite and Cumberland, 18,256 tons; Oregon and Washington, 438,440; Alaska, 1,460; British Columbia, 443,345; Australia, 247,477; Tonkin, 1,487; Great Britain, 158,501; total, 1,308,906 tons.

Buffalo.

Jan. 15.

(From Our Special Correspondent.)

No changes in the condition of the anthracite coal trade as regards supply, demand or prices. The weather the past week has been unsettled, alternating from 3° above zero up to 40° above, with very sharp wind on Wednesday. This temperature was good for coal dealers.

Bituminous coal is quiet; manufacturers not at all pressed by orders, just jogging along and living in hopes of the good times coming. Prices are nominally unchanged, but in favor of buyers. Stocks ample for all requirements.

The contract for the extension of the harbor and breakwater at this port has been awarded at \$1,766,450.

Wholesale stealing of coal from cars still continues. A gang of thieves unloaded a whole carload from the railroad tracks last week, and have received punishment by fine and imprisonment.

A grand "electric banquet" was held last Tuesday in Buffalo to celebrate the introduction of electric power from Niagara Falls. Among the many notables present was the great Tesla.

Chicago.

Jan. 13.

(From Our Special Correspondent.)

Anthracite.—The demand has not as yet improved to any extent, though the few colder days of the past week brought out a little more buying. The situation, however, is very dismal for the coal dealer, and all over the West the same conditions prevail. Business is just as bad in St. Louis and Milwaukee as it is in Chicago. Dealers generally say that never have they witnessed such a long continued state of inactivity. Buy-

ing continues very moderate and stocks are kept up to the point wherein there is just enough for temporary needs and nothing more. Circular prices as formulated a few months ago are now being smashed; and it is more and more a matter of getting business at bargain prices. Colder weather is looked forward to anxiously, but even zero weather would not drive people to using anthracite coal largely as things are. We must have improved commercial conditions before the coal dealer can hope to get back into his former run of business.

Bituminous.—Soft coal is in only limited demand and that in the face of the fact that there are thousands of tons too much of it in this market at the present time and more coming in each day. Manufacturing concerns are not buying nearly what was expected of them and better conditions with them are looked forward to hopefully by dealers.

Pittsburg. Jan. 14.

(From Our Special Correspondent.)

Coal.—The market still shows scarcely any change. A small rise in the Ohio was followed by a light shipment of coal to Cincinnati, 670,000 bu., being the first of 1897. All the Southern and Western markets have supplies that will last until Spring; prices are very low, which makes coal men indifferent about shipping. Along the Monongahela very little mining is being done, but more activity is noticed in the third pool than in any of the others. The Alps Coal Company started its mine at Roscoe on Monday which has been closed several months. It will employ 100 diggers. An agreement has been made to pay \$1 per 100 bu. for "run of the mine." The arrangement is a good one and does away with the system of screening. A number of operations, especially in the Wheeling District, refuse to pay the 60c. rate, and have closed their mines.

Connellsville Coke.—The trade continues to improve; it begins to look like a boom. The shipment was the largest for some time. The present indications for a big trade are all that could be desired.

The next important new industry in McKeesport suburbs to begin permanent operation will be the United Gas & Coke Company's big product plant at Glassport, the largest concern of the kind in existence. This mammoth plant will start operations about the 1st of February, when 30 of the 120 ovens will be blown in, giving employment to a number of men. When everything is completed and the 120 ovens are in operation, there will be 400 men at work; work on the big plant is being pushed. Summary of the coke region shows 9,825 ovens in blast with 3,432 idle. The only addition announced is the firing of the Atlas plant of the Cambria Iron Company; this will add 80 ovens to the active list. The production of the region for the week amounted to 95,582 tons against 91,202 tons the preceding week; increase 4,380 tons. In the running order 3,595 ovens made six days, 5,781 ovens five days, 423 ovens four days and 25 ovens seven days; average 5.34 days against 4.84 days the week previous. The shipments were distributed as follows: To Pittsburg and way points, 2,380 cars; to points west of Pittsburg, 2,675 cars; to points east, 769 cars; total, 5,824 cars. The big firms are holding out for \$2 at ovens, sales are being made at furnace, \$1.75.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Jan. 15, 1897.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending		From Jan., '96.	From Jan., '97.
	Jan. 17, 1896.	Jan. 15, 1897.		
	F'ces.	Tons.	F'ces.	Tons.
Anthracite.	59	38,030	20	19,150
Coke.....	162	184,150	117	136,600
Charcoal...	23	5,450	20	5,850
Totals	244	227,630	157	161,600
			552,813	346,286

The iron market generally continues quiet, the only movement reported anywhere being in Bessemer pig iron at Pittsburg. The recent fall in prices brought out a good many orders for billets which are now being worked off and keep the steel mills busy.

The railroads still hold back on their orders. The placing of a part of the Pennsylvania Railroad order, noted last week, has not been followed by any others as yet. The New Haven Company, it is said, will be in the market for a lot of 100-lb. section rails, like those it laid on the main line from New Rochelle to Greenwich last year. The new order will be for the new tracks between Stamford and Bridgeport.

The Illinois Steel Company has taken a considerable order for the Grand Trunk road in Canada, at a price not stated. Reports have been current that the Bethlehem Iron Company had taken a contract for rails for the Siberian Railroad, but the company's officers deny it. A small order, 4,000 tons, for rails for the Norwegian State lines, is on the market. Bids are to be in by January 26th, and deliveries made in May.

Exports of pig iron from Alabama furnaces continue; recent sales reported are 5,000 tons for Belgium and 10,000 tons Japan. It is understood that these sales are at prices which realize between \$6 75 and \$7 at furnace for No. 3 foundry.

The Tennessee Coal, Iron & Railway Company has elected C. M. McGhee and Oliver H. Payne directors,

in place of J. Edward Simmons, resigned, and John H. Inman, deceased.

Local papers report the output of the Colorado Fuel and Iron Company's Pueblo Works in 1896 at 39,115 long tons steel rails; 14,141 tons bar and shapes; 1,558 tons bolts and nuts, and 3,096 tons castings. The production of coal from the company's mines was 1,751,992 tons, and its ovens turned out 274,538 tons of coke. All the items show increases over 1895.

New York. Jan. 15.

The local market continues very quiet, little new business being reported. Not much is usually expected at this time of year, however, and until the end of the month it will be hard to say how matters are going to turn. The run of small orders from the local shops is light, and none of them seem to have much work ahead. The Newark foundries are complaining of short orders, and none of them are buying stock just now. There seems to be a halt in the planning of new buildings in the city, and new contracts for structural work are scarce. The hardware business is light, even for the season. The only consolation agents and brokers have is in the hope that when new business does come, it will come with a rush.

Pig Iron.—Some sales are reported, but business is not active. The furnacemen seem to be getting a little anxious, and there is some pressure to sell. While there is no quotable change, some shading in prices is reported, and purchasers are not turned away for a difference of 25c. a ton or so.

For Northern iron we quote: No. 1 foundry, \$12.50 @ \$13; No. 2 foundry, \$11.50 @ \$12; No. 2 plain, \$11 @ \$11.50; gray forge, \$10.50 @ \$11. For Southern iron we quote: No. 1 foundry, \$11.75 @ \$12; No. 2 foundry, \$11 @ \$11.50; No. 3 foundry, \$10.50 @ \$11; No. 1 soft, \$11 @ \$11.50; No. 2 soft, \$10.50 @ \$11; forge, \$10.25 @ \$10.75; basic pig, \$11.50 @ \$11.75. All prices are for tidewater delivery.

Cast-Iron Pipe.—No new contracts are reported. Orders for spring delivery are beginning to be discussed, but only two or three small ones for New England towns are in sight. About \$20 per ton would be a fair quotation.

Spiegeleisen and Ferro-Manganese.—There have been few sales to be noted. Ferro-manganese is quoted at \$46.50 @ \$47 for imported 80%, New York. For 20% spiegeleisen \$19 @ \$19.50 per ton is quoted. Some ferro-manganese is being exported.

Steel Billets and Rods.—It was supposed that most large buyers had supplied themselves, but some sales of billets are reported on the basis of \$15 @ \$15.50 per ton at Pittsburg.

Merchant Iron and Steel.—Business continues quiet with chiefly small sales. Prices show no change. For bars we quote: Common, 1.10 @ 1.15c.; refined, 1.20 @ 1.45c.; soft steel bars, 1.20 @ 1.30c. Other quotations are: Steel hoops, 1.50 @ 1.60c.; steel axes, 1.60 @ 1.75c.; links and pins, 1.60 @ 1.70c.; tire steel, 1.80 @ 1.90c.; spring steel, 1.95 @ 2.15c. All prices are for delivery on dock New York.

Plates.—Sales continue light, but prices are not changed. We quote for universal mill plates, 1.20 @ 1.30c. For steel plates prices are: Tank, 1.20 @ 1.30c.; boiler shell, 1.35 @ 1.45c.; flange, 1.45 @ 1.55c.; firebox, 1.65 @ 2.45, according to quality. Charcoal iron plates are 2.25 for shell, 2.75 for best flange and 3.25 for firebox. Rivets are 3 @ 3.25c. for iron and 2.15 @ 2.25c. for steel. All prices are for large lots on dock.

Structural Iron and Steel.—No new contracts are reported this week. No change in prices is noted. We quote for angles, 1.25 @ 1.35c.; tees, 1.60 @ 1.65c.; channels, 1.70 @ 1.80c. The price of beams, New York delivery, is 1.75c. for ordinary sizes, 1.85c. for 20-in., and 1.95c. for 24-in., large lots. Smaller orders are 0.10 @ 0.25c. higher.

Steel Rails and Rail Fastenings.—The price for standard sections is \$25 per ton at mill, or \$26 tidewater. Girder rails are \$25 @ \$27 per ton at mill, according to section.

For rail fastenings demand is light, and will probably continue so until railroad work begins in the spring. Prices are, for angle bars, 1.15 @ 1.25c.; spikes, 1.60 @ 1.65c.; bolts, 1.85 @ 1.90c. for square nuts and 1.90 @ 2c. for hexagon nuts.

Wrought-Iron Pipe.—Business continues quiet. Discounts are as follows for plain pipe, out of store: 1 1/2 in. and over, 67, 10, 10, 10 and 10%; 1 1/4 in. and under, 57, 10, 10, 10 and 10%. Galvanized pipe, 1 1/2 in. and over, 55, 10, 10, 10 and 10%; 1 1/4 in. and under, 50, 10, 10, 10 and 10%. Boiler tubes, 1 in. to 2 1/2 in., 70, 10 and 5%; 2 1/2 in. up, 75 and 5%. Cold-drawn seamless steel tubes, 60%.

Nails.—Sales are only moderate. For steel wire nails we quote \$1.45 Pittsburg, or \$1.70 New York, for large lots. Cut nails are about \$1.30 Pittsburg, or \$1.55 New York.

Old Rails.—Old iron rails are quoted \$12.50 @ \$13.50, New York, with no sales. Old steel rails are quoted \$10.50 @ \$11.50. Old steel rails fit to relay, standard sections, can be had at \$19 @ \$22, New York harbor delivery, according to condition. Old wrought-iron pipe is quoted \$7.50 @ \$8 per ton.

Scrap Iron.—A few sales are noted and we continue to quote for good machinery scrap \$10.50 @ \$12 per ton; ordinary cast scrap, \$8 @ \$9.50; stove-plate and mixed, \$6.50 @ \$8. Old car wheels are \$11 @ \$11.50 per ton, New York delivery. There is some demand for heavy steel scrap for export.

Chicago. Jan. 13.

(From Our Special Correspondent.)

Pig Iron.—As was expected, there has been but very little improvement in pig iron business, only car-load lots remaining in demand and very few of those. Inquiry has not yet developed any indication that trade will pick up very soon, but dealers are hoping that business will come with a rush presently. Prices are fairly firm though reductions might be made to obtain any fair-sized contract. We quote: Lake Superior charcoal, \$13.50 @ \$14; local coke foundry No. 1, \$11.75 @ \$12.25; No. 2, \$11.25 @ \$11.75; No. 3, \$11 @ \$11.25; local Scotch foundry No. 1, \$11.75 @ \$12.25; No. 2, 11.25 @ \$11.75; Southern coke No. 1, \$11.65 @ \$11.90; No. 2, \$11.15 @ \$11.40; No. 3, \$10.90 @ \$11.40; Southern No. 1 soft, \$11.40 @ \$11.65; No. 2 soft, \$10.90 @ \$11.40; Southern silveries No. 1, \$12.15 @ \$12.65; No. 2, \$11.65 @ \$12.15; Jackson County silveries, \$14 @ \$16.05; Ohio silveries No. 1, \$15 @ \$15.55; Ohio silveries No. 2, \$14.50 @ \$15.05; Ohio strong softeners, \$14 @ \$14.25; Alabama car wheel, \$16.65 @ \$17.15; coke Bessemer, \$13 @ \$13.50.

Bar Iron.—There is no improvement to speak of in bars and inquiry is very light. Bars are quoted for common, 1.25 @ 1.30c.; refined bars, 1.35 @ 1.40c.

Steel Rails.—No large business is reported, but it is expected that a number of the large Western roads will soon be in the market. The Santa Fe road recently contracted for upward of 15,000 tons of rails, the local works getting the contract. Rails are quoted at \$26, Chicago.

Billets and Rods.—Both of these commodities remain inactive, and indications are rather against any increased buying the remainder of this month. Billets are quoted \$17.50 @ \$18.

Structural Material.—Bridges work is more plentiful, some fair-sized contracts for railroad bridges being now in the market. Quotations are: Plates, 1.30 @ 1.35c.; beams and channels, 1.70 @ 1.80c. angles, 1.30 @ 1.35c.; tees, 1.50 @ 1.55c.

Cleveland, O. Jan. 14.

(From Our Special Correspondent.)

Iron Ore.—The condition of the market as to sales is what is usually expected at this season of the year. Very few, if any, sales were made during the last week. The sellers have not been making much effort to extend their business, and the buyers have not been making inquiries that would indicate that they wanted much ore to fill their present orders. The movement of ore from the docks to the furnaces is somewhat heavier than several weeks ago, and the prospects are that when navigation opens again in the spring the ore docks will be nearly cleared. The brokers have begun to discuss prices for the current year. No definite action will be taken, however, until the annual meeting of the Western Iron Ore Association, which will probably be held in this city.

Following are the quotations: Standard hard speculars, Bessemer quality, \$4.50 @ \$5; standard hematites, Bessemer quality, \$4 @ \$4.25; standard hard hematites, non-Bessemer quality, \$3.50 @ \$4; standard soft hematites, non-Bessemer quality, \$2.50 @ \$3.25.

Pig Iron.—Prices on all kinds of pig iron, except Bessemer and charcoal, have been shaded down during the past week, on account of the depressed condition of the market. Bessemer, however, declined considerably in value during the past month, and a further shading of this variety was not required. In brief, the market is very dull. Scarcely any sales of whatsoever kind have been reported during the past week. The quotations follow: Lake Superior charcoal, \$13.50; Bessemer, \$11 @ \$11.25; No. 1 foundry, \$11.75; No. 2, \$11.40; No. 1 Ohio Scotch, \$12; No. 2, \$11.50; Mahoning and Shenango Valley neutral mill iron, \$10; Mahoning and Shenango Valley red short mills, \$10.

Philadelphia. Jan. 15.

(From Our Special Correspondent.)

Pig Iron.—Quotations have not been lowered since Monday, but lower prices were accepted on several good sized lots of foundry, which is just now receiving more attention than forge. Some brokers talk of an improving market, but it is true only in the sense that a few large buyers, who have been contemplating buying for several weeks, came in and bought. The mill owners are quite backward. They say orders must first be booked. A little mill iron was offered yesterday at a delivery price of \$10.50. The better makers of mill irons are held at \$11.25. Business is coming along in No. 1 foundry at \$13; No. 2, \$12; Bessemer is dull at \$13, although the belief is expressed that the activity in the western end of the State will soon be felt here. Low phosphorus is \$17, and basic \$11.50.

Steel Billets.—A 2,000-ton lot is being loaded today for England. Brokers here figure out, that with continued low freight rates, further shipments will be made. It looks to-day as if prices might harden, as \$18 @ \$18.50 is quoted to-day, but \$17.50 is the price that large buyers regard as the highest that billets will bring this winter.

Merchant Bar.—There is a sharp struggle for business this week, in view of the fact that several buyers are in the market to see how near cost they can get bars for. Brokers have been advising bar-iron consumers to buy soon, as a hardening tendency is in sight. There is some talk of big railroad orders and car orders.

Skelp.—The skelp market is very dull.

Sheet.—Millmen count on depleting their stocks considerably during the next week or two. Large consumers have been very backward, and are now looking up stocks lest prices harden. At least so the manufacturers give it out.

Pipes and Tubes.—Pipes are still dull. A few lots of tubes were ordered, and this fact is favorably commented on by millmen.

Merchant Steel.—The small shop demand is not sufficient to make any improvement in quotations possible for the present. Buyers know they are on dangerous ground. Anything that starts a demand will encourage manufacturers to withdraw present prices.

Plate and Tank.—The bulk of our business is in small orders and the rates are fair. Tank plates are 1'25; universals, 1'30; shell, 1'35; flange, 1'45; firebox, 1'70.

Structural Material.—A large amount of business that has been hanging fire for weeks was placed this week, amounting, one or two estimates give it out, to between ten and eleven thousand tons. Prices are desperately low.

Steel Rails.—There is nothing of moment occurring in this market. Rails are \$25 at mill.

Old Iron Rails.—Rails are to be had at \$14 and it is understood there will be plenty in sight as soon as there is a chance to sell.

Scrap.—The scrap yards present a rather doleful appearance. Not very much business is being done.

Pittsburg, Jan. 11.

(From Our Special Correspondent.)

Raw Iron and Steel.—Business during the week shows sign of improving; the undertone of the market shows more strength; there is an increased inquiry. The new year has not sufficiently advanced for the development of the activity in trade that was generally looked for; the situation, however, is more hopeful for a gradual betterment of trade generally. Iron merchants and manufacturers look for an increased demand and better prices as the season shall advance toward spring. Business in iron and steel has not been very satisfactory, although the change for the better is not very marked yet. There is a fair demand, however, and a general sentiment that the situation will improve, which tends to keep producers and consumers in line. There has been a material decline in production of pig iron during the past year. It is pretty evident that stocks in first hands are not very large. In regard to values no flagrant instances of price cutting are reported, but a large number of inquiries about future supplies have been received, which indicates an opinion that prices are at bottom, but a limited amount of new business appears to have been placed lately.

Latest.—Notwithstanding the market is dull, there is a good deal of iron changing hands, which shows that consumers have light stocks on hand, and, as a consequence, have to visit sellers often. Prices show a wide range of value here and in the valley: Bessemer, Pittsburg, \$10.50@11; Valley, \$10@10.25; steel billets, sales, \$15.75@16.50; Ferro-manganese declined; sales, 80% delivered, \$47 cash.

COKE, SMELTED LAKE, AND NATIVE ORE.		BLOOMS, BILLETS AND SLABS.	
Tons.	Cash.	Tons.	Cash.
10,000 Bessemer, Jan., Feb. & Mar., Val.	\$10.00	10,000 Billets, Jan., Feb., Mar., Val.	\$15.50
8,000 Bessemer, Jan., Feb. & Mar., Pits.	10.60	2,000 Billets, Jan., Feb., Pits.	16.00
5,000 Bessemer, Jan., Pits.	10.70	1,500 Billets, Jan., Pits.	15.80
2,000 Bessemer, Jan. & Feb., Pits.	10.90	1,000 Billets, Jan., Feb., Mar., Pits.	16.45
2,000 Bessemer, Jan., Val.	10.00	500 Billets, Jan., delivered, Pits.	16.25
2,000 Mill Iron, Pits.	10.00	500 Billets, Jan., delivered, Pits.	16.00
1,500 Bessemer, Jan. to April, Val.	10.25	500 Billets, Jan., delivered, Pits.	16.00
300 Bessemer, Jan. to July, Val.	10.60	800 Wide grooved, Pits.	\$1.25 4 m.
230 Mill Iron, Jan., Pits.	9.75	325 Narrow grooved, Pits.	1.25 4 m.
200 No. 2 Foundry, spot, Pits.	11.50	300 Sheared, Pits.	1.49 4 m.
50 No. 2 Foundry, spot, Pits.	11.50	500 Billets, Sheared, Pits.	\$1.25 4 m.
50 No. 2 Foundry, spot, Pits.	11.50	500 Wide grooved, Pits.	1.00 4 m.
28 No. 2 Foundry, Jan., Pits.	11.50	300 Narrow grooved, Pits.	1.00 4 m.
28 No. 2 Foundry, prompt, Pits.	11.50	500 MUCK BAR, Neutral, delivered, Pits.	\$19.50
28 No. 2 Foundry, prompt, Pits.	11.25	1,000 STEEL WIRE RODS, 5-gauge, delivered, Pits.	\$21.00
28 No. 1 Foundry, Jan., Pits.	12.25		
28 No. 1 Foundry, Jan., Pits.	12.15		
CHARCOAL.		BLOOMS, BILLETS AND BAR ENDS.	
100 No. 2 Foundry, Pits.	\$15.80	700 Billet ends, delivered, Pits.	\$12.50
100 No. 4 Foundry, Pits.	15.80	3,000 SHEET BARS, Delivered, Pits.	\$18.50
50 Cold Blast, Pits.	23.00		
50 Cold Blast, extra, Pits.	27.00		
25 Cold Blast, Pits.	25.00	400 FERRO-MANGANESE, 80 per cent., delivered, Pits.	\$47.00

METAL MARKET.

NEW YORK, Friday Evening, January 15, 1897.
Gold and Silver.

Prices of Silver per Ounce Troy.

January.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.	January.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.
9	4.87	29 1/2	61 3/4	.498	13	4.87 1/4	29 1/2	61 3/4	.498
11	4.87	29 1/2	61 3/4	.498	14	4.87 1/4	29 1/2	61 3/4	.498
12	4.87 1/4	29 1/2	61 3/4	.498	15	4.87 1/4	29 1/2	61 3/4	.498

The market shows no disposition to advance, yet in some way or other seems to absorb amounts offering without any material decline becoming manifest. Drought, famine and pestilence have interfered in a measure with India's purchasing power and under the circumstances silver holds up very well.

The United States Assay Office in New York reports the total receipts of silver at 73,000 oz. for the week.

Average Monthly Prices of Silver

In New York and London, per ounce Troy, from January 1st, 1896, and for the years 1895 and 1894.

Month.	1896.		1895.		1894.	
	Lon-don Pence.	New York Cents.	Lon-don Pence.	New York Cents.	Lon-don Pence.	New York Cents.
January	30 69	67 13	27 36	59 69	30 81	66 63
February	31 01	67 67	27 47	59 90	29 18	63 43
March	31 34	68 40	28 33	61 98	27 28	59 49
April	31 10	67 92	30 39	66 61	28 95	62 92
May	31 08	67 88	30 61	66 75	28 69	62 96
June	31 46	68 69	30 47	66 61	28 68	62 59
July	31 45	68 75	30 48	66 75	29 82	62 45
August	30 93	67 34	30 40	66 61	28 29	61 83
September	30 19	65 68	30 54	66 90	38 88	64 14
October	29 68	65 05	30 89	67 64	28 69	63 06
November	29 46	64 98	30 79	67 40	39 41	65 13
December	29 70	65 24	30 40	66 47	27 78	60 43
Year	30 67	67 06	29 53	65 28	29 13	63 00

The New York prices are always per fine ounce, or ounce of pure silver; the London quotation is per standard ounce, or for metal 925 fine.

Gold and Silver Exports and Imports.

At all United States ports, December, 1896, and years from January 1st, 1896 and 1895:

	Gold and bullion.		In ores.		Total excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
GOLD					
Dec.	\$405,856	\$2,572,271	\$25,970	\$227,076	E. \$2,367,521
1896.	56,742,844	102,766,438	269,621	1,963,124	E. 47,777,097
1895.	104,695,023	32,538,736	362,379	1,857,656	E. 70,571,910
SILV.					
Dec.	6,819,145	1,279,801	101,285	1,661,009	E. 3,980,020
1896.	63,029,336	12,504,577	994,405	17,730,280	E. 33,777,884
1895.	53,833,153	11,285,007	377,933	13,087,340	E. 29,837,739

This statement includes the exports and imports at 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 January 14th, 1897, and for years from January 1st, 1897, 1896, 1895, 1894:

	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
Week	\$62,100	\$22,962	\$364,600	\$46,068	E. \$356,670
1897.	141,310	147,131	1,416,745	71,804	E. 1,339,120
1896.	5,910,422	1,654,150	1,874,190	72,561	E. 3,057,901
1895.	11,039,676	234,243	1,554,803	100,206	E. 12,260,030
1894.	939,296	153,819	2,557,202	85,392	E. 3,252,287

The gold exported for the week went to the West Indies and Panama; the silver went to London. The gold and silver imported came from Central and South America, principally.

FINANCIAL NOTES OF THE WEEK.

General business continues somewhat depressed, and the return of activity is slow. Most men are wondering how much more harm the present Congress can do. The close of its existence in March would be a cause for congratulation, were it not that an early special session of the next Congress is promised, with a general change in the tariff.

Money continues to come to New York from the country banks, and we are having a renewal of the

old conditions when funds were sent here for use, if possible, with a consequent surplus offered at very low rates; lack of demand in trade is given as the reason, but there is no doubt that the practice is carried to excess, and that good use could be found at home for much of the money now sent to New York to loan at 2 and 2 1/2%.

The Monetary Conference which was in session at Indianapolis January 12th and 13th, was a large and representative body, including delegates from commercial organizations in all parts of the country. Mr. E. O. Stannard, of St. Louis, was temporary chairman, and the Conference chose Mr. C. Stuart Patterson, of Pennsylvania, as permanent chairman and Evans Woolen, of Indianapolis, as secretary. Speeches were made by many well-known merchants and bankers, and a number of plans were presented and referred to the Committee on Resolutions. That committee presented the following report, which was adopted:

"This conference declares that it has become absolutely necessary that a consistent, straightforward, and deliberately planned monetary system shall be inaugurated, the fundamental basis of which should be:

"First—That the present gold standard should be maintained.

"Second—That steps should be taken to insure the ultimate retirement of all classes of United States notes by a gradual and steady process, so as to avoid injurious contraction of the currency or disturbances of the business interests of the country, and that in such retirement, provisions should be made for a separation of the revenue and note issue departments of the Treasury.

"Third—That a banking system be provided which should furnish credit facilities to every portion of the country and a safe and elastic circulation and especially with a view to securing such a distribution of the loanable capital of the country as will tend to equalize the rates of interest in all parts thereof."

For the purpose of promoting these objects it was resolved that 15 members of the conference be appointed by the chairman to act as an Executive Committee while the convention is not in session. The Executive Committee shall have the power to increase its membership to any number not exceeding 45, and shall have power to call the convention together again and shall continue in office, with power to fill vacancies, until discharged at a future meeting of this convention. It will be the duty of the Executive Committee to endeavor to procure at the special session of Congress which it is understood will be called in March next, legislation calling for the appointment of a monetary commission by the President, to consider the entire question and to report to Congress at the earliest day possible, or, failing to secure the above legislation, they are authorized to select a commission of 11 members to make a thorough investigation of the monetary affairs and needs of this country, and all relations and aspects, and to make appropriate suggestions as to any evils found to exist and the remedies therefor; no limit is placed upon the scope of such inquiry or the manner of conducting the same. The Executive Committee is authorized to receive contributions and to use them for paying necessary expenses.

The imports of specie from Mexico at San Francisco, principally by rail, for the past two calendar years compare as follows:

	1895.	1896.
Dollars	\$8,185,053	\$7,830,254
Silver bullion	2,838,387	1,163,684
Gold bullion	907,015	824,644
Total	\$9,930,455	\$9,818,582

The total for 1894 was \$4,570,242, and for 1893 \$4,326,392 in dollars, \$20,412 in fine silver, and \$223,480 in fine gold. It was only in 1894 that any account was made of receipts of gold from Mexico.

The statement of the United States Treasury on Thursday, January 14th, shows balances in excess of outstanding certificates as below, comparison being made with the statement for the corresponding date last week:

	Jan. 7.	Jan. 14.	Changes.
Gold	\$138,539,551	\$140,097,749	I. \$1,558,198
Silver	17,386,513	18,606,397	I. 1,219,884
Legal tenders	28,964,912	23,322,682	D. 5,642,230
Treasury notes, etc.	34,955,696	34,927,947	D. 27,749
Totals	\$219,846,672	\$216,954,775	D. \$2,891,897

Treasury deposits with national banks amounted to \$16,300,233, a decrease of \$177,411 during the week.

Total United States Treasury notes issued under act of July 14th, 1890, in general circulation and in the Treasury \$911,496 coined standard silver dollars, and silver bullion purchased at a cost of \$109,217,784, making a total of \$119,129,280.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending January 9th, gives the following

totals, comparisons being made with the corresponding weeks in 1896 and 1895:

Table with 3 columns: 1895, 1896, 1897. Rows include Loans and discounts, Deposits, Circulation, Reserve, Specie, Legal tenders, Total reserve, and Surplus reserve.

Changes for the week this year were increases of \$17,253,200 in deposits, \$550,700 in specie, \$14,467,100 in legal tenders, and \$10,704,500 in surplus reserve; decreases of \$259,700 in loans, and discounts and \$692,300 in circulation.

The following table shows 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:

Table with 3 columns: Gold, Silver, Total. Rows list various banks such as Asso. Banks of New York, Bank of England, Bank of France, etc.

The return for the Associated Banks of New York is of date January 2d; all the others are of January 14th, except the Bank of Italy, December 10th, and the Bank of Russia, November 16th-28th.

Shipments of silver from London to the East for the year up to December 30th are reported by Messrs. Pixley & Abell's circular as below:

Table with 3 columns: 1895, 1896, Changes. Rows include India, China, The Straits, and Totals.

Arrivals for the week this year were £213,000 in bar silver from New York, £6,700 from the West Indies, and £32,500 from Chile; also £30,000 in Mexican dollars from New York, a total of £288,200.

Indian exchange continues high, in spite of a comparatively light demand caused by the holiday interruptions. The average price realized for Council bills in London was 15.34d. per rupee.

The statement of the Bureau of Statistics of the Treasury Department gives the merchandise trade of the United States for the year ending December 31st as below:

Table with 3 columns: 1895, 1896. Rows include Exports, Imports, Excess exports, and Total.

Apparent balance in favor of United States, \$311,322,971. The movement of gold and silver in detail will be found in the usual place, in the tables at the head of this column.

Domestic and Foreign Coins.

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

Table with 3 columns: Bid, Asked. Rows include Mexican dollars, Peruvian sole, Victoria sovereigns, etc.

Other Metals.

Copper.—The better feeling which had already manifested itself before the Christmas holidays has made considerable progress. A healthy demand has sprung up since the beginning of the month from home consumers as well as from exporters, and a further rise in prices has set in.

From abroad advices regarding consumption continue satisfactory, and it is anticipated that consumption will go on at the same rate as of late. On the 11th inst., g. m. b.'s opened at £49 12s. 6d spot and £50 7s. 6d., three months prompt, but after that a better demand set in and prices advanced from day to day, closing at the best, viz., £50 2s. 6d. @ £50 5s. for spot and £50 12s. 6d. @ £50 15s. for three months prompt.

For fine copper values have been rather irregular, and we have to quote: English tough, £52 15s. @ £53; best selected, £53 10s. @ £54; strong sheets, £61; India sheets, £57 10s.; yellow metal, 5 1/2 d.

A circular just received informs us that the partnership lately subsisting between John Richardson Francis and John Crow Richardson, carrying on business at Swansea, Wales, under the firm of Richardson & Company, has been dissolved by mutual consent, as and from December 31st, 1896, and the business has ceased and been discontinued.

The following figures give the production (in tons of 2,240 lbs.) of copper in the United States and also by the chief foreign mines, with the exports from the United States for December and the 12 months ending December 31st:

Table with 3 columns: Dec. 1896, 12 months 1896. Rows include Production, fine copper, long tons, Reporting mines, U.S., Pyrites and outside sources, U.S., Reporting foreign mines.

Total production, tons..... 25,304 257,245 290,290 Exports from U. S. fine copper. 12,980 64,000 125,605

Average Monthly Prices of Lake Copper In New York, for the years 1896, 1895, 1894, 1893, and 1892; in cents per pound:

Table with 6 columns: Month, 1896, 1895, 1894, 1893, 1892. Rows include Copper (Lake) for each month and Year.

Tin.—In spite of the advance in London and the better feeling there with regard to tin, the market here has remained rather inactive and dull, there being no disposition on the part of consumers, who are evidently well supplied, to follow the advance, in consequence of which very little business has been done.

In London prices have shown a rather firmer tendency. The market opened at £58 12s. 6d., and advanced to £59 10s. @ £59 12s. 6d. for spot, and £60 5s. @ £60 7s. 6d. for three months prompt, at which it closes. It is expected that during this month heavy shipments will be made from the Straits, as is usually the case before the Chinese holidays, which commence on February 2d.

Average Monthly Prices of Tin In New York, for the years 1896, 1895, 1894, 1893, 1892; in cents per pound:

Table with 6 columns: Month, 1896, 1895, 1894, 1893, 1892. Rows include Tin for each month and Year.

Lead.—Not much business has been doing and the market is rather dull, consumers not caring to take in any quantities except at lower prices, which so far refiners have mostly resisted.

In St. Louis the market has been rather quiet, with not much business doing at 2'75 @ 2'77 1/2 c. The foreign market is firm at £11 12s. 6d. @ £11 13s. 9d. for Spanish and 5s. higher for English lead.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is strong but very quiet. Chemical is nominally worth 2'75c. Missouri refined is quoted 2'77 1/2 c., and argentiferous corroding lead 2'85c. Transactions at these rates have been only of a limited character.

Average Monthly Prices of Lead In New York, for the years 1896, 1895, 1894, 1893, 1892; in cents per pound:

Table with 6 columns: Month, 1896, 1895, 1894, 1893, 1892. Rows include Lead for each month and Year.

Spelter continues exceedingly irregular, and again prices have eased off somewhat. We have to quote prime Western spelter 3'00 @ 3'05c., but it is said that in certain instances even these figures have been shaded.

From London it is cabled that the market is rather flat, same having declined to £17 10s. for ordinaries and £17 13s. 9d. for specials.

Average Monthly Prices of Spelter In New York, for the years 1896, 1895, 1894, 1893, 1892; in cents per pound:

Table with 6 columns: Month, 1896, 1895, 1894, 1893, 1892. Rows include Spelter for each month and Year.

Antimony is neglected and only retail lots have been sold. Cookson's at 7c.; U. S. Star at 6 1/2 c., and Hallett's at 6 1/2 c.

Nickel.—Sales have been light, but prices are unchanged. We quote for ton lots 33 @ 36c. per lb., with 37 @ 39c. for smaller orders. London prices are steady at 14 @ 15d. for large orders and 15 @ 16 1/2 d. for small lots.

Platinum.—Demand is steady and prices are firm at \$14.50 @ \$15.50 per oz., New York. London quotations are 57s. 6d. @ 59s. per oz.

Quicksilver.—The New York quotation is unchanged at \$36.75 per flask. The London price is £6 12s. 6d. per flask, with £6 11s. 3d. named from second hand.

The Minor Metals.—Quotations for these metals are given in the table below, the prices being for New York delivery:

Table with 2 columns: Description, Price. Rows include Aluminum, Ingots from scrap, Aluminum-nickel casting metal, Bismuth, Phosphorus, Platinum, Tungsten, Tungstic acid, Ferro-tungsten.

Variations in prices are chiefly on size of order. Imports and Exports of Metals.

Table with 3 columns: Philadelphia, Week Jan. 8, Year 1897. Rows include Antimony, Copper ore, Ferro-manganese, Ferro-silicon, Iron ore, Pyrites, Manganese ore, Spiegeleisen, Tin, Tin and black plates.

†† From New York Metal Exchange Reports.

New York.*	Week, Jan. 14.		Year, 1897.	
	Expts.	Imps.	Expts.	Imps.
Aluminum..... lbs.				
Antimony ore..... short tons		13		13
" regulus..... casks		39		39
Brass, old..... short tons	5		5	
Copper, fine..... long tons	1,600	78	3,087	137
" matte..... "	158		399	
" sulphate..... "	133		133	
Iron ore..... "				
" pigs, bars..... "				
" rods..... "	17	156	17	156
Iron pyrites..... "		2,670		2,670
" sulphate..... "				
Ferro-manganese..... "	67	52	67	52
Ferro-silicon..... "				
Manganese ore..... "				
Spiegeleisen..... "		30		30
Lead ore..... "	475	7	1,475	1,599
" pigs and bars..... "				
Magnolia metal..... "	57		57	
Nickel..... "				
Steel, billets, rods..... "	14	1,137	14	1,137
Tin..... "	120	500	120	762
Tin and black plates, boxes..... "		29,075		29,075
Zinc (spelter)..... long tons	17	205	17	420

*Metal Exchange Reports.

Baltimore.**	Week, Jan. 14.		Year, 1897.	
	Exp.	Imp.	Exp.	Imp.
Bismuth metal, cases.....				
Chrome ore..... long tons				
Copper, fine..... "	175		1,896	
" matte..... "				
" sulphate..... "				
Iron ore..... "		8,321		8,321
" pigs, bars..... "				
" ingots, blooms..... "	80		80	
Iron oxide..... bags				
" pyrites..... long tons				
Ferro-manganese..... "	178		178	
Ferro-silicon..... "				
Lead..... "				
Limestone..... short				
Manganese metal, long				
Spiegeleisen..... "		25		125
Steel..... "	162	168	162	197
Steel wire, bundles..... "		236		574
Tin, long tons..... "		83		122
Tin and black plates, boxes..... "		130		320
Zinc (spelter) long tons..... "				

**From our special correspondent.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Jan. 15.
Heavy Chemicals.—There has been no improvement, nor even a tendency that way, in the heavy chemical market during the past week. The waiting policy continues on all sides, and the amount of business done is small in consequence. Alkali continues flat and dull; the sodas are no better, but bleaching powder is still in demand. We quote: Caustic soda, 60%, \$2.22½@3.42½; 70-74@76%, \$2.12½@2.22½ per 100 lbs. Alkali, 58%, 70@75c. for 50-ton lots and over, and 80@90c. for smaller quantities; 48%, \$1@1.20 for jobbing lots. Bleaching powder, prime brands, \$1.75@1.87½; Continental, \$1.62½@1.75 per 100 lbs. Bicarb. soda, English, 1.75@2c. per lb.; American, bulk, \$1.50@3.50 per 100 lbs., according to make. Sal-soda, English, 62½@67½c.; American, 65c. (in barrels), 80c. (in kegs) per 100 lbs. Hyposulphite of soda, 1.65@1.85c. in casks; 1.75@2c. in kegs.

Acids.—Business in acids during the past week has been rather quiet. Contracts for 1897 have been pretty well all placed, and always at the advanced figures over 1896 previously noted in these columns. Prices on current business are steady, but the market is without special feature. Quotations per 100 lbs. in New York and vicinity in lots of 50 carboys or over are as follows: Acetic acid (in barrels), \$1.35@1.45; in carboys, \$1.40@1.60; muriatic acid, 18%, 75@85c.; 20%, 85@95c.; 22%, \$1.15@1.25, according to make and quantity. Nitric acid, 36%, \$3.50@4.40; 40%, \$4@4.50; 42%, \$4.50@5.50. Oxalic acid, \$7.25 ex-dock and \$7.50 ex-store. Mixed acids, according to mixture. Sulphuric acid, 60%, 85c.@1 per 100 lbs., 10@15c. higher for small quantities. Chamber acid, \$6@6.50 per ton at factory. Blue vitriol, \$3.75@4 according to grade and order.

Brimstone.—Trade in this article is reported rather dull at this time. An arrival due this day is offered for spot sale at \$23½@24 per ton, best un-mixed seconds, according to quantity. Other spot quotations have been given as low as \$21@21½. For February and March shipment the figures are \$19.75@20½, the lower values being due, it is said, to lower freight rates abroad. For prompt shipment the quotation is \$20½ per ton. Thirds are \$1 per ton less than the preceding prices.

Fertilizing Chemicals.—There seems to have been a good hand to mouth business during the past week. Orders are fair in number, but small in amounts called for. Sulphate of ammonia has taken another advance, and spot quotations now are \$2.30@2.35, a 50-ton sale having been made at the latter figure. We quote as follows:

Sulphate of ammonia, gas liquor, \$2.25 for shipment, and \$2.30@2.35 for spot; bone, \$2.10 per 100 lbs. Dried blood, high grade Western, \$1.70@1.75

per unit New York; f. o. b. Chicago, \$1.50@1.55 per unit; low grade, fine ground, Western, \$1.45@1.50 f. o. b. Chicago. Azotine, \$1.60@1.70 basis New York. Concentrated phosphate (30% available phosphoric acid), 57½c. per unit. Acid phosphate 13%@15%, av. P₂O₅, 54@65c. per unit at seller's works in bulk. Dissolved bone black, 17%@18% P₂O₅, 85c. per unit. Acidulated fish scrap, \$10, and dried scrap \$19.50@20, f. o. b. fish factory. Tankage, high grade, \$14.25@14.50 per ton; concentrated, \$1.40 per unit, f. o. b. Chicago; New York, \$20; low grade, \$19. Bone tankage \$19@20; ground bone, \$21@23. Bonemeal, \$20@22.50.

Sulphate of Potash: 90-95%, New York and Boston, \$1.96½; Philadelphia, Baltimore and Norfolk, \$1.98; Southern ports, \$2.

Double Manure Salts: 1.03@1.05½c., basis of 48% chlorate high grade (basis 90%), 1.90½@2.03c., in bulk, 24@38½ per unit O. P., 36½@38c.

Muriate of Potash: We quote: 1.78c. at New York and Boston, 1.79½c. Philadelphia, Baltimore and Norfolk, and 1.81½c. Charleston, Savannah, Wilmington and New Orleans, for 80@85% basis of 80%, in lots of 50 tons and upward.

Chlorate of Potash.—Conditions remain sufficiently firm to maintain the price previously quoted, which is 8@8½c. according to quantity.

Kainit.—Quotations per ton of 2,000 lbs. are \$8.80 @ \$9.25 per ton for shipments; the same for bulk, ex-ship.

Nitrate of Soda.—While general conditions remain much the same as previously reported, prices have become firmer, and we now quote: For spot, 1.90c.@1.92½c.; to arrive, 1.82½@1.87½c. according to position. A steamer arrived at the beginning of the week with a cargo of 26,000 bags.

Liverpool. Jan. 5.

(Special Report of Joseph P. Bruner & Co.)

Although not active, the chemical market is in a firm position and there is a fair trade reported in a quiet way.

Soda ash is without special feature, and quotations are nominally unchanged, the range for tierces, according to export market, being about as follows: Leblanc ash, 48%, £4@£4 5s. per ton; 58%, £4 5s.@£4 10s. per ton, net cash. Ammonia ash, 48%, £3@£3 10s. per ton; 58%, £3 5s.@£3 15s. per ton, net cash. Bags 6s. per ton under price for tierces. For the American market special prices will be quoted on application. Soda crystals are selling at £2 5s. @£2 7s. 6d. per ton, less 5% for barrels and 7s. less for bags.

Caustic soda is in fair request, and unbarred makes continue in narrow compass. Nearest range for any position, as to destination, may be called about as follows: 60%, £6 5s.@£6 7s. 6d. per ton; 70%, £7 5s.@£7 7s. 6d. per ton, net cash; 74%, £8 2s. 6d.@£8 5s. per ton; 76%, £8 17s. 6d.@£9 per ton, net cash.

Bleaching powder is steady at £6 12s. 6d.@£6 17s. 6d. per ton net cash for hardwood packages, as to export market. There is nothing offering here available for export to America, the outside makers being fully sold ahead for some months.

Chlorate of potash is held for 4½d. per lb., but there is little doing.

Bicarb. soda is firm at £6 15s. per ton, less 2½% for the finest quality in 1 cwt. kegs, with usual allowances for larger packages.

Sulphate of ammonia is better, and £8 per ton, less 2½%, is about nearest value for good gray 24% and 25%, in double bags f. o. b. here.

Nitrate of soda is quiet at £3 2s. 6d.@£3 5s. per ton, less 2½% for double bags f. o. b. here, as to quality.

Carb. ammonia, lump, 3d. per lb; powdered, 3½d. per lb., less 2½%.

Valparaiso, Chile. Dec. 5.

(Special Report of Jackson Brothers.)

Nitrate of Soda.—The European market has continued to decline, the latest quotations giving 7.50 marks, February and March delivery in Hamburg; exporters have therefore shown no interest to operate. Some English companies and a few Coast producers have consigned cargoes rather than give way in prices, but at the close sellers seem more inclined to meet buyers. We quote sellers of 95%, at 5s. 9½d., and of 96%, 1% at 5s. 11½d., December and January delivery. The price of 5s. 9½d. with 6s. 6d. freight stands in 7s. 3¼d. per cwt. net cost and freight without purchasing commission, against quotations from Europe of 7s. 2½d. for December sailings. Sales for the fortnight amounted to 307,000 metric quintals.

MINING STOCKS.

Complete quotations will be found on pages 83 and 84 of mining stocks listed and dealt in at:

New York.	Colorado Springs.	Paris, France.
Boston.	Duluth, Minn.	Mexico.
Philadelphia.	Helena, Mont.	Shanghai, China.
Baltimore.	Salt Lake, Utah.	Valparaiso, Chile.
Pittsburg.	San Francisco.	London, England.
Cleveland, page 83.	Denver, Colo.	British Columbia.

NEW YORK, Friday Evening, Jan. 15.

Actual business is very small and illustrates the condition of the market at the present time. Inquiries from outsiders grow fewer in number, and inside traders apparently do not care to devote too much attention to mining stocks, while other securities offer better inducements to investors.

The new New York Mining Exchange reports

more trading this week than it did last, and shows transactions amounting to 22,000 shares, against 18,000 shares when it opened for business. The greater portion of its dealings is in Cripple Creek stocks.

The Consolidated Stock and Petroleum Exchange, which has supported the major part of mining stock speculation in New York for many years, reports sales for the week as 17,600, against 14,265 shares last week.

The Comstock group of stocks were very quiet this week, and but little more can be said of the Californias. The affairs of the Standard Consolidated Mining Company of Bodie are in a satisfactory condition, and it is now issuing new stock to the companies which have consolidated with it. The Standard records two sales this week amounting to 200 shares at \$1.50.

The Brunswick Consolidated Mining Company held its annual meeting in San Francisco on January 14th, electing the old board of directors and officers, which are as follows: J. B. Robinson, president; J. J. Halpin, vice-president and treasurer; J. Stadfeld, Jr., secretary; T. H. Chandler, W. B. Mack, Jr., W. H. Lewis, assistant secretary, and C. H. Mallen (new) superintendent.

The Colorados, especially the Cripple Creeks, continue to be in most demand. There were sales of 4,800 shares of Cripple Creek Consolidated at 12@13c. this week, while Iron Silver, a Leadville stock, showed dealings of 3,300 shares at 33c.

The Portland Gold Mining Company, of Cripple Creek, at its recent meeting declared a dividend of 1c. per share, or \$30,000, which was paid to-day to stockholders of record on January 9th. The annual election of officers of this company will be held on February 1st.

The Victor Gold Mining Company, in its statement for November, 1896, shows receipts to the amount of \$88,688, of which \$18,634 went for operating the mine, and \$20,000 for the regular monthly dividend. The balance on hand November 1st amounted to \$50,054.

The report that the Tomboy gold mine, in San Juan district, Colo., was sold to the Exploration Company, of London, was denied by Mr. F. L. Underwood to a representative of the *Engineering and Mining Journal*. He said that negotiations for the sale of the property were pending, but were not yet completed.

Boston. Jan. 14.

(From Our Special Correspondent.)

The market for copper shares has been fairly strong and active the past week, with the exception of Butte & Boston, which has been freely offered for sale, resulting in a decline from \$6½ to \$5½, with recovery to \$6½. Boston & Montana, after selling at \$99½, declined to \$96½, and recovered to \$99½, the highest point touched. Later sales were at \$98@98½, at which it closed to-day.

The surprise of the week was the declaration of a \$15 dividend by the Calumet & Hecla, which sent the stock up from \$340 to \$348. Later it sold at \$340 ex-dividend, equal to \$355 per share, which beats all former records. Tamarack sold at \$102 in early dealings, but declined to \$96½, with recovery to \$100 to day. Quincy sold at \$124½, declined to \$123 and held steady at that price. The scrip early sold at \$107, but declined to \$104½ and closed at \$1.05. Kearsarge was steady at \$17@17½. It is reported that the company has on hand about \$200,000 in cash, and that a dividend of \$1 per share will be forthcoming within three months. Osceola sold at \$29½ to \$30½ ex-dividend, but was not very active. Atlantic was a little heavy and sold down to \$23½, a loss of \$1. Franklin was steady at \$11½@12, a slight gain over last week. Wolverine held fairly well at last week's prices, \$9@9½, closing at the latter figure. Tecumseh gained ¾ to \$3½. Tamarack, Jr., after selling at \$17½, declined to \$16 to-day, for some unknown reason. The Centennial has called for the balance of 50c. per share, under the reorganization plan, making \$2.50 paid in. The stock sold to-day, assessment paid, up to \$3½. Arnold advanced ¼ to \$2½, but later declined to \$2, and closed at \$2½. Some sales of Humboldt mining were reported at 17½c. per share. Old Dominion has been very dull, and inclined to weakness, with sales at \$17½@18.

The gold stocks were dull with the exception of Gold Coins, which, under the favorable report of the December earnings, advanced from \$3½ to \$3¾, with later sales at \$3¾. Pioneer was neglected; small sales were reported at \$5@5½. Santa Ysabel was firm at \$11½@12 closing at the former price. Merced was steady at \$7½@8. Boston & Cripple Creek sold at 10c.

3 p. m.—At the afternoon call, Boston & Montana advanced to \$99; Kearsarge to \$17½; Calumet & Hecla declined to \$335½; Quincy to \$122, and Tamarack to \$97. The balance of the list was steady.

Cleveland. Jan. 13.

(From Our Special Correspondent.)

While not much trading has been done in iron mining stocks the brokers say that indications point to the transaction of considerable business when navigation opens in the spring. The quotations are unchanged this week. They will be found on another page.

Salt Lake City. Jan. 9.

(Special Report of James A. Pollock.)

The first week in the new year was a good one for the local mining stock market, dealings being unusually heavy with prices firm and advancing in

nearly all parts of the list. Ajax did considerable business, but the quotations were not materially higher. The properties are again in full operation. Anchor moved but little, and closed with very light offerings only. A small force of miners is at work in the company's properties again. Centennial-Eureka again displayed no activity, nor is it at all likely to do so for the next few months. The company is doing well. While only a limited amount of business was done in the stock, Daly held its own. Daly West was strong and did some business at the previous week's figures. Offerings continue limited. Dalton & Lark showed no activity, although a few more would-be buyers were in. Dalton was practically unchanged. Little business was done in the stock. Four Aces showed some activity, but there was no change in the quotation. Galena was slightly stronger. A limited demand for Geyser kept the stock down to where it was last week. Lucky Bill continued to make a good ore showing at its properties, and the stock held fairly stiff. Mercer fulfilled all my predictions, for it advanced above the \$7.25 mark, sales being made 15c. higher than that point. There was such a limited amount of the stock out that when some good buying orders came in the stock was forced up very rapidly. Renewed buying caused Mammoth to take another spurt, and the stock passed the \$3 mark, but at the close was somewhat weaker on realizations. Northern Light was in heavy demand and made great gains in the quotation, selling up to 95c. The advance proved too rapid, however, for at the close a break came, carrying prices off 10c. Ontario was fully as strong as during the previous week. Swansea lost heavily at the close, quite a number of sellers who were willing to realize after the dividend went off coming out. (The company pays 5c. per share January 15th. South Swansea's advance was checked, evidently through sympathy for its neighbor, but the stock did not sell down materially. Utah did little; there were only limited offerings, however.

San Francisco. Jan. 9.

(From Our Special Correspondent.)

The first week of the new year opened with some show of business, and there was a general improvement over the closing quotations of the previous week. The official reports of the companies showed little worth noting, however, and the dealings were not at all heavy, most of them being for small amounts.

On Tuesday prices fell off again and there was a return of quiet in the market, but on Wednesday another little revival set in and quotations recovered. The feature of the market was an especial interest in the Gold Hill stocks on reports of favorable indications from the explorations now going on to the westward of the present workings.

Toward the close of the week business was fair and the quotations were better than for several weeks past. Some closing prices were: Confidence, \$1.45; Consolidated California & Virginia, \$1.30; Hale & Norcross, \$1.30; Ophir, \$1; Chollar, 78@80c.; Challenge, 65@68c.; Yellow Jacket, 41c. The Bodies are now all represented by Standard Consolidated, which is once more quoted here; the stock sold to-day at \$1.50.

The usual sworn monthly statements as filed January 2d show that the following companies had balances on hand: Andes, \$3,535; Alta, \$1,161; Alpha Consolidated, \$4,429; Belcher, \$5,000; Bullion, \$2,172; Best & Belcher, \$2,440; Caledonia, \$3,357; Consolidated New York, \$630; Challenge Consolidated, \$2,634; Chollar, \$357; Consolidated Imperial, \$1,000; Confidence, \$3,582; Consolidated California & Virginia, \$4,945; Eschequer, \$1,608; Gould & Curry, \$1,235 with \$2,500 owing to the Nevada Bank; Justice, \$374; Mexican, \$10,075; Overman, \$8,214; Ophir, \$6,082; Occidental Consolidated, \$4,373, with \$2,500 due the bank; Potosi, \$9,068; Savage, \$292; Seg. Belcher, \$2,805; Syndicate, \$576; Sierra Nevada, \$9,595; Standard Consolidated, \$42,050; Union Consolidated, \$10,980; Utah, Consolidated, \$1,489.

The following mining companies report having an indebtedness: Crown Point \$2,004, Hale & Norcross \$19,995, with monthly expenses to be paid, and \$26,547 to be collected on the pending assessment, Lady Washington \$866, Silver King \$2,084.

The sums disbursed by the mining and other corporations on and around the Comstock for labor during the month of December, 1896, were as follows: Hale & Norcross, \$1,235; Andes (estimated), \$1,200; Consolidated California & Virginia, \$11,541; Mexican, \$1,742; Ophir, \$2,314; Best & Belcher, \$2,124; Gould & Curry, \$858; Alta (estimated), \$1,500; Utah, \$308; Occidental, \$2,254; Brunswick Exploration Company, \$6,106; Savage, \$2,450; Crown Point, \$819; Yellow Jacket, \$1,382; Confidence, \$314; Challenge, \$144; Belcher, \$1,844; Segregated Belcher, \$469; Imperial, \$94; Bullion, \$1,036; Chollar, \$4,336; Potosi, \$480; Union Shaft, \$2,383; Sierra Nevada, \$711; Alpha, \$723; Nevada mill (estimated), \$2,500; Electric Light (estimated), \$500; water company (estimated), \$3,000; quartz mills (estimated), \$5,000; total, \$59,368. The pay rolls are over \$7,000 less than those of November.

The annual meeting of the Sierra Nevada Mining Company has been called for January 20th.

The Teresa Mining Company of Sinaloa, Mexico, has levied an assessment of 5c. per share, delinquent February 5th.

The Larkin Mining Company of El Dorado County has levied an assessment of 5c. per share, delinquent February 15th.

At a meeting of the executive committee of the California Miners' Association on Thursday it was

resolved to request the legislature to pass a measure to remove all legal doubt about the appropriation of \$250,000 to erect restraining dams in the interest of hydraulic mining. This sum is to be used in connection with a similar sum appropriated by Congress at its last session. The committeemen also expressed themselves in favor of an appropriation for a dredge to be used on the Sacramento River if the farmers desired money for that purpose. It was decided to ask for an appropriation of \$100,000 to erect a home for aged and sick miners.

The sales on regular call at the San Francisco Stock Board for the past two years were as follows:

January.....	1896.	1896.
February.....	254,315	296,415
March.....	196,700	183,790
April.....	286,530	216,105
May.....	262,810	261,735
June.....	274,030	318,610
July.....	231,645	479,135
August.....	155,395	321,480
September.....	2,9350	210,610
October.....	333,245	193,125
November.....	259,460	207,990
December.....	352,675	152,050
Total.....	286,055	211,710

Total..... 3,155,710 3,585,875
For 1894 the sales were 3,956,110 shares, against 3,443,690 shares in 1893. The sales in 1896 showed an improvement, though only a slight one.

British Columbia.

(From Our Special Correspondent.)

ROSSLAND, Jan. 8.

The great event of the week is the announcement of the sale of the War Eagle mine. There now does not appear to be any reason to doubt the correctness of the report. The old company disappears, and the new organization is to be known as the War Eagle Consolidated Mining Company, with a capital of \$2,000,000, including \$350,000 in the treasury for development purposes only. The names of the new management as presented are: George Gooderham, of Toronto, president; Dominion Senator George Cox, vice-president. The directors, so far as known, are: Mr. W. H. Beatty and Mr. T. G. Blackstock, of the same city. The properties consolidated by this company are: The War Eagle, Crown Point, White Swan, Hidden Treasure, R. Lee, Tiger, Uncle Sam, Richmond, Star View, Empire, Watson and a fraction of the Summit. The five last-named are silver claims in the Slovan country. The effect which this deal has had on the Trail Creek camp has been to stimulate it, especially among the Canadian mining promoters, many of whom contend that Canada can furnish all the capital necessary for the development of Trail Creek and Slovan mines during the next five years. The present condition and showing of the War Eagle mine is very encouraging. The old company was well managed, as it was in the hands of experienced men who brought it to its present stage of prosperity. The company has paid in dividends to date \$187,500. Here the sale is regarded not only as the largest deal which has taken place in the camp since it began, but the most important.

Though this is the quietest time in the year in the camp, a very hopeful feeling among all classes prevails, and a place is given to the most sanguine anticipations, owing to the steady inflow of Eastern capital into this field. The number of mining promoters who are interested in this camp and who have gone East, presumably to influence capital, is being continually reinforced.

London. Jan. 2.

(From Our Special Correspondent.)

The turn of the year has brought a much more hopeful feeling with it in the mining market. There is a general opinion in the press and among promoters that the year 1897 will bring rather more prosperity than the latter half of the old year did. It is difficult to gauge the reason underlying these prophecies, but my opinion is that they are promulgated with the ultimate object of working off on the public the immense blocks of stock in Rhodesian companies with which underwriters are loaded, and not that any new departure is to be made in bringing genuine mining properties before the public.

Bears have not had much opportunity of exercising their tactics in the South African section, for events, both political and otherwise, are more favorable to mining interests lately. The copious rainfall has supplied the Transvaal mines with water, and the active efforts of Mr. Barnato and Mr. Robinson in endeavoring to bring about a better understanding between the mines and the government, have strengthened the gold shares. The pacification of Rhodesia brings the hope that that country will have a chance of development, and promoters in this section are preparing for a boom. The only event to cause any uneasiness in the market has been the triumphal progress of Mr. Rhodes through the Cape Colony, the publicly expressed admiration of the man and his policy being judged to irritate the Transvaal and reopen the wound of a year ago. Perhaps this event will not have much influence in professional circles, but it will be sufficient to remind the public that the jealousy between the English and the Boers in South Africa is a serious bar to the success of mining enterprise there. Another important matter in connection with a possible general rise in South Africa is that very large numbers of shares are ready to come on the market, directly there is anything like an advance in quotations. This will operate to prevent any substantial rise for a long

time to come, so that the outlook is not quite so hopeful as some people are desirous of believing.

In the West Australian section there is a general inclination to hope for a renewal of activity, and in some cases there have been considerable rises on prospects, not results. The continued absence of dividends in this department has been observed by this time by investors, and there seems to be a general disinclination on the part of the public to buy. In looking through the reports of the meetings of West Australian companies, which were held by scores during the last two weeks of the past year (a favorite time for holding company meetings in London), it was really sad to find that not one could report any substantial progress. Many had come to the end of their money without doing anything, and proposed reconstructions, and others had not really started operations. But none of the papers that had the remunerative job of reporting these meetings thought it expedient to call their readers' attention to this state of things.

The Indian section is practically the only department of the mining market that has shown any strength and real business during the past week or two. The buying is genuine and there is a prospect of buyers getting their money's worth as well. The leading mines are all strong, and with dividends of 50% and 75% public interest in them is justifiable. The new Coromandel Company, an offshoot of Champion Reef, is getting into excellent shape.

New Zealand has been very much in the background, and their future is very doubtful. Americans and British Columbians are also lying low, though the usual rumors are being sent round relating to the early arrival of the boom in the latter.

Practically no new mining companies have been floated during the past fortnight, as might be expected considering the period of the year.

Paris. Jan. 3.

(From Our Special Correspondent.)

The past week has been a very quiet one in the stock market, the festivities of the season taking attention away from business. Very little was done, and there was no occurrence of importance to be noted. The week following will show the real opening of business for the year.

We are watching here with much interest the struggle of the German bourses against the new anti-option law. I believe that the law must give way in the end.

There is a prospect, I am told, of some extensive investments in Russian gold mining stocks which are shortly to be brought out here. South African experience may discourage investors; but the Russian influence is very strong here.

Having so little news, I can only conclude by sending you our best greetings and wishes that you may join in the prosperous season which has already begun in Europe.

ASSESSMENTS.

Name of Co.	Loc'n.	No.	Dirq.	Sale.	Amt.
Alta Silver.....	Nev.....	54	Jan. 18	Feb. 8	.05
Anna Gold.....	S. D.....	6	" 27	" 15	.002
Beaver Creek.....	Mont.....	"	" 17	" 23	.02
Butte & Phila.....	"	"	" 23	Jan. 29	.002½
Central Kureka.....	Cal.....	4	"	Feb. 15	.03
Con. Cal. & Va.....	"	7	" 14	" 4	.25
Crown Point.....	Nev.....	69	" 18	" 3	.10
East Gold'n Gate.....	Utah.....	"	" 22	" 15	.00½
Far West G. & S. S. D.....	"	14	" 9	Jan. 30	.003
Gould & Curry.....	Nev.....	80	" 19	Feb. 9	.15
Gray Eagle.....	Cal.....	"	" 30	"	.05
Hale & Norcross.....	Nev.....	110	" 11	Feb. 1	.25
Live Yankee	Cal.....	"	Jan. 7	"	.02
Gravel.....	Cal.....	"	Dec. 21	Jan. 22	.001
No. Golden Gate.....	Utah.....	"	"	"	"
North Gould & Curry G. & S.....	"	17	" 5	" 22	.10
Occidental Con.....	"	25	" 29	" 18	.15
Oreans.....	Cal.....	"	Jan. 11	Feb. 2	.10
Overman.....	Nev.....	76	Dec. 31	Jan. 22	.10
Red Cloud.....	Utah.....	6	" 31	Feb. 1	.02
Sheep Rock.....	"	"	Jan. 9	Jan. 30	.10
Savage.....	Nev.....	91	" 26	Feb. 15	.20
Silver King.....	Utah.....	"	" 8	Jan. 23	.02
Snowflake.....	"	"	Dec. 29	" 22	.01
Tetro.....	"	4	Jan. 30	Feb. 20	.01

DIVIDENDS.

NAME OF COMPANY.	Current Dividends.		Paid since Jan. 1, 1897.	Total to date.
	Date.	Amt.		
Anchoria-Leland.....	Jan. 15	\$6,600	\$6,000	\$36,000
Calumet & Hecla.....	Feb. 10	1,500,000	1,500,000	48,350,000
Coronas.....	Jan. 1	1,500	1,500	6,500
Delta S.....	"	10,000	10,000	60,000
Elkton Con.....	" 20	25,000	25,000	191,960
Galena.....	" 10	5,000	5,000	71,000
Le Roi.....	"	25,000	25,000	275,000
Mont. Ore Pur. Co.....	" 15	40,000	40,000	520,000
Nana Con.....	" 2	10,000	10,000	820,000
N. Y. & Honduras	"	"	"	"
Rosario.....	" 15	15,000	15,000	690,000
Osceola.....	Feb. 1	50,000	50,000	2,127,500
Portland.....	Jan. 15	30,000	30,000	893,000
South Swansea.....	"	7,500	7,500	15,000
Swansea.....	" 10	5,000	5,000	26,500
Totals.....		\$1,730,000	\$1,730,000	\$53,177,460

NOTE.—This table does not give all the dividends paid by mining companies, as it is impossible to obtain a complete list of dividends declared. Many companies are close corporations and refuse to give the information. 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.

NEW YORK.*

Table of stock quotations for New York, listing company names, locations, par values, and prices for various dates from Jan 9 to Jan 15.

*Official quotations N.Y. Stock and Con. Stock & Petroleum Exchs. Total shares sold, 17,600.

INDUSTRIAL COAL AND COAL RAILROAD.*

Table of stock quotations for Industrial Coal and Coal Railroad, listing company names, par values, and prices for various dates from Jan 9 to Jan 16.

*Official quotations N. Y. Stock Exchange. Total shares sold, 183,540.

BOSTON. MASS.*

Table of stock quotations for Boston, Mass., listing company names, locations, par values, and prices for various dates from Jan 8 to Jan 11.

*Official quotations Boston Stock Exchange. †Ex-dividend. Total sales, 53,667.

SAN FRANCISCO, CAL.*

Table of stock quotations for San Francisco, Cal., listing company names, locations, par values, and prices for various dates from Jan 8 to Jan 14.

*Official telegraphic quotations, San Francisco Stock Exchange.

COLORADO SPRINGS, COLO.

Table of stock quotations for Colorado Springs, Colo., listing company names, par values, and prices for various dates from Jan 4 to Jan 9.

*Official quotations: Colo. Springs Mfg. Stock Assoc.; *Board of Trade Exchange. Total shares sold, listed, 525,750; unlisted, 654,684. Sales given are those made at both exchanges.

CLEVELAND.

Table of stock quotations for Cleveland, listing company names, par values, and prices for various dates from Jan 13 to Jan 18.

BALTIMORE, MD.*

Table of stock quotations for Baltimore, Md., listing company names, locations, par values, and prices for various dates from Jan 13 to Jan 18.

*Official quotations Baltimore Stock Exchange.

CHICAGO.*

Table of stock quotations for Chicago, listing company names, locations, par values, and prices for various dates from Jan 7 to Jan 13.

*Official quotations, Chicago Stock and Mining Board.

BRITISH COLUMBIA.

Table of stock quotations for British Columbia, listing company names, par values, and prices for various dates from Jan 9 to Jan 13.

Par val.: Hall Mines and Le Roi, \$5; Slocan Star, 50c.; other stocks, \$1.

LONDON.

Table with columns: NAME OF COMPANY, Country, Product, Capital stock, Par value, Last dividend, Quotations. Lists various mining and industrial companies from Alaska to Witwatersrand.

* Ex-dividend. † Dividend pending.

PARIS. Week ending Dec. 24.

Table with columns: NAME OF COMPANY, Country, Product, Capital Stock, Par value, Divs. last year, Prices. Lists companies like Acieries de Creusot, Agnès Tenidas, Boleo, etc.

MEXICO. Week ending Jan. 7.

Table with columns: NAME OF COMPANY, State, No. of shares, Last dividend, Last assessment, Prices. Lists companies like Amistad y Concordia, Angustias, etc.

NOTE.- In most Mexican mining companies the shares have no fixed par value. The capital is formed of a certain number of shares, the total value not being named. Prices are in Mexican dollars.

VALPARAISO, CHILE.* Oct. 15.

Table with columns: NAME OF COMPANY, Capital, Share value, Last dividend, Prices. Lists companies like Arturo Prat, Caracoles, etc.

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

SHANGHAI, CHINA.* Nov. 29.

Table with columns: NAME OF COMPANY, Country, No. of shares, Value, Last dividend, Price. Lists companies like Jieibu Mg. & Trad., etc.

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

DENVER, COLO.*

Table with columns: NAME OF COMPANY, Par val, Jan. 4, Jan. 5, Jan. 6, Jan. 7, Jan. 8, Jan. 9, Sales. Lists various mining companies like Anaconda, Anaconda, etc.

* Official quotations Colorado Mining Stock Exchange. Shares sold, listed, 438,440; unlisted, 570,000. Total, 1,008,440.

SALT LAKE CITY, UTAH.* Week ending Jan. 9.

Table with columns: STOCKS, Par value, Bid, Asked, Actual selling price. Lists companies like Ajax, Alliance, Annie, etc.

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

PHILADELPHIA PA.*

Table with columns: NAME OF COMPANY, Location, Par value, Bid, Asked, Sales. Lists companies like Acet'e, L.H. & P, Cambria Iron, etc.

* Official quotations Philadelphia Stock Exchange. Total sales, \$784.

HELENA, MONT.* Week ending Jan. 9.

Table with columns: NAME OF COMPANY, Location, Par value, Bid, Asked, Price. Lists companies like Am. Dev. & M. Co., Bald Butte, etc.

* Special Report of Samuel K. Davis. Total shares sold, 3,700.

PITTSBURG, PA.* Week ending Jan. 9.

Table with columns: NAME OF COMPANY, Location, Par val, Bid, Ask, Sell price. Lists companies like Mansfield, N.Y. & C. Gas Co., etc.

* Official quotations Pittsburg Stock Exchange.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns for Name and Location of Company, Capital Stock, Shares, Assessments, Dividends, and Date and Amount of Last. It lists 130 dividend-paying mines and 130 non-dividend-paying mines.

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 \$42,390,000. ‡ Dividends paid since consolidation. NOTE.—Corrections to this table are made monthly. Correspondents are requested to forward changes or additions so as to reach us before the end of each month.