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AND



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The index to Volume LXI., January to June, 1896, is mailed with this issue of the *Engineering and Mining Journal*. Should subscribers not receive it they should at once notify this office.

With the introduction of electric apparatus for underground use the chances of accidental shock, usually due to carelessness, cannot be entirely avoided. The importance of prompt action in such cases and of knowing just what to do to resuscitate the victim of such shocks cannot be over-estimated. The *Engineering and Mining Journal* printed in its issue of November 30th, 1895, a set of rules applying in such cases, which ought to be conspicuously posted in every electric mining power-house.

The Minister of Mines for the Province of British Columbia (Hon. Col. James Baker) has taken a useful step toward making his department even more efficient than hitherto, by issuing bulletins from time to time, as the reports from various districts come in, thus supplementing the past annual report and anticipating the coming one. We have bulletin No. 1 just issued, being a report on the mineral deposits and the progress of mining operations in Alberni and on Barclay Sound, Island of Vancouver. The fact that the report is by William A. Carlyle adds to its value.

A new opportunity will be afforded to our manufacturers of all classes, machinery, mining equipment, transportation, etc., included, to extend their foreign market in the coming year. On March 15th the Central American Exposition will be opened in Guatemala City by the Government of the Republic of Guatemala. In the circular issued by the Consul General of Guatemala in this city (which we print *in extenso* elsewhere) United States manufacturers are cordially invited to exhibit, and the conditions, freedom from duties, reduced rail road freight and passenger fares, together with money prizes from \$100 to \$5,000, importation free from duty up to \$5,000 for one year after, should be sufficient inducement to attract a good exhibit.

In another column we publish a paper on the quartz veins and gold placers of British Guiana, written by an American, which gives the best description of the country generally and of the Barima district in particular that we have met with. It is interesting to observe how entirely the sentiment of Americans doing business in the colony and especially those engaged in mining in the disputed territory, is in favor of the award being made in favor of Great Britain in this boundary matter, and the reasons given therefor are conclusive, while the slender claim that Venezuela can put forward from point of occupation is made most clear when the writer says: "In all my travels up to the Schomburgk boundary line, I never found a Venezuelan settlement, laborer, canoe, trader or miner."

Increase in Export of American Manufactures.

The Bureau of Statistics have issued their report for eleven months of the fiscal year, which conclusively shows that the total value exported will largely exceed any previous record. For the eleven months alone, the excess over the corresponding period of the preceding year amounts to nearly \$40,000,000, and in the eleven months a most encouraging feature for many of the readers of the *Journal* is the fact that nearly \$3,000,000 of the increase was in machinery, and nearly \$1,000,000 in builders' hardware.

The most satisfactory feature, perhaps, is that the percentage of manufactures is steadily rising in proportion to our total exports, thereby showing that we are not so dependent as formerly on the amount of cotton, breadstuffs, etc., exported to preserve the balance of trade. In 1880 the percentage was 12.48%; in 1890, 17.87%; 1891, 19.37%; 1892, 15.61%; 1893, 19.02%; 1894, 21.14%; 1895, 23.14%.

If, however, we take the month of May alone, the percentage of manufactured exports to the total export amounted to 35 per cent., and we may safely count upon the percentage in the whole fiscal year exceeding 25 per cent. of the total.

One great aid to trading with foreign countries, especially on this hemisphere from Mexico to Cape Horn, would be the adoption of the metric system, as all our customers in these countries are accustomed to that system of measurement, weight and computation of value. Much business from South America goes to Germany and France in preference to the United States and England (although in many cases the goods themselves of the two latter countries may be preferred) solely on this account.

Steel Production in the United States and Great Britain.

The following table presents an interesting comparison between the two leading steel-making nations, showing the total production of Bessemer and open-hearth steel in each for ten years ending with 1895, in long tons.

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The production of crucible and other special steels is not included; it is very small as compared with the totals:

Year.	United States.					Great Britain.				
	Bessemer.		Open Hearth.		Total Tons.	Bessemer.		Open Hearth.		Total Tons.
	Tons.	p.c.	Tons.	p.c.		Tons.	p.c.	Tons.	p.c.	
1886.....	2,969,190	91.2	218,973	8.8	2,488,163	1,570,520	69.3	691,150	30.7	2,264,670
1887.....	2,936,083	90.1	307,069	9.9	3,258,102	2,089,408	68.0	981,104	32.0	3,470,507
1888.....	2,511,161	88.9	314,318	11.1	2,825,479	2,032,794	61.1	1,292,742	38.9	3,325,536
1889.....	2,430,204	88.7	374,513	11.3	3,304,747	2,110,791	59.9	1,429,169	40.1	3,569,960
1890.....	3,688,871	87.8	513,232	12.2	4,202,103	2,014,843	56.3	1,564,200	37.7	3,579,043
1891.....	3,247,417	84.9	579,753	15.1	3,827,170	1,642,005	52.0	1,514,538	38.0	3,156,543
1892.....	4,168,435	86.2	669,889	13.8	4,838,324	1,509,810	51.4	1,418,830	48.6	2,919,640
1893.....	3,215,686	81.3	737,991	18.7	3,953,676	1,493,354	50.6	1,456,909	49.4	2,949,663
1894.....	3,571,313	82.0	784,936	18.0	4,356,249	1,535,381	49.4	1,575,318	50.6	3,110,702
1895.....	4,909,128	81.2	1,137,182	18.8	6,046,310	1,535,225	47.1	1,724,737	52.9	3,259,962

This table shows that while the fluctuations in our own production have been much greater and more abrupt than in the British output, the tendency has been generally to an increase. The quantity of steel made in the United States in 1895 shows an increase over that for 1886 of 3,558,147 tons, or 143%; while the gain in Great Britain during the 10 years was 995,292 tons, or 44.4%. In 1886 the total steel production of the United States was to that of Great Britain as 100:91; while in 1895 the proportion was as 100:54.

The growth of the open-hearth process has been much greater proportionately in Great Britain than here. While our proportion of open-hearth ingots to the total increased in 10 years only from 8.8 to 18.8%, the British figures show an advance from 30.7 to 52.9%, more than half the steel being now made by the open-hearth process.

The basic process has made much more progress in Great Britain than in this country. In 1895 the returns show that of the Bessemer steel ingots 1,093,675 long tons, or 71.2%, were made by the acid process while 441,548 tons, or 28.8%, were made by the basic process. In 1894 the proportions were 74.2% acid and 25.8% basic ingots. In the making of open-hearth steel the basic process has made less advance; in 1895 there were 1,564,868 tons, or 90.7% of the total of open-hearth ingots, made by the acid process, while only 159,869 tons, or 9.3%, were basic ingots.

Our own statistics do not distinguish between the steel made by the two processes. There is no basic Bessemer steel made here, however, and until very recent years the basic open-hearth process made very little headway, its use being confined to a single plant. As its advantages become more apparent the process is growing in favor, and we find that out of the new open-hearth plants built or begun in 1895, which included 62 furnaces with a total capacity of 690,450 tons yearly, 34 furnaces were intended to make basic steel. The transformation is thus evidently going on with increasing rapidity, and its progress will be hastened by present trade conditions, the tendency of which is to induce the mills turning out finished steel in its various forms to make their own ingots instead of depending upon billets bought from the steel makers. The present prospect is that the present and the coming year will see a considerable increase in the number of open-hearth—and especially basic open-hearth—plants.

The slow progress made by the basic process has been due partly to some doubt which has existed as to the quality and reliability of the product, which has been gradually removed as it was tested and came into use; but in greater degree to the fact that we possessed in the Lake Superior region an apparently inexhaustible supply of ores adapted to the Bessemer process. More recently some of the Southern furnaces have shown that they can furnish basic pig in abundance and at a low price, and this fact will have a great effect in the future, especially in furthering the manufacture of steel in the South.

The Texas and Other American Sulphur Deposits.

The advance in the price of brimstone has directed attention to sulphur deposits in many parts of the United States as well as to some in the West Indies. It is therefore timely to notice those that occur in Texas, and concerning which we have reliable information in a report by Dr. Eugene A. Smith, State Geologist of Alabama, a competent and reliable authority. Dr. Smith thinks that the Texas sulphur is contained in a series of lake deposits of Permian or Triassic age. He says: "The sulphur is closely connected with a loose, exceedingly fine-grained material which has been looked upon by some of the geologists who are familiar with this part of the State as the sediment from lakes of moderately recent date. There seems also to be no doubt that this surface material, which is found everywhere in the drainage ways, has partly been drifted in by the agency of the winds. I do not find the sulphur impregnating any of the older strata, though in some places the sulphur-impregnated earth lies directly upon some limestones which may probably be referred to the Permian or Triassic. I will say, however, that in the vicinity of these sulphur deposits the rocks have been so strongly corroded by the action of sulphuric acid that it is very difficult to arrive at any great degree of

certainly as to the stratigraphic relations of these beds. In any event, the sulphur does not appear to be of general occurrence, *i. e.*, it does not appear to impregnate uniformly any particular stratum, but we find it more or less concentrated about certain centers, and it appears to be absent or very sparing in the intervals. The sulphur which has thus far been discovered is always associated with bare spots from which the surface soil has been blown off by the winds or washed off by the floods which often result from the heavy rainfalls which occur several times during the year.

"In three localities covered by the claims examined, these outcroppings of sulphur are distributed over areas of different extent. If the whole area between the outer limits of the actual outcrops should prove to be underlain by the sulphur (as it has been proven to underlie a part of the area where it makes no surface show), then there will be a quantity of sulphur available, amply sufficient for the operations for many years."

Dr. Smith estimates that the sulphur ore will run on an average 50% of sulphur and some of it very much higher than this, and that there are some 30,000 tons actually proven, "in sight," and a very much larger amount in addition to this he thinks exists in the basins. In confirmation of the theory that the deposit is of lake origin, he says that Mr. K. M. Cunningham, of Mobile has found under the microscope many shells of fresh-water diatoms in the sulphur-impregnated earth.

These deposits have also been examined by Mr. John E. Rothwell, mining engineer of Denver, Colo., also a careful and competent expert. He tested the property by boring and shafts and proved a still larger quantity of sulphur "in sight" than did Dr. Smith, so that there can be little doubt as to this being a valuable deposit. These beds have easy access to tidewater and the Mississippi River, and consequently have low freights to many of the most important markets for this material. Their exploitation, therefore, offers the foundation of a prosperous industry.

The Utah deposits, of which there are a number, are known to contain very considerable amounts of sulphur, but have the disadvantage of being at a great distance from market with high railroad freights. The same is true of the Lower California deposits. The Louisiana deposit has recently produced a few thousand tons of very fine quality of sulphur, and many bore holes have demonstrated that the quantity there is enormous.

In the West India Islands, notably in Saba and Santa Lucia, and in some islands near the South American coast, are also deposits of sulphur which have been examined and reported on a number of times. Though they are close to the ocean they have not yet been worked. It is possible that if prices should increase these deposits may come forward as new sources of supply.

On the whole, should the Sicilian combination advance prices to an unreasonable degree, it will find several competitors in this market.

NEW PUBLICATIONS.

BLUE BOOK OF AMERICAN SHIPPING. Published by the *Marine Review*, Cleveland, O. Pages, 325. Price, \$5.

A very useful and interesting compendium of information on marine and cognate subjects has been issued under the above title, but in reality the name of the Directory does not do justice to the information contained, and it is arranged in such a way that no time need be lost in searching for what is wanted. It embraces: Who owns fleets of coast vessels? Who owns fleets of lake vessels? What are the principal passenger steamer lines of the United States and who are the purchasing agents? What are names of ship and engine builders, and dry dock proprietors of United States? The Lake Carriers' Association—controlling 700,000 tons of lake vessel property, names and addresses. Ship Masters' Association—600 members, names and addresses. American Association of Masters and Pilots—800 names and addresses. Marine Engineers' Beneficial Association—names and addresses of 1,750 coast and 1,400 lake marine engineers. Society of Naval Architects and Marine Engineers, comprising the ship and engine builders and designers of the United States, 640 names and addresses. American Society of Naval Engineers—400 names and addresses of constructors and engineers of the U. S. Navy. Classified Marine Business Directory of the United States—names and addresses of over 1,000 concerns furnishing supplies to or engaged in navigation and its allied interests. Directory of different ports of the United States, giving name and business of concerns located there.

ANNUAL REPORT OF THE MINISTER OF MINES FOR THE YEAR ENDING 31ST DECEMBER, 1895, being an account of mining operations for gold, coal, etc., in the Province of British Columbia, Victoria, B. C. Pages, 727, with maps.

In consequence of the large amount of public attention now and for some time past attracted by the undoubted merit of the mineral resources of the Province of British Columbia, this annual report of the Minister of Mines is of unusual interest. It is replete with facts, and much of the information is given in useful statistical form. To take the first table as an example, covering the gold-mining statistics, we find the returns given by districts, such as Cariboo, East and West Kootenays, these again divided into divisions and subdivided into localities, namely Bar, Gulch, Creek or River. The number of companies working is given, divided into prospecting, and taking out gold, average number of men employed during season, white, Chinese and Japanese, with respective rate of wages, the nature of the claims and how worked, description of machinery, value of gold per ounce, total product by divisions and total by districts, being the sum of the detailed returns from each locality, which are stated fully.

The above will give some idea of the thoroughness with which the work is carried out.

The second table shows the actually known and estimated yield of gold and silver, the number of miners employed, and their average earnings per man per year from 1858 to 1895. From this table we see the increase in product in 1895 over 1894 and preceding years, which product, including lead in the ore from Kootenay, reached the respectable total of \$3,811,545 in value in 1895.

Every district is dealt with in detail, the full reports of the provincial agents of the department of mines being set forth *in extenso*, furnishing an amount of information most useful to anyone contemplating an investigation into proposed investments in the province. To judge from these reports a good field for prospecting seems to have been opened up in Vancouver Island, called the Alberni District, from a large number of samples having been received at the Government Assay Office, and taking the whole of the assays for the purpose of this report the return is \$12.50 in gold per ton of 2,000 lbs.

The information on the subject of the coal industry is very full and clear, accompanied by a table showing the output of each year from 1874 to 1895 inclusive. From it is seen that the output for 1895 was 939,651 tons against 1,012,953 tons in 1894, this falling off being due to the very low prices which have ruled, being the lowest known to the trade. This low price also accounts partly for the increase in the home consumption, which amounted to 188,349 tons, as against 165,766 tons in 1894. A new outlet for the coal is being found in coking and the capacity now or shortly in operation will be 140 tons of coke a day. The description of the various collieries with their equipment and plant is interesting and exact in detail.

The table of accidents is full of information, giving dates, nature and cause of each accident, the summary of which is: A total of 56 accidents, 46 of them being reported slight or serious, and 10 as fatal, and of the 46 casualties, 4 were with coal, 13 with rock, 12 by explosion of gas, 3 by shots, 9 by the cars in the mine, 2 by ropes on incline, 2 by falling off trestle, and 1 being caught by cage. Of the 10 fatal accidents, 1 was caused by fall of coal, 5 by rock, 2 by shots and 2 by cars in mine.

The maps relate to some of the mining districts referred to in the detailed reports, and are of assistance in making them clear.

In next year's report it is to be hoped that copper and lead will be included in the returns, and that silver production will be set forth in a separate table in detail as the gold is dealt with in this.

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.

Annual Report of the City Engineer of Providence, R. I., for the year 1895. Providence, R. I.; City Printers. Pages, 100; illustrated.

Annual Report of the Department of Mines and Agriculture, New South Wales, for the year 1895. Sidney, N. S. W.; Government Printer. Pages, 191; with diagram and illustration.

General Report on the Mining Industry of Queensland, for the year 1895. By P. F. Sellheim, Under-Secretary for Mines. Brisbane, Queensland; Government Printer. Pamphlet, pages, 40.

Statistisches Jahrbuch für das Deutsche Reich (Statistical Annual of the German Empire). 17th year, 1896. Edited by the Imperial Statistical Department, Berlin; Puttkammer & Mühlbrecht, publishers.

Nitro-Explosives; A Practical Treatise Concerning the Properties, Manufacture and Analysis of Nitrated Substances, Including the Fulminates, Smokeless Powders and Celluloid. By P. Gerald Santord, London, England; Crosby, Lockwood & Son. Pages, 270; illustrated. Price (in New York), \$3.

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.

Quantitative Determination of Dilute Solution KCy in Sea Water.

Sir: Will you kindly give me through the medium of your valuable journal, a method of testing quantitatively a dilute solution of KCy in sea water.

SAN DIEGO, Cal., June 25th, 1895.

MARK LAMB.

Sir: In reply to the inquiry *re* cyanide in sea water, I would remark that any reply must depend upon what quantity might be considered to be a dilute solution of KCy.

In an ordinary case, I should employ the direct titration by decinormal solution of nitrate of silver, each cc. consumed corresponds to 0.0052 gm. cyanogen (=0.01302 gm. KCy.) See "Volumetric Analysis" by Sutton, 1890, page 173.

But if the quantity of cyanide be so small that a concentration might be advisable, distillation of a known volume of the sea water might be resorted to after addition of (a) tartaric acid, or (b) of zinc and sulphuric acid. In either case the cyanogen comes over as HCN, and is received in a solution of silver nitrate where it forms cyanide of silver, which may be collected, dried and weighed, or otherwise determined.

12 OLD SLIP, NEW YORK, July 3d, 1896.

J. L. WILLS.

The Mercur District.

Sir: I have just visited the mines and all the mills in the vicinity of Mercur, Utah, and found them very interesting. I have not the time now to describe them fully, but suffice to say the famous Mercur lodes are bedded veins, following sheets of porphyry (now represented by kaolin) between beds of limestone and shales—carboniferous age—dipping into the south end of the Oquirrh range (a synclinal) from W. S. &

E. The lodes are soft decomposed porphyry, slates, limestone, preserving the original bedding, lamification and even fossils, mixed up in the richer chutes with boulders and fragments of the original rock. The ore contains native sulphur, realgar and orpiment, especially in the lower workings. No free gold has ever been seen. The ores carry, in the chutes, from \$3 to \$9 per ton in gold; it is claimed that in the Golden Gate \$30 ore is abundant, but on account of the large amount of realgar and orpiment present it must be roasted before it can be cyanided. They are experimenting on this now. The deposits are sometimes very thick, 30 to 60 and even 100 ft. thick, soft clayey ore. It is crushed through ordinary rock breakers, so as to break up the hard rock (limestone, quartzose, rock, etc.) to inch size (only in the Sunshine and the Mercur mills are rolls used at all, and leached with weak cyanide, 0.1 to 0.3% strength). The crushing of the hard barren rock assists the mechanical percolation of the cyanide by keeping the material open and porous. If crushed finer, it is claimed, the ore cannot be leached at all; 60 to 85% extraction is claimed, and of course at some of the mills they claim to extract more. Everybody claims that the ores form a vast nearly flat bed, resulting from sedimentary deposition, but a very brief inspection of the lodes shows that they are the result of a hydrothermal and solfataric metamorphism along the eruptive planes. There are at least two beds, and the ore crosses from one stratification to another in places. No clear evidence of faulting was observed in my two days' visit.

SALMON CITY, Idaho.

W. GEO. WARING.

Treatment of Sulphurets by the Electric Current.

Sir: You will find in your issue of September 21st, 1895, under the title "Action of Electric Current on Fused Sulphurets," a communication from "R. W. P.," dated from Deer Park, Md. The title given is misleading, as the subject treated is the action of the current on sulphuret ores at a red heat. Fusion would, apparently, interfere with the action, and I infer that the treatment requires an open condition of the charge not readily secured with concentrates—that is, the charge should consist mainly of ore in small lumps.

I think your large personal experience in the roasting and subsequent treatment of sulphides will enable you to quickly appreciate the valuable features which this process appears to possess. I must say that I have been surprised that, if as stated "this discovery has been applied on a commercial scale to the desulphurization of gold ores," the results have not been given to American miners, and also that the communication in question should have apparently excited no comment nor inquiry, except from your humble servant.

If sulphuret ores can, by simple application of a red heat and a gentle electric current, be within a few hours roasted dead, and also left in proper condition for complete treatment by amalgamation or chemicals, the question would seem to resolve itself into the practicability of so carrying on the operation on a commercial scale as to get the cost of the labor involved in charging and drawing retorts down to a sufficiently low figure, the impression conveyed by R. W. P.'s statements being that the first cost and durability of the apparatus and cost of fuel would in most localities offer no serious difficulties.

Cannot R. W. P. be induced to publish in the *Journal* a complete paper on this important subject?

W. F. MATTES.

OURAY, Colo., June 25th, 1896.

Sir: In response to your inquiry of June 27th for further particulars of the practical working of Dr. Henry Eames' process for the extraction of sulphur from pyrites and sulphuret gold ores, I have to say that but little has been done in a commercial way, as will appear in the subjoined account.

About 1888 Dr. Eames discovered that the passage of an electric current through pyrites heated to redness in a closed vessel not only effected the separation of the sulphur, but left the resulting roast in perfect condition for pulverization and amalgamation of the gold contained. After long experimenting on a laboratory scale in Baltimore, a large plant was erected in North Carolina, which closely followed in form the original apparatus. It consisted of a circular mass of brickwork containing a large firebox for burning wood, the flames of which passed up into a chamber in which were set six vertical pots or retorts, holding each about one ton of broken rock. The bottoms of the retorts swung downward, and were pierced with a number of 1-in. holes for the exit of the sulphur, and in turn this perforated bottom was connected and luted to an iron receiver running on wheels to facilitate handling. A thick soapstone cap fitted the mouth of each of the retorts which were flush with the iron platform constituting the top of the crucible oven: through the caps passed two cast-iron rods one foot apart and reaching within a few inches of the bottom, forming terminals connected with the two poles of a dynamo, and properly insulated. As soon as the furnace was sufficiently heated a charge of ore broken to about 1½ in. was introduced and carefully packed round the terminals, the top luted on, the poles connected with the dynamo, the contents brought to a red heat and was allowed to remain there for about eight hours. It was found that until the fumes of sulphur began to appear at the test hole no current passed, but then a circuit was immediately formed and continued till all the sulphur was expelled, when the circuit was broken and the distillation completed. Upon opening the receiver about 90% of the sulphur was deposited in the form of a mass of nearly pure brimstone.

From the outset the company operating this process seemed doomed to disaster; they were advised to erect the plant near Indian Trail Station, N. C., in order to take advantage of the large quantities of sulphureted and base gold ores said to be obtainable in the neighborhood, but which proved to be an illusion. Then, great difficulty was encountered in obtaining such large crucibles capable of withstanding the expansion of the heated ore, and in this they never really succeeded. The furnace was erected, fired before the segments of which the crucibles were constructed were set, and at the first heat all burst, so discouraging the owners, who had expended close to \$100,000, that they threw the plant up in disgust. Their engineer, however, finding two of the crucibles in fair condition, patched them up, and for a year ran them successfully, grinding the roasted ore in a Huntington mill, and selling the brimstone for sealing fruit jars, etc., at a good price. At this point I was asked to look into the matter, and succeeded in putting

through two charges in the now much dilapidated crucibles, one of which burst early in the heat, the other when nearly completed. I obtained considerable brimstone, but not the theoretical quantity, owing, I believe, to the cracks in the crucible. There appears to be no doubt as to the action of the electric current in accelerating the distillation, and I think, with a properly constructed furnace, two charges could readily be run in 24 hours, but I should recommend retorts of not more than 12 cu. ft. capacity. As my trial was made rather to demonstrate the claim that the roasted ore amalgamated freely than to save the sulphur, I did not take the pains I might otherwise have done to repair the furnace and crucibles, and I believe the owners have done no further work. One of the gold ores I experimented with contained 25% of iron, principally magnetite, but the roast was nearly perfect and the gold quite free. So far as I could ascertain, the cost of roasting sulphureted ores did not exceed \$2 per ton, and with cheap fuel on sufficiently large scale might be considerably reduced.

R. W. P.

Central America Exposition.

Sir: In conformity with the wishes of my Government I take pleasure in advising you that, under its supervision, there will be opened in Guatemala City on March 15th, 1897, an exposition to be known as the Central American Exposition, and which will be continued until July 15th, 1897.

All United States manufacturers and merchants are cordially invited to exhibit their products, manufactures, objects of art, industries machinery, etc., etc. Space for exhibiting purposes may be obtained by addressing the "Central Committee of the Exposition, Guatemala City, Guatemala," application to be made before August 31st, 1896.

All exhibits to be marked "Exposition Centro-Americana, Guatemala." No duties will be levied on goods intended for exhibition; the com-

Any information desired will be cheerfully given upon application to the office of this Consulate General, 4 Stone street.
JOAQUIN YELA, Consul-General of Guatemala.

BRITISH MINES IN 1895.

The preliminary summary of the returns of statistics relating to mines and quarries as compiled by the British Inspectors of Mines, has just been issued. This statement shows that during the year 1895 the total number of persons employed in and about all the mines of the United Kingdom was 733,657, of whom 700,284 worked at the 3,512 mines under the Coal Mines Act, and 33,373 at the 724 mines under the Metalliferous Mines Act. Compared with 1894 there is a decrease of 4,956 persons at mines under the Coal Mines Act, and a decrease of 484 persons at mines under the Metalliferous Mines Act.

Of the 700,284 persons working at mines under the Coal Mines Act, 564,638, or about 80%, were employed below ground. Of the 135,646 surface workers 4,837, or about 3½%, were females.

At the mines under the Metalliferous Mines Act, 19,660 persons, or about 60%, worked below ground, and of the 13,713 surface workers 799, or nearly 6%, were females. At quarries there were 104,625 persons employed, of whom 53,915 worked inside the actual pits or excavations, and 50,710 outside.

The returns received from some of the quarries state that the persons were employed "a few days during the year" or "occasionally." In making up the totals for the tables these persons have been disregarded, because the error due to their omission is less than the error which would arise if they were included as having worked for the whole year.

The total output of minerals at mines under the Coal Mines Act was 201,735,351 tons, of which 189,652,562 were coal, 2,314,983 fireclay, 7,231,835 ironstone, 2,246,865 oil shale and 292,106 sundry minerals.

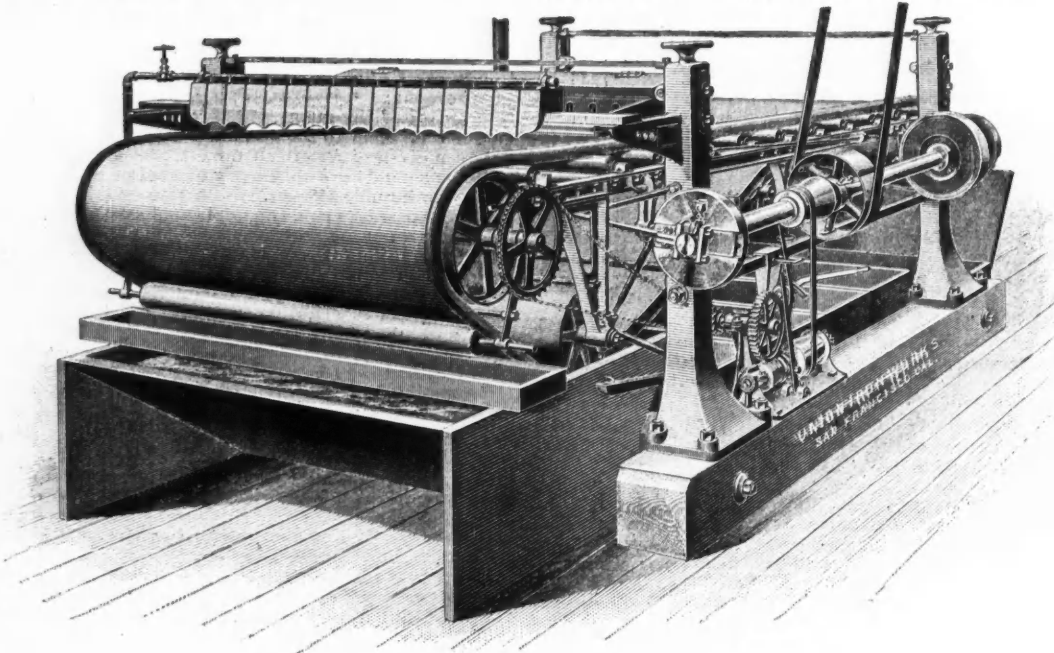


FIG. 1.—UNION CONCENTRATOR WITH SULPHURET DISCHARGE.

mittee attending to their dispatch at the customs houses of Guatemala, and giving receipt for same, holding itself liable for those goods which arrive in good condition, but not for such as may suffer damage or impairment during the Exposition.

All goods exhibited remain the property of exhibitors, but can only be retaken at the close of the Exposition; those thereat manufactured may be sold or given away without being liable to the payment of duty.

The Exposition is intended to embrace the following branches: Science and literature, education and teaching, fine arts, mechanics and constructions, agriculture, horticulture, arboriculture and special cultivations, fauna and flora, ornamental industries and all kinds of industries, natural products, transportation, mining and immigration.

Exhibits pronounced meritorious by the committee and qualified as worthy of premium shall be awarded the following; Six premiums each of \$5,000; six premiums each of \$1,000; 10 premiums each of \$500; 20 premiums each of \$200, 50 premiums each of \$100.

In addition to the above, gold, silver and bronze medal diplomas will be awarded as first-class premiums; also honorable mentions will be made of same.

Exhibits awarded premium may be sold in Guatemala without liability to customs duties; those not awarded premium will be considered as goods in transit, and must be reshipped, or if sold, pay such duties as apply to such merchandise.

Goods exhibited at the Exposition, and which are not known to the agricultural or industrial trade of Guatemala or little known, and which are of great utility to such trade, may, at the close of the Exposition, be imported into Guatemala within the year following the closing of said Exposition free of duty for the first shipment provided the duty on such importation do not exceed \$5,000 nor be less than \$100, the committee in charge reserving the right, in each and every case, to pass on the eligibility of such goods to free entry.

The various railroad and foreign transportation companies in Guatemala will make great reductions in freight charges as well as passenger rates to those attending the Exposition.

Adding 8,800 tons from open quarries, the total output of coal was 189,661,362 tons, which exceeds by 1,383,837 tons the highest output hitherto recorded, viz., that of 1894. According to returns which have been received for the first time under the Quarries Act, the total quantity of stone and other minerals obtained from quarries in 1895 was 29,813,734 tons.

At the mines under the Coal Mines Act, there were 868 separate fatal accidents, causing 1,042 deaths. Compared with 1894 there is an increase of 55 in the number of accidents and a decrease of 85 in the number of deaths. At the mines under the Metalliferous Mines Act, there were 46 fatal accidents, which caused 54 deaths. Compared with 1894, there is an increase of seven in the number of accidents and eight in the number of deaths. At the quarries under the Quarries Act, there were 102 fatal accidents and the same number of deaths. As the Act did not come into operation until 1895, there are no figures available for comparison with 1894.

The Triphase Electric Railway at Lugano, Switzerland.—The first application of the three-phase system for traction purpose has recently been realized at Lugano, Switzerland. The generating station is situated near Maroggis, at a distance of 12 km. from Lugano. It utilizes the hydraulic power of the Arogno torrent. A three-phase generator of 150 H. P. is driven from a 300 H. P. turbine, thus allowing of the installation of a second turbine. The frequency is 80, and the working pressure 5,000 volts. The exciter is direct-coupled to the alternator spindle. At Lugano the pressure is transformed down to 400 volts. The cars carry a double trolley, and the rails are utilized as one conductor. The use of the three-phase system, it is claimed, offers the following advantages: The transmission of power from a distant source of power, the elimination of commutators on the motors, the speed of the cars remains constant, irrespective of load or gradient. At Lugano the maximum speed is 15 km. per hour. A hand regulator allows intermediate speeds to be obtained. The absence of any electrolytic action is also a great advantage. The chief disadvantage of the system is the use of two overhead conductors and a double trolley.

UNION ORE CONCENTRATOR.

No process connected with the reduction and treatment of ores commands more attention than that of concentration. The accompanying illustration shows a Union ore concentrator, set up in complete running order, with sulphuret discharge, Fig. 1. The type of machine here shown is so well and generally known that a lengthy description is not necessary.

The machine consists of an inclined shaking frame or table, suspended by hangers or links from the four iron posts or columns shown. A side shake or lateral motion is imparted to the frame by means of steel connecting rods, attached to adjustable cranks, keyed to main driving shaft (see Fig. 2). Upon the shaking frame is mounted or stretched an endless rubber belt, with raised or flanged edges, forming the bed or plane upon which the dressing of the ore is effected.

This belt or bed is caused to travel continuously up hill by rotating the head roll or drum, the power for which is transmitted by means of a link-chain belt and sprocket wheels, driven from the worm and gear shown. The travel of the belt is under full control, and can be regulated to any speed required.

The operation of the machine is as follows: the pulp or crushed ore from the battery is conveyed to the distributor located on top of the shaking frame above the belt. This distributor spreads the pulp evenly over the surface of the bed or belt, which is moving continuously up hill or toward the head of the machine. The side shake or lateral motion given the bed causes the sulphurets and valuable metallic portions of the ore to settle and lie upon the surface of the belt, and, as they pass up hill or toward the head of the machine, they come under the water box, delivering clear water in fine streams upon the belt; and, as the pulp passes through these streams, the worthless or lighter portion of the ore is "winnowed" out or washed from the valuable portions, and passes down the belt into the tailing sluice.

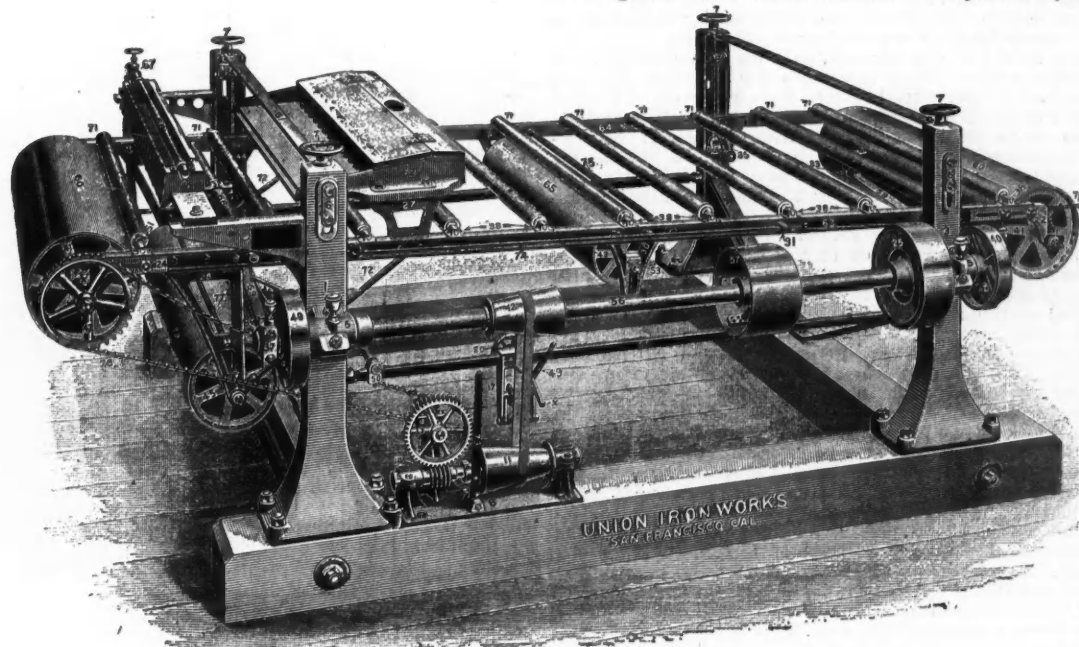


FIG. 2.—UNION CONCENTRATOR (BELT REMOVED).

The valuable portions of the ore, which still adhere to the belt, pass on over the head roll until they come in contact with the small wooden automatic discharge roller shown. Here the moisture, still clinging to the belt, forms a water cushion, which causes the concentrates to leave the belt and deposit themselves in the small box resting upon the water tank, into which the belt is depressed for the purpose of washing off any fine sulphurets that may have escaped the automatic discharge. When the small box is filled with sulphurets it is removed and another substituted, thus making the process of concentration continuous and automatic.

Fuller's Earth in the Isle of Man.—A valuable bed of fuller's earth has been laid open in Glen Wyllin, says the *Isle of Man Times*. Boring operations have been performed to test the extent of the stratum, with the result that a seam 150 ft. long and 25 ft. deep of rich earth presents itself. The whole of the undertaking is in charge of J. R. Cowell, of Ramsey, Isle of Man. Forty years ago it is stated the peculiar nature of this earth was observed, and it is believed that some years ago a few carloads were sent to Peel, a seaport town of the Isle of Man, for shipment.

German Iron Production.—The output of the German blast furnaces for the month of May is reported by *Stahl und Eisen* at 559,991 metric tons, showing an increase of no less than 70,362 tons over May, 1895. For the five months ending May 31st, 1896, the total output of pig iron was 2,658,742 tons, showing a gain of 293,270 tons over the corresponding period last year. Should the present activity be maintained, as seems probable, the German production for 1896 will be over 6,000,000 tons of pig iron, which will be the largest output ever reported and will show a close approach to that of Great Britain.

QUARTZ AND PLACER DEPOSITS IN BRITISH GUIANA.

Written for the Engineering and Mining Journal by Charles E. Clarke.

Public interest in the varying complications of the Venezuela boundary question naturally excites the query whether the material wealth of this until lately neglected disputed territory is worth fighting for. Having lately returned from a second journey to British Guiana the practical information obtained will be at least of passing value. A glance at a modern map which is based on the outlines of the so-called Schomburgk boundary shows a country about 470 miles long and of varying width up to say 240 miles. Let the reader now, for convenience sake, start at the Venezuelan line on latitude 4°, go directly east to the great Essequibo River and then follow its course due north to the Atlantic Ocean. That is the territory Venezuela claims. It contains (except in a small portion at the Southern end) all the auriferous wealth on the Eastern slope—and there is not much left of British Guiana. Take the present boundary line, and it includes one of the strangest jumbles of heterogenous formations ever tramped over by prospector.

I am convinced that there was originally a great mountain chain running fairly north and south through which extended a mother lode of vast auriferous wealth. West of that chain there was a large fresh water lake system. Subsequently there was a depression submerging the mountain chain, and into which the lakes were emptied and lost. Then a vast and irregular volcanic upheaval partially uplifting the old range, tossing it into countless spurs at varying angles; here grinding the auriferous quartz to powder, and there breaking it into little pieces and scattering the whole in placers over the present surface. This upheaval was loftier in the central and southern than in the northern district, where the highest elevations are not in any place over 300 ft. above sea level. There is but one remaining evidence of the original mountain range of British Guiana, in Mt. Roraima on the central western boundary, 8,600 ft. high and about six miles across. It is pierced by huge diorite dykes,

the top is flat, like the Buttes, in our southwest, and the mountain must have originally been from 10,000 to 12,000 ft. high.

Let us look further at the physical and climatic conditions in British Guiana before considering its auriferous deposits, as the profits in working the latter vitally depend on the character of the former. Being neither a learned geologist nor a professional expert in mineral, but instead, a business examiner, employed on occasion, to investigate, among other things, mining property with reference either to advancing fresh money, foreclosing, or charging investment to profit and loss, I have found by rugged experience that well nigh a hundred adverse conditions, unperceived by the original owner, or purchasing company, may one or another enter into and make a theoretically valuable mine or placer, commercially worthless. The same business necessity of looking at all sides of a proposition leads to freer reliance on former practical experience, and what has actually been found, rather than theoretically what ought to be found. So we will see whether it would pay to mine gold in British Guiana. Glancing again at the map the reader will be struck with the wonderful number of great rivers, running both north and south, east and west, each with so many affluents that the country seems a network of waterways. So it is, but at present there are but few ways of utilizing water carriage, owing to innumerable falls and rapids, which have to be portaged and render travel and transportation of supplies tedious and expensive. This is capable, however, of remedy, or radical improvement. Starting at the coast, a mud flat is formed by the silt of the swift flowing rivers. This extends 20 to 40 miles into the interior, where it is backed by low ridges of quartz sand, which have been gradually washed down from the ranges, which lie away in the rear. Entering the Waini River on the Northern boundary the steamer, which has come by sea from Georgetown, the capital, proceeds a short distance up to a natural canal running into the Barima River, a cleared navigable stream, and thence up to Mt. Everard. Thence up by steam launch and canoe to Arakaka, 70 miles. Strange to say, the Colonial surveyors have never taken elevations, but I judge it to be about

150 ft. only above the sea. Back of Arakaka, on the Barima, and across the Barima River, toward the Cuiuni, lies the only developed quartz district, in the Colony. In fact there is but one mill as yet in operation, the 20-stamp outfit of the "Barima Mining Company" (a strictly Colonial enterprise) installed by its Superintendent, an American engineer, A. A. Watson, who under adverse circumstances has done an exceptionally splendid piece of work. The characteristics of the country are innumerable small hills, densely wooded and traversed by small, sluggish creeks. I don't think the crown of the highest hill is over 350 ft. above sea level, and the average is much less. Not only are most of the creek courses placer beds, but the surface of the sides, and even of tops of the hills is auriferous. A New York company on the Barima vein owns one of the highest hills in the district, and on its crown, as an experiment, I took gravel and earth that showed colors in every pan. One side of the same hill I found packed to the top with small broken free-milling quartz. I had this repeatedly sampled and tested, and the average ran over \$8 per ton. While of minor importance, these illustrations show the diffused auriferous conditions in this country. The hillsides and portions of flat lands are frequently covered with small round balls and flat pieces of iron peroxide. In the centre of the balls is sometimes found a tiny mass of free gold, bright and sparkling. Mr. Long, the Colonial official at Arakaka, has an interesting collection of them. The general trend of the gold-bearing veins in this district is northeast and southwest, which vary in width from a few inches to six feet. The overlying country rock is schistose, always more or less decayed and crumbling, and thus difficult of classification. This gradually changes at depth, and the country rock becomes diorite, which likewise obtrudes in many places in great dykes. The character of the hanging and foot walls vary widely; sometimes diorite and slate, sometimes only a foot-wall slate, with clay in lieu of a hanging wall. Sometimes near the surface an uprising in clay of a rich rose quartz, semi-decomposed, running from 1 to 20 oz. per ton.

It is only at the Barima Mine that any practical workings have been made, and their deepest shaft was but 196 ft., crossing two veins. At another angle, and in the valley, a tunnel was run which struck an excellent vein. It seemed to me that further operations would find the veins meeting at a lower level. On the veins opened ore has been taken running all the way from 2 to 5 oz. per ton, with occasional bonanza in the streak running very high. At present depth the ore shows no signs of turning refractory. It will thus be seen that we have no present knowledge of the permanence of the gold-bearing veins of the district beyond the present limit of operations of the Barima Company. I examined their workings carefully, after having traversed the district for miles both ways and traced the course of the placers with reference to their original sources of supply, and am satisfied that from the Barima to the Cuiuni, where identically similar evidences as to placers and external evidence at least as to a continuous vein of mineral are found, there exists an area of country which will rank in the future with the richest gold-producing sections in the world. As one nears the Cuiuni, the hills rise in height to ranges varying from 1,200 to 3,000 ft. high. Continuing south-ly and across the Mazzaruni, Potaro and Rupununi down to the boundary, I have only the evidence of placer prospectors, those restless sons of Ishmael, who invariably told me that the country looks just as it does in the hill country of the Cuiuni. No attempts have been made to prospect for mineral except near the Minnehaha placers in the Potaro District (which lies about in the center of the colony), owned by Mr. G. Garnett, a prominent shipping merchant in Demarara, and one or two working associates, who have paid Government tax on over 60,000 oz. of gold from those placers since 1890. Mr. Garnett told me as I was leaving Demarara that some miners whom he had sent up to tunnel for quartz on a promising location, had just sent down samples of rich free-milling ore. To me the evidences are substantial that the entire stretch of hill country for 400 miles is a gold mine. Rich float quartz is found all over the upper Rupununi. All interests await the settlement of the boundary question. It is so tedious and expensive to convey even a placer outfit and supplies for laborers to the interior except on and near the Barima River that should the territory by any possibility be adjudicated to Venezuela, developments would mainly cease; the customs duties alone being well nigh prohibitory; the duty on flour, for instance, being \$5 in gold per barrel of 196 lbs. Now beyond raising a few yams, all the necessities of life have to be brought from Georgetown on the sea coast. There are neither public nor private roads or paths; supplies, tools, etc., have to be carried in from the river side either on the heads or strung on poles resting on the shoulders of negroes. There is not a beast of burden outside of the sugar plantations near the coast, nor is there any suitable herbage found to feed them if there were, yet by planting alfalfa, at elevations above overflow, there are countless areas of excellent alfalfa land which would support pack animals, as well as cattle, sheep and pigs for fresh meat. As it is, one has to live on canned goods and salt meats. The laborers live chiefly on salt fish, rice and sugar. With Venezuelan duties on all these, nothing short of a bonanza "Callao" mine would pay to work. It may be of passing interest to note that in all my travels up to the Schomborgk boundary line I never found a Venezuelan settlement, laborer, canoe, trader or miner. The country was originally explored by young colonists, fond of adventure, whose attention was first directed to cutting rare woods and gathering balsams and medicinal herbs and roots in profitable foreign demand. They had made a few permanent settlements here and there, carrying with them law, order and protection of property, when placer gold was discovered, and the population rapidly increased.

As between 1884 and 1894 there were 632,000 oz. of placer gold produced which paid Government tax, besides an enormous amount which evaded the tax, it will be interesting to note the method of production. The pay gravel is, in the majority of cases, found in the valley beds of small creeks, and lies from 4 to 30 ft. below the surface. Pits, about 25 x 40 ft., are dug to the pay streak. The shovel men use a small, narrow spade with a long handle and quickly pile up the dirt so that a "bench" becomes necessary for a second row of shovel men to pitch the dirt still higher. In a 12-ft. stripping a third shovelling is frequently required. Now this earth, except on the final excavation, is necessarily piled up on the adjoining space of the "claim," which is usually 1,500 x 3 ft. deep. Consequently when the pay gravel in the pit is exhausted original contents have got to be shovelled back into it in order to clear

the adjoining space for similar operations. As the gold in the pay streak is as eccentric in its points of deposit here as everywhere else in the world a pit frequently pays nothing at all. The supply of water in these creeks in the working seasons being limited, clay largely mixed with the pay gravel and the same water being generally used in turn along the line of the claims, it is impossible to catch the fine gold while the clay steals much of the coarser. My observations from casual pannings of tailings, taken here and there, was that between the thick water, clay and the pyritic covering, scale and rust, it was a lucky foreman who saved one-third of the gold in a pay streak. Regarding the difficulty of cheaply and quickly cleaning pyritic and rusty gold, a method used by C. Helman, in Virginia, of receiving the gravel in bulk, in a large wooden revolving cylinder, where the gold was cleaned by mere attrition, and subsequently separated from the gravel, silt, etc., and saved on the sluice-plates, could be very profitably applied in British Guiana. From a careful observation of the country and its underflow, I think it would pay better to get a clear water supply from a little group of driven wells than use the present "eoupy" liquid. The depth would be slight, the tubes can be driven by hand, and fuel for a small sectional boiler, engine and pump can be had for the cost of cutting. This would also enable continuous work in the dry season. A slight knowledge of steam and its powers would thus lead the placer owners to undertake what I consider to be the now vital necessity, viz., automatic excavation and dumping. As the alluvial of one-half, at least, of British Guiana is auriferous, and the rich shallow deposits are now worked out, such necessity is evident. Hydraulicing is generally out of the question, owing to the lack of fall and dump. Drift-mining—now unknown—could be advantageously used in places where there is a stiff clay overlay, posts and lagging costing only the hewing. But the vast majority of existing pay streaks over 8 ft. in depth (and which, by the way, are generally the richest) must be either stripped or left untouched. I asked various owners of such properties now lying idle why they did not put on a reciprocal overhead wire tram, with scraper buckets, which would both strip and dump. They invariably replied that the dense mass of roots in the ground near the surface could only be cut by hand. I found, on experiment, that these were generally soft and spongy, and told them that a revolving cutter, attached to a beam and working ahead of a turning share could be devised and operated as a separate attachment to the pulling cable. This was regarded as equally impossible. Yet it is only a question of time when automatic methods of working placers in British Guiana will be in general use. Small owners will lease on royalty to operators of portable plants and become prosperous where they are now poor and idle. Climate and health vary according to locality. In the Northwest, as there is natural drainage, both are fairly good. In central and southern districts, where the eccentric configuration of the various mountain ranges frequently impound the waters of the rainy season and create swamps, the country fever afflicts all alike. Manual labor is wholly performed by negroes, whose average cost is \$1 per day, including their food. The cost of supplies and transportation is at present very heavy. It is no place for a white prospector of slender purse. The people are all peaceable. Law is administered impartially. The Government has a most admirable system of police stations and hospitals in every mining district, where there are also large trading stores. The Colonial officials are uniformly courteous, obliging and hospitable to newcomers of other nationalities, and the disposition to welcome all strangers who come for useful purposes is universal. Should the present Schomborgk boundary be settled upon, the colony will at once proceed to build high-roads, clear the rivers, build portages around the rapids and falls of the same, and construct drainage canals. English capital already stands waiting to build two new lines of railways, and thus with quicker and cheaper transportation, reduced cost of living and natural influx of outside capital and skilled labor, British Guiana would soon demonstrate to the outside world the vast auriferous wealth within her boundaries.

Transporting Calcium Carbide.—The *Electrotechnische Blätter* is authoritative for the statement that the Swiss Federal Council has decided that calcium carbide will only be received for transportation on railways when packed in hermetically-sealed iron cases. No other substances are to be packed with the carbide.

Electric Power Plant.—Mariposa County, California, is, it is said, to have the third largest electric power developing and distributing plant in the United States. It is to be constructed at the Horseshoe Bend, on the Merced River. The location is near the center of a mining district having at least 100 mines that are sufficiently prospected to use cheap power. At the driest season of the year the power company calculates upon 1,800 H. P. and during eight months in the year they expect water enough to generate 3,500 H. P. The price the company proposes to charge its consumers is said to be \$5 per horse power a month.

The Zone System in Hungary.—The zone system of fixing fares on the Hungarian railways seems to have proved far from a complete success. It is true that the number of passengers carried increased from 9,056,000 in 1888 to 28,623,700 in 1892, but although the length of line open was also 10 per cent. greater, the receipts in the same period have only increased 40 per cent. As a matter of fact, passengers have dodged the tariffs in every way. Thus, they could be picked up at certain stopping-places which were not regular stations, and the distance between such stopping-places and the next station was not counted in fixing the tariff. Hence, when such a stopping-place was near a station, many passengers who, under ordinary conditions, would have boarded the train at the latter, walked on to the stopping place, and thus got carried free for some distance. This has now been altered, and the zone tariff for local traffic extends from one station to the next or next but one, regardless of distance. Other troubles arose in connection with the long-distance zone, as passengers were permitted to break their journeys at intermediate stations, with the result that the ticket was often transferred to another individual, with consequent loss to the line. To stop this, passengers are now totally prohibited from breaking their journeys, and the tickets themselves are available only for 24 hours.—*Public Opinion*.

THE BROKEN HILL SILVER MINES IN AUSTRALIA.

The silver production of New South Wales comes entirely from the Broken Hill Mines on the Barrier Range—a very remarkable group of mining operations. A recent article in the Melbourne *Argus* gives a very interesting account of this, from which some of the following statements are taken, the figures being supplemented and corrected by the companies. The Broken Hill deposit of silver-lead ores is worked by nine companies, the Broken Hill Proprietary, the Broken Hill Block Ten, the Broken Hill Block Fourteen, the British Broken Hill, the Broken Hill South, the North Broken Hill, the Central Mine, the Broken Hill Junction and the Broken Hill Junction North. Of these the Broken Hill Proprietary is by far the largest and most important, the extent of its property and the amount of its output being greater than that of all the other companies put together. The property worked by this company occupies the central portion of the range and its production for the last fiscal year covered by its report, that ending May 31st, 1895, included 13,010,776 oz. of silver, 5,652 oz. of gold, 43,894 tons of lead and 2,435 tons of copper. The lead and the silver are the principal productions, the gold and copper being obtained as by-products in refining.

The Broken Hill Proprietary Company was originally a consolidation of several smaller properties, and the present corporation has been in existence somewhat over ten years. During that time, up to May 31st, 1895, it has paid its stockholders £3,248,000 in dividends on an original capital stock of £960,000, and the total output of its mines has reached 71,616,192 oz. of silver and 379,277 tons of lead, obtained from 2,444,584 tons of ore extracted. The mine was originally worked in the ordinary way by shafts, of which ten were open in various portions of the property. In 1891, however, shortly after the collapse of one of the principal shafts at the northern end of the mine, it was decided to continue the exploitation by open cuts, or quarries, from the surface. The present condition of the open-cut workings may be briefly described as follows, an idea of their size being given by the statement that some 570,000 tons of ore have been obtained from them. The most northern of the open-cut workings is known as Wilson's quarry, which has now reached a depth of about 80 ft., and is to be carried for some distance further. At the south end of this quarry the lode is small, being only 20 ft. in width, but at the north boundary, where it joins the property known as Block 14, it widens out to about 80 ft. The ore from this quarry is hauled to the surface by a hoist which has been sunk to the 100-ft. level. Between Wilson's quarry and a smaller one, situated north of what is known as the Darling shaft, a pillar of ground a hundred feet in width has been left. The second quarry is now idle, the ore being apparently worked out. A smaller pillar, about 20 ft., separates this quarry from the Darling shaft and beyond that shaft again is the main open cut, which has now been extended for nearly one-third of the company's ownership on the lode. The present width of the main quarry is 350 ft. at the surface, and it has been carried down at present to a depth of 150 ft., at which level the lode varies from 80 to 100 ft. in width. It is intended to carry the cutting down 50 ft. further and on this extension the work is to be done by trenching out lengths of 50 ft. at a time and filling in with waste rock when the ore has been taken out. Some stoping has already been done to this increased depth. The ore which is at present found consists of lead and iron ores, which are sent to the smelters, with some low-grade silicious ore, which is treated by leaching.

One of the principal methods of removing the waste material from this and from all the open cuts is by driving tunnels on the floor level, these tunnels being temporarily timbered with heavy logs. Large trucks are then run into the tunnel and over them a few of the logs are removed and the loose material picked down into the trucks. This method of working has been found very cheap and a large quantity of ore has been taken out in this way. The tunnels are worked in for only a short distance at a time. Beyond the main open cut is another and smaller one known as Wigg's quarry. No work has been done here during 1895, as a further extension of the cut would have weakened two adjoining shafts which it was desired to preserve; for the present boring shows that the ore body here stands about 40 ft. below the present bottom of the quarry and on the eastern side a large body of good silicious and iron ore is exposed.

Beyond this again and separated from it by only a short interval is another large open cut, second in size only to the main cut. It includes two of the old shafts and is now 100 ft. deep, which will be the working level probably for some time to come, although the intention is hereafter to extend it to a depth of 200 ft. The ore body exposed is wide and strong, and from this cut in 1895 the principles of fluxing ore for the smelters was obtained. The northern extremity of this cut is known as Harry's quarry, and in this part of the working a fire occurred in June, 1895, and stopped operations, which have not yet been resumed, as the fire is still smoldering in the lower works. The ore body at this end of the property is as yet only partially explored. As far as work has been carried it is still tending downward. This ore is of a high silver value, the best quality carrying about 100 ounces of silver to the ton; the lead contents, however, are low. Some time will be required before operations can be renewed, as it is estimated that there is still a quantity of timber in the workings to be burned out before the fire is completely extinguished. The most active work carried on during 1895 was in the northern section of the mine, originally known as Block 13. The ore obtained from this block is rich in lead and is of the best quality of smelting ore. Some time ago it was believed that the supply of this carbonate ore was almost exhausted, and that the company would be obliged to fall back upon the sulphide ores found in other sections of the mines. Somewhat unexpectedly, however, the ore body widened out, and the supply has proved very much larger than was expected, thus postponing the time when the sulphide deposits would furnish the chief value. How far the new supply extends is still uncertain.

Several large bodies of the sulphide ores have been exposed in this northern portion of the property. Most of them are of good quality, and one, which has been opened up to some extent, contains a sufficient portion of carbonates to permit the ore to go to the smelters in its crude state, without concentration or other treatment. It is a fact, however, that the ore bodies in the northern portion of the property, though of very great value, are somewhat irregular, and more prospecting work has been required here than in any other portion of the mine. What is known as the eastern vein in this block is separated from the main lode by a

horse of barren rock, varying in width from 80 to 100 ft. The sulphide lode on the eastern vein is from 10 to 12 ft. wide, and has been explored for a distance of about 100 ft. only, the quality being good as far as shown.

In the central portion of the mine in the section known as Block 12, the largest reserves of carbonate ore in sight are found and work has been prosecuted very steadily. Some large bodies of sulphide ores have been opened up, but not much taken out. The sulphide ore here carries a considerable percentage of zinc as well as the lead.

In the southern portion of Block 11, there still remains a large block of fluxing ore which is gradually being taken out. There is also a considerable body of sulphide ore, which has more recently furnished the chief supply of that ore, and stoping is now being carried on extensively. This ore contains on an average 16 oz. of silver to the ton and 25% of lead and zinc.

Up to a comparatively recent date the company relied almost entirely upon its carbonate ores. The difficulty of treatment of the sulphide ores was fully recognized, and the plan preferred was to work out the carbonates as far as possible, trusting to time and investigation for the discovery of a satisfactory method of treating the others. A number of experiments have been made at various times, but for the most part without very great success. Some years ago a leaching process was tried on a reduced scale, but the results obtained showed a loss of about 50% of the silver and 25% of the lead. Another chemical process suggested gave much better results on a small scale, but its cost was too high to warrant the erection of anything more than an experimental plant. The Proprietary Company during 1895 commenced the work of extending its concentration plant, the intention being to concentrate the sulphide ores and ship them to other points. Several of the other Broken Hill Companies, including the Block 14 and the South mine, are also concentrating the ores.

During 1895 two companies were organized for the purpose of treating the low-grade sulphides, both claiming to be the possessors of patents covering methods which are claimed to be already successful. The Australian Smelting Company, which is owned by a London syndicate and is managed by Mr. John Howell, who was formerly superintendent of the Broken Hill Proprietary Company's mine, is building extensive smelting works at Illawarra. The plan is designed on similar lines to the Siemens & Halske process, which has been successfully used in Belgium. The other company is the Sulphide Corporation, Ashcroft process, which has been organized in London, and owns the patents covering the process referred to. This corporation has purchased the Central mine from the company which formerly operated it, for the purpose of securing a steady supply of ore for its furnaces.

At present the finest smelting plant in Australia is that owned by the Broken Hill Proprietary Company. This company owns two groups of smelters immediately adjoining the mine workings, one group including nine lead blast furnaces and the other six blast furnaces and a small furnace used for special products. The blast furnaces are nearly all of the same size and have a capacity of 50 tons of ore per day each. In addition to this the company owns a plant of five blast furnaces situated at Port Pirie and connected with the mines by rail. At the same place there are also extensive refining works owned by the company and having a capacity of from 800 to 1,000 tons of base bullion per week. The bullion and matte obtained in the furnaces is now all taken to the Port Pirie refinery for treatment. Formerly bullion was shipped to Europe to be refined, but under the custom prevailing in the trade the company lost under this arrangement the value of the gold, which has reached as much as 5,000 oz. in a year. The latest addition is a plant for parting the doré bars into gold and silver.

Besides the smelting furnaces, the company has at the mine a plant capable of treating about 200 tons a day by leaching process: the ores treated in this plant are the low grade ores containing very little lead. The process in use here consists of first crushing and then roasting the ore in revolving cylinder furnaces with a small addition of salt, the roasted ore is then treated in vats holding about 50 tons each with a solution of hyposulphite of sodium and the silver dissolved out is finally precipitated. The poorer grade ores have been treated here at a fair profit.

The other companies of the Broken Hill group generally ship their ore to outside smelters, with the exception of the Block 14 Company which owns smelting works at Port Adelaide, in which are treated not only the ores from its own mines, but those taken out by several of the other companies.

The year 1895 was a prosperous one for the most of these companies. The discovery of the additional carbonate ore bodies in the Proprietary mine enabled that corporation to keep up its output without hurrying too much on the question of treatment of the sulphides. The other companies all did fairly well also, and four of them were added to the list of dividend-paying mines during the year. The shipments of ore away from the range for treatment amounted to 191,015 tons, of which the Proprietary Company furnished 102,718 tons. While the new supplies of ore will enable the district to keep up its production with present methods for several years longer, its ultimate prosperity depends entirely on the new processes devised for the treatment of the sulphides. These latter ores are known to exist in sufficient quantities to furnish employment to the miners for a number of years.

Iron Production in Belgium.—The output of the Belgian blast furnaces in May was 83,080 metric tons, an increase of 2,945 tons over May, 1895. For the five months ending May 31st the total production was 351,600 tons of pig iron, showing a decrease of 33,950 tons as compared with the corresponding period of last year.

Geological Survey of Egypt.—The Egyptian Government has determined to commence a geological survey. The work will be begun this year, and will take about three years for its completion. The estimated cost is \$125,000. Capt. H. G. Lyons, R. E., who is at present engaged under the Public Works Department of the Egyptian Government in superintending the excavation of the ruined temples of Philæ, will have charge of the survey.

THE GIESLER ELECTRO-MECHANICAL WATER-WHEEL GOVERNOR.

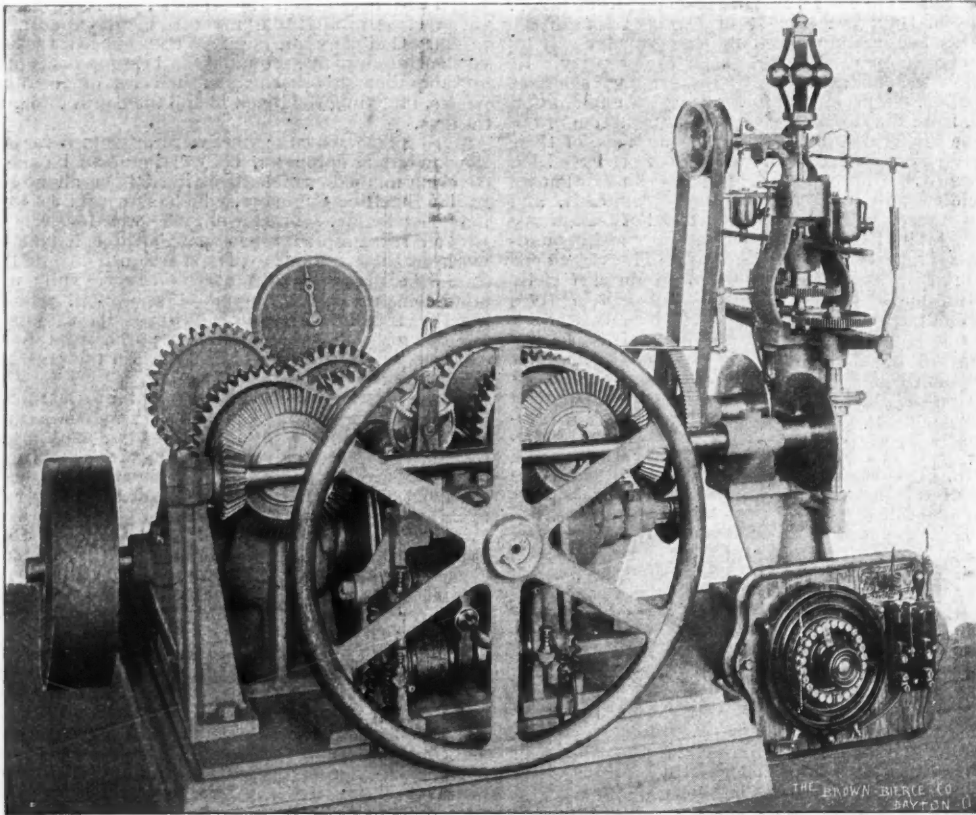
The Stilwell-Bierce & Smith-Vaile Company, of Dayton, has taken the lead in developing the horizontal type of turbines and adapting the same to the requirements of the electrical generators. They have realized for a long time that no governing device for water-wheels brought out up to this time was at all adequate to take care of the sudden and material changes in load and maintain a uniform speed. Formerly a variation of speed of 5 to 10% was permissible in ordinary mills. Now a variation of not exceeding 1% is desired. During earlier experiments, efforts were directed to making a governor entirely electrical—that is, one which should use the change in the electrical current as a medium for governing the water-wheel employed in generating that current; but the results were unsatisfactory. The ordinary governors used up to this time were useless for close regulation. Very fair results were obtained by the use of a hydraulic piston, but there were objections to this form in actual practice and they were expensive to build and maintain as well. After experimenting in every direction, they finally settled to the conviction that the form adopted, and as shown in the accompanying cut was decidedly the most desirable in every way. With this machine, the slightest variation in speed is instantly multiplied to any desired extent, and enables them to open or close the water-wheel gate long before the ordinary balls, as used in other governors would

eligible site. The dam and power-house were built by W. A. Chapman & Co., of Providence, R. I. The electrical machinery was furnished by the General Electric Company of New York and the turbines, feeders, power connections and electro-mechanical governors, together with all the plans for the entire development were furnished by the Stilwell-Bierce & Smith-Vaile Company.

IRRIGATION IN UTAH.

The development of the new State of Utah by irrigation is on the same lines as the activity in mining, we can scarcely call it revival, as even in the worst and blackest days since the fall in the prices of silver and lead, most of the well-established mines kept on the even tenor of their ways and a fair amount of prospecting was always going on.

So with irrigation, and additional acreage has constantly year by year been added by this means to the valuable farming lands of that region. Some interesting official figures as to results obtained are given in a recent issue of *The Utahian* having special reference to the work being carried out by the Mount Nebo Land and Irrigation Company, the officers of which corporation are: Gill S. Peyton, president; E. G. Rognon is the secretary and treasurer; O. R. Young, chief engineer and William Hammond Hall, of San Francisco, consulting engineer; E. R. Crooks is another of those interested in the project.



ELECTRO-MECHANICAL WATER WHEEL GOVERNOR.

show any sign of moving. The governor can be arranged so as to fully open or close the water-wheel gate in from three to fifteen seconds according to the requirements of the situation. The engineers of this company have been experimenting along this line for two years, sparing neither time nor expense, and their efforts have resulted in perfecting the Giesler electro-mechanical-governor, which has proved itself to be of such excellence as to entitle it to the same pre-eminence among water-wheel governors that the "Victor" turbine enjoys among water wheels—a pre-eminence resting upon the sure foundation of demonstrated results. The requirements of a water-wheel governor are severe and are fully met with in this governor, and the Stilwell-Bierce & Smith-Vaile Company manufacture and sell them under a guarantee that they will perform all they are recommended to do. The makers are enabled to use very small balls in this governor because the balls are relieved of doing any work whatever; such, for instance, as lifting a valve against pressure, lifting a pawl or moving a slide, etc. The balls and their attachments are all balanced to the finest degree possible, and their movements magnified to such an extent that the slightest variation of centrifugal action will at once manifest itself by directly opening or closing the water-wheel gate as required. This is a subject in which nearly all users of water power are interested, and further information concerning this valuable invention may be had by parties interested upon application to the manufacturers, whose address is given at the beginning of this article.

An interesting example of a plant where this governor is used is shown in the two engravings herewith, which illustrate the power plant recently installed for the Pelzer Manufacturing Company at Pelzer, S. C. One engraving shows the dam and power-house; the other is an interior view showing five pairs of 39-in. horizontal Victor turbines in position, each pair of which is coupled direct to a 1,000 H.-P. generator and regulated by a Giesler electro-mechanical governor. The power thus generated is transmitted electrically to the cotton mills of the corporation about $3\frac{1}{2}$ miles distant. This plant puts 5,000 H.-P. into a very narrow space and the arrangement permits the location of the factories at an

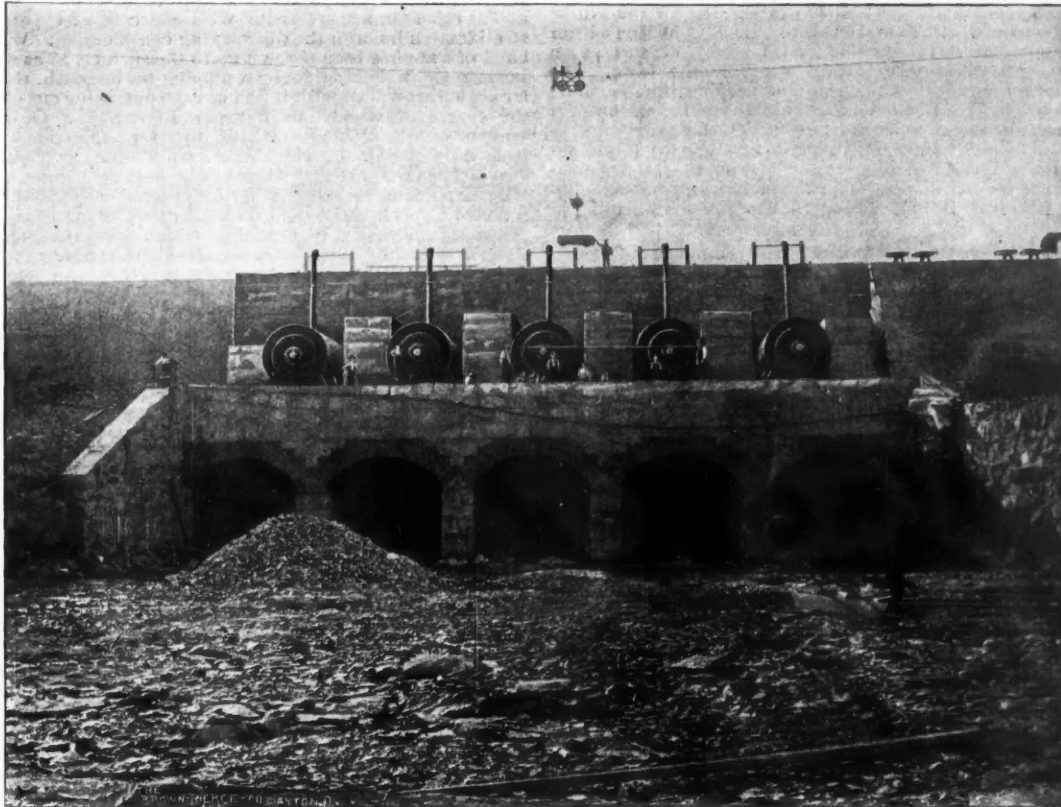
According to the national department of agriculture, in Utah by aid of irrigation 60 to 70 bu. of wheat to the acre is an ordinary yield. The *American Agriculturist* prize of \$500, for the largest yield of wheat to the acre in the United States, was awarded to William Gibby, whose farm is a short distance south of Salt Lake City, for his crop of 84 bu. and 10 lbs. to the acre.

W. D. Major, near Bountiful, in Davis County, has raised 90 bu. of barley to the acre; and, in a single season, he cut three crops of alfalfa from his meadow, amounting to seven tons to the acre. He sold it in the Salt Lake Market at \$14 a ton, making \$98 an acre in cash for one summer's hay crop. Four crops of alfalfa are frequently cut in a season, and from seven to ten tons is a common yield. Utah does not claim to be a corn country, because many other crops are so much more profitable; but Thomas Farrar, near Green River Station, has raised 112 bu. to the acre, and 50 to 70 bu. is a common shell-out. Richard Carlisle, of Mill Creek, six miles south of Salt Lake City, with irrigation from an artesian well, raised 947 bu. of potatoes to the acre, and sold them at 80c. a bushel, realizing in cash \$767.60 an acre for one year's crop. Mr. Culmer, at Pleasant Grove, 30 miles south of Salt Lake City, cleared \$1,200 an acre, and A. L. Buckland, of Bountiful, north of this city, \$1,500 an acre, on strawberries, in a single season. Near Provo, in Utah County, 39 tons of sugar-beets to the acre have been produced, that brought \$5 a ton at the great Lehi beet-sugar factory; or \$195 an acre for a single crop. And near Bountiful, in Davis County, early tomatoes have yielded 2,250 bu. to the acre, that sold at \$2 a bushel—a grand total of \$4,500 an acre for one year's product!

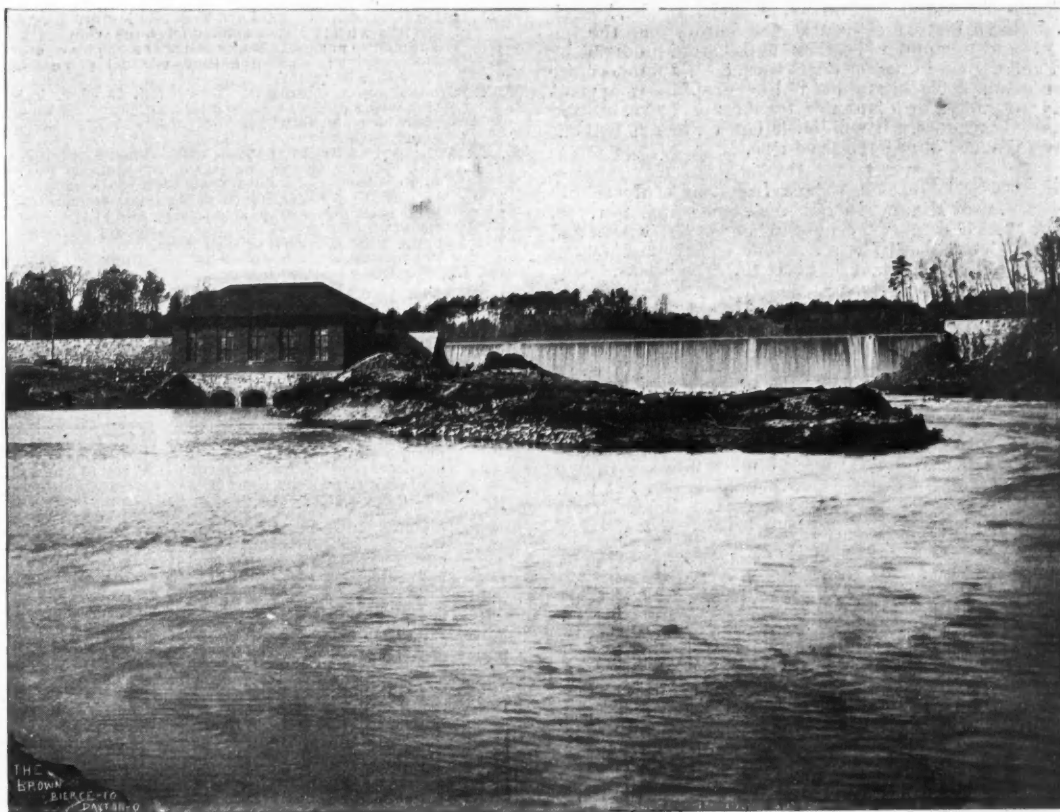
The *Utahian* points out that this system of canals is one of the most perfect in the West and that the 25,000 acres which will be rendered available for cultivation are of first-class quality. The Mount Nebo reservoir is in Juab County, Utah. The valley in which it is situated lies between the Wasatch mountains on the east and a lower range on the west. Current Creek, which traverses the entire valley from north to south, rises on the east side of Mount Nebo, and has a watershed of over 200 square miles. Just where the stream cuts through the mountains which form

the line between Juab and Utah Counties is an ideal reservoir site. Here the Mount Nebo Company has a massive dam of stone and earth, 210 ft. long at the top, and 130 at the bottom, and 30 ft. high. It is 110 ft. wide at the base, tapering to 8 ft. at the top. Every part of its construction was under the supervision of eminent engineers and builders. With little care or expense, it will last for ages. The reservoir thus formed is five miles long, and from a half to three-quarters of a mile wide, and covers

canal follows the canyon over two miles, requiring a high degree of engineering skill to overcome the rugged natural obstacles. For most of the distance the water is conveyed in a flume and pipe-line. The fluming is of an entirely new and patented form. It is semi-circular, like the half of a great pipe, 6 ft. across the top and 3 ft. in depth. It is made of redwood staves, bound with heavy steel bands, and is supported on high trestles, which wind in and out among rocky cliffs and chasms, where it



HORIZONTAL VICTOR TURBINES, PELZER, S. C.



DAM AND POWER HOUSE, PELZER, S. C.

1,850 acres to an average depth of about 12 ft. It has a storage capacity of 838,000,000 cu. ft. By raising the dam 5 ft. higher, the reservoir will cover 2,400 acres, with a storage capacity of 1,300,000,000 cu. ft.

The tunnel for conveying the water from the reservoir is cut through solid rock around the end of the dam, removing the risk of passing the water through the dam itself. The tunnel is 140 ft. long and 6 ft. high, by from 4 to 5 ft. wide. The gates and gateshafts embrace all the latest improvements, and are massive in strength and easily controlled. The

would seem impossible that any human structure could carry water. There is over a mile of this model flume. For crossing the canyon there is a wonderful pipe-line in the form of an inverted siphon. It is of wooden staves, banded with steel, and is 4 ft. in diameter, having the full capacity of the canal. It is 1,967 ft. long, and is the first pipe of this kind that has ever been used, on so extensive a scale.

Besides this elaborate flume and pipe-line, the system includes about 20 miles of main canal, and as many miles of laterals.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

LEASE OF COAL MINES.—A lease of coal lands required payments quarterly of royalties on tonnage mined, the lessee being bound to pay on a certain minimum tonnage, whether actually mined or not. At the time of the lease two mines already had railroad connections, and the lessor covenanted within six months after demand to extend the road to a new mine which was to be opened, also to make certain other extensions within periods ranging from a year to 18 months; and for any default as to such extensions the lessee was authorized to terminate the lease. The court held that as the minimum royalties were to become due, in part, before performance by the lessor of its covenants to make extensions, such covenants were to be regarded as independent of the covenants to pay royalties, and the lessor's failure to extend was no defense to an action for the minimum royalties which become due prior to the termination of the lease by the lessee.—*Central Appalachian Company vs. Buchanan* (73 Federal Reporter, 10061), United States Circuit Court of Appeals.

LIABILITY IS BASED ON KNOWLEDGE AND LACK OF ORDINARY CARE.—Before the owner or operator of a coal mine can be held liable for the death of one of his employees engaged in mining coal, caused by the falling of loose rock or earth from the roof of the mine, it must be shown that the owner or operator had previous knowledge of the defective condition of the roof, or by the exercise of ordinary care and caution, he could have discovered the defective condition. The owner or operator is only held to the exercise of ordinary care in the employment of competent and skillful operators and superintendents, and in the construction and repair of the mine, so as to make it reasonably safe for the protection of those employed therein. And, it is not evidence of negligence, or that he had knowledge of the defective condition of a roof, when he makes repairs immediately after an accident has occurred.—*Cherokee & Pittsburg Coal and Mining Company vs. Britton* (45 Pacific Reporter, 101), Court of Appeals of Kansas.

DUTY OF MINE OPERATOR CANNOT BE ESCAPED BY DELEGATION.—No duty devolving upon the owner or operator of a coal mine, or other work of a dangerous character, can be delegated to an agent or employee, so as to relieve the owner or proprietor of his personal responsibility. No duty required of him for the safety and protection of his employees can be transferred to another, so as to exempt him from his liabilities. He may, and often must, delegate the performance of such duties to subordinates; but he assumes the responsibility to all his servants for the acts of those subordinates in that particular capacity, to the same extent as if those acts were literally his own. And a duty enjoined, either at common law or by statute, which is omitted, and by reason thereof injury occurs to some of the employees in the service of the delinquent party, it is the direct negligence of the person owing the duty, and not of his employees.—*Cherokee & Pittsburg Coal and Mining Company vs. Britton* (45 Pacific Reporter, 100), Court of Appeals of Kansas.

A Substitute for Bort.—According to *Nature*, M. Moissan, the French chemist, is reported to have discovered a substance harder than the diamond, in the form of a compound of carbon and boron, produced by heating boric acid and carbon in an electric furnace at a temperature of 5,000° C. This compound is black, and not unlike graphite in appearance, and it is likely to supersede diamonds for boring rocks, cutting glass and other industrial purposes. It will even cut diamonds without difficulty, and can be produced of any required size.

Utilization of Shale from Coal Washing.—The refuse from coal washing at the Libuschin Colliery, near Kladno, in Bohemia, consisting as it does of bituminous shale, is turned to good account when mixed with a due proportion of clay for producing bricks by a machine constructed for the express purpose by Herr L. Schmelzer, of Magdeburg. The bricks, burnt in a continuous kiln, are, states the *Deutsche Bauzeitung*, hard throughout their whole structure, and show small blue spots that have the appearance of being melted, and which are due to particles resembling blackband, traversing the whole brick through and through, and which impart the resistance to compression and weather-resisting qualities, as is proved by tests carried out by the Prague Boiler Association. In fact, the tests showed that the undermost bricks were not pulverized when built up into a column 372 m. (1,220 ft.) high, but only the cross-piece between the longitudinal holes broke, these bricks being now made of Austrian size, 28 cm. × 14 cm. × 7 cm. (11 in. × 5 in. × 2 in.), with two longitudinal holes of rectangular section, 4 cm. × 5 cm. (1½ in. × 2 in.). The bricks, which weigh 2.4 kg. (5 lb.) each are good non-conductors of heat and sound, and come cheaper than ordinary bricks.—*The Colliery Guardian*.

Coal and its Competitors.—Some of our chief authorities on power appear to be of opinion that liquid fuel is likely to displace coal in the near future over a large area. The residue of the distillation of petroleum or shale oil, known by the name of mazouth and astatkis, is successfully used on more than 72 locomotives on the Volga Railway. In England there has recently been constructed a torpedo boat of about 86 tons displacement. She has a double bottom divided up into eight water-tight compartments, which are used as tanks or bunkers for the oil, and which holds from 15 tons to 16 tons. As these compartments are emptied of the liquid fuel they are filled with water, so that the draught and stability of the boat remains always the same. This boat's engines are ordinary triple-expansion. The boiler is of the ordinary locomotive type, with the special fittings necessary for liquid-fuel burning. It is fitted with 31 oil jets, which are fed by a Worthington pump, which draws the fuel from the double bottom and delivers it into a cylindrical tank, where it is put under air pressure. It has been claimed that the results of all trials up to the present time have been to show that there are only two ways of burning liquid fuel, viz., either by means of atomizers for large powers or gasifiers for small powers. Of course, in England, where coal is cheap, and oil or petroleum so relatively dear, we could hardly expect the latter to make such headway as in Russia or the Balkan States.—*Iron and Coal Trades Review*.

Oilstone.—The large oilstone, a meter long, shown at the Chicago Exhibition and sold for \$5, was extracted from the quarries of MM. Jaques et Cie. at Vielsalm, Belgium, which are visited with great interest by geologists of all nations, as they contain the only deposit of this stone (coticular shale) known to exist in the whole world. The entire canton of Vielsalm is traversed from east to west by the *veine*, or seams; varying in width from 2 m. to 18 m. and upward, of this valuable rock; which is sometimes found in six distinct layers separated by clay slate, and at others in a single seam with scarcely any parting, not only the stratification but also the dip varying considerably. While the overlying band of slate has been thrown up to the surface, so as to form with the horizon an angle of 50 degrees, dipping to the south, the seams of coticular shale thrown up with it do not crop out, being cut off by a fault, along the course of which now flows the River Salm. Of the six layers, that known as the "old rock" is by far the most valuable; but it is only 2 cm. (¾ in.) thick, while the "ordinary" layers may attain three times that thickness; and between these two qualities are what are known as "fine" and "extra fine." Examination by the microscope of a specimen of "old rock" or "fine" stone shows that it is composed of minute garnet particles, which give the cutting effect. The stone is mined by adits from the hill side that follow the seam to the rise, widening out into large working places where the stratification is contorted. The adits are 1 m. wide and 2 m. high; but no timbering is required, as the rock is very solid. Moreover, there is no need for artificial ventilation, because, however far into the mountain the adits may be driven, there is always a sufficient supply of fresh air, which is supposed to make its way in from the surface through fissures. The rock, got by blasting, is put out in slabs, which are afterward cut to the required dimensions by saws without teeth, either hand or mechanically worked, supplied with sand and water. Besides the oil-stones finished at the factory by 30 to 40 hands, cutting and polishing the pieces at home constitutes the main support of 80 families in the neighborhood of the mines.—*The Colliery Guardian*.

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 JUNE 30TH, 1896.

- 562,844. **HOIST AND DUMP FOR GRAIN OR COAL.** Peter Muller, Table Rock, Neb. A frame of movable cross bars, rods pivotally connected therewith, having bent ends to connect detachably with the wheels of wagon, a system of pulleys and ropes carried over and under the pulleys.
- 562,882. **AMALGAMATING APPARATUS.** John A. Bentley, Denver, Colo. Combination of a cylindrical tank having detachable ends, the inner surface of the tank being amalgamated, compression-heads, rods connecting the heads, skeleton cage attached to the tank and provided with trunnions, a suitable supporting framework in which the trunnions are journaled, and means attached to one of the trunnions for imparting a rotary movement to the tank.
- 563,000. **MINING MACHINE.** Bernhard Yoch, Belleville, Ill. A single pair of supporting wheels, a shoe connected to the front part of the machine and adapted to normally bear against the machine support while the body of the machine is oscillated in a vertical plane and suitable means for oscillating the body.
- 562,921. **GOLD WASHING MACHINE.** Edward J. Cowley, Boise, Idaho. Combination with a cylinder, tangential feed pipe and amalgamated plates, a removable cover to which amalgamated plates are connected and a discharge pipe.
- 563,046. **APPARATUS FOR SEPARATING AND SAVING GOLD.** Joseph Mait, Oakland, Cal. The apparatus consists of an inclined table having depressions made transversely at intervals between the upper and lower end with an upwardly projecting lip at the lower edge, mechanism by which the table is oscillated from side to side, and at the same time given a vertical bumping movement, and stationary spoons rearwardly extending above the depressions and dipping into them, and having rearwardly extending lips to agitate the material before it flows into the depressions.
- 563,087. **COAL OR ROCK DRILLING MACHINE.** Jessie N. Southwick and Alexander Walker, What Cheer, Ia. Said Southwick assignor to said Walker. Said Walker assignor of two-thirds to William Thompson and Thomas Thompson, same place. Combination with a frame, sectional boxing consisting of two hinged sections provided with trunnions seated in bearings in the frame, said boxing being provided with an internal annular groove, sectional feed nut, consisting of two hinged sections provided with a collar, fitting in the groove, a threaded drill-rod carried by the feed nut, a wheel feathered on the drill-rod, and means for rotating the wheel.
- 563,101. **ORE SAMPLER.** Thomas A. Topham, Aspen, Colo. The machine consists of a wheel mounted to rotate and having located between its axis and periphery a chute which passes diagonally through the wheel and which has its outer end in line with the periphery of the wheel, and its inner end nearest to the axis thereof, and a spout juxtaposed to inner end of the chute and having its discharge end below the axis of the wheel.
- 563,119. **AMALGAMATOR.** Francis B. Austin, Tempe, Ariz. Combination with an inclined sluice having an opening; a pan arranged in the sluice and having a horizontal bottom, spikes arising from the bottom of the pan, a coverplate for the pan, the same being rested on and insulated from the pan and curved upwardly and forwardly and having its front and rear edges raised above the pan, spikes secured to the under side of the plate and projecting downwardly toward the first spikes, and means for electrically charging the pan and plate.
- 563,143, 563,144. **PROCESS OF EXTRACTING COPPER FROM ORES.** James Douglas, New York, N. Y. The process consists in suspending the solid cuprous chloride of copper in an electrolyte, inserting the cathode into the solid cuprous chlorid, and the anode into the electrolyte, and passing a current there through.
- 563,162. **ARTIFICIAL FUEL.** Aaron M. Gontner and Franklin G. Motter, York, Pa. The composition of matter to be used in preparing a substitute for coal consists of sand or earth, resin, coal, charcoal, flour, sulphur, and wood-pulp or sawdust, in substantially the same proportions.
- 563,217. **ORE FEEDER FOR STAMP MILLS.** Henry Bolthoff, Denver, Colo. Combination with a stamp stem and a suitable framework, a feed disk journaled in the drum, a rod attached to one end of the circular drum, a band engaging the drum, a rod attached to a tension nut attached to the rod, to which the rod is movably attached, a tension nut attached to the rod, a coil spring located between the bracket and the nut, another rod movably supported on the framework, the opposite extremity of the band being suitably attached to the rod, an arm to which the last named rod is pivoted, a rock shaft to which the arm is made fast, another arm attached to the rock shaft, and suitable means located intermediate the stamp stem and last named arm whereby the downward movement of the stamp depresses the arm.
- 11,551. **MINE TRAP DOOR.** James O'Brien, Evansville, Ind. Filed May 4, 1896. Reissue. Original No. 557,481, Dated March 31st, 1896. The mechanism consists of a level rail fitted to a curved track section having pivotal connections at its extremities with the tie chairs, and similar connections with the ties between the extremities having double pivot joints.

PERSONAL.

MR. H. V. CROLL has been appointed superintendent of the Denver Engineering Works, of Denver, Colo.

MR. THOMAS MORRISON, superintendent of the Edgar Thomson Steel Works has gone to Scotland for a few months' stay.

CAPT. HENRY A. JUDD, an English mining engineer, who has spent some time in North Carolina, left July 4th on the *Lucania* for London, on his way to Western Australia.

MR. WILLIAM A. FARISH, mining engineer, of Denver, Colo., has returned from the Black Hills, S. Dak., where he examined some mining properties for a Pennsylvania syndicate.

MR. CYRUS ROBINSON, engineer and manager of the mining department of the Jeffrey Manufacturing Company, of Columbus, O., has resigned his position to accept the management of the J. H. McEwen Company, with headquarters in New York City.

MR. FRANK NICHOLSON, mining engineer and metallurgist, of Phoenix, Ariz., has returned from London, Eng., where he has been on professional business. Mr. NICHOLSON will leave shortly for Mexico, and in all probability will return to London, where he expects to make his headquarters.

MR. R. N. DICKMAN, of the firm of Dickman & Mackenzie, of the Rookery Building, Chicago, has returned to that city from Mexico and New Mexico, where he has been for a year past working mining properties. Mr. Dickman will make his headquarters in Chicago and not in Cleveland as heretofore. Mr. Dickman is now in Georgia where he will examine some gold properties for Eastern people.

OBITUARY.

JOHN WILSON, who was engaged in coal mining near Cumberland, Md., died in Baltimore, recently, aged 33 years.

S. N. HARDESTY, of Webb City, Mo., died June 27th, after a long illness. For nearly a quarter of a century he was prominently identified with the mining industry in Webb City.

T. W. KENNEDY, said to be the first furnace builder and iron manufacturer in the Mahoning Valley, died recently. He was a director in the Commercial National Bank of Youngstown and president of the Lowell Milling Company, of Lowell, O.

SIR JOHN PENDER, a prime mover in securing and carrying on ocean telegraphy, died in London, England, on July 7, aged 80 years. He was born in Dumbartonshire, Scotland, and trained in Glasgow and Manchester.

He became interested in ocean telegraphy when Mr. Cyrus W. Field visited England in 1856 with his Atlantic cable project. After long and cautious investigation, a company was formed on a basis of a capital of \$17,000,000. The shares were \$5,000 each. Twenty-eight subscribers were found in Manchester, of whom Mr. PENDER was one. He became a member of the Board of Direction that year. This attempt failed through the breaking of the cable, and a second and third attempt proved abortive. Undiscouraged by failures, PENDER organized the Anglo-American Company, and gave his personal guarantee for \$1,250,000. He became chairman of the new company, which successfully laid its cable and recovered the old one.

The project of a cable to the East was then revived, and Mr. PENDER was made chairman of the Eastern Telegraph Company. Line after line was built until at last the immense cable system was perfected. In addition to managing this great network of cables and telegraph lines, Mr. PENDER was chairman of the Direct Cable Company to the United States; the chairman of the Eastern Extension Australasia and China Telegraph Company, of the Globe Trust and Telegraph Company, of the London, River Plate and Brazil Telegraph Company, etc. He also interested himself largely in technical education and has written books on English trade and manufacture. Mr. PENDER received knighthood many years ago and was a member of Parliament for nearly a quarter of a century.

INDUSTRIAL NOTES.

Application will soon be made to amend the charter of the James P. Witherow Company, of New Castle, Pa., by changing the name to the New Castle Engineering Works.

The Cincinnati Trust Company has been appointed temporary receiver of the Royal Clay Manufacturing Company, of Uhrichsville, O., by the United States Circuit Court at Cincinnati.

The Leeburg Foundry and Machine Company, of Pittsburgh, Pa., has received an order from the Chartiers Iron and Steel Company for a No. 3 pickling machine, modified to permit the pickling of long sheets.

The Dodge Mining Machinery Company of San Francisco has shipped machinery for a cyanide plant to J. M. Pearson & Co., Acton Station, Los

Angeles County, Cal., and two amalgamators to the Gates Iron Works, Chicago, Ill.

The Troy Steel Company, of Troy, N. Y., will make, in addition to steel billets which will constitute the bulk of their output, a full line of machinery steel and special soft steels for the manufacture of firearms. Mr. E. P. Howlett is the New York representative of the company.

The Bethlehem Iron Company, of South Bethlehem, Pa., is now ready to roll plates from high-grade open-hearth steel on its new plate mill, the rolls of which are 126 in. in length. The product in this line will consist of plates for all purposes, including ship plate, boiler plate, tank stacks, etc.

The Wrought Iron Bridge Company, of Canton, O., has received a contract for constructing the steel buildings of the Hyde Windlass Company at Bangor, Me. The foundry will be 190 x 100 ft., the machine shop 150 x 80 ft., and the office 50 x 25 ft. It is expected that the buildings will be completed by the middle of September.

An open-hearth steel plant will, it is reported, be erected at New Castle, Pa., costing about \$750,000. Phelps, Dodge & Co., of New York; Norton Bros., of Chicago, and the tin plate and tubing mills at New Castle, Pa., are said to be among those who are backing the enterprise. The product of the plant will be hollow steel billets suitable for the manufacture of all kinds of tubing, including pipe.

There has been chartered at Basic City, Va., a furnace company, of which William Kaufman, of Reading, Pa., is president, and C. N. Wise, of Philadelphia, vice-president, while M. H. Leonard, Philadelphia, is secretary, and D. H. Winegard, Reading, treasurer. The Board of Directors consists of these gentlemen and W. O. Stokes. The Bon Ore Bank has been purchased by this company and active operations will commence at once.

The Westinghouse Electric and Manufacturing Company recently shipped eight carloads of electric apparatus to the Boston and Montana Consolidated Copper and Silver Mining Company for electrolytic purposes. The shipment comprised two enormous 1,100 H.-P. generators, each delivering 4,500 amperes at 180 volts, together with switch-board appliances, etc. The Westinghouse Company has also recently furnished the Anaconda Copper Mining Company with seven 360 H.-P. generators, also for electrolytic work.

The Link Belt Machinery Company, of Chicago, have been running night and day for two months past. They are rushing some large contracts, among which are complete coal and ash handling plant for the remodeled power-house of the Chicago Sugar Refining Company; a complete plant of electrical coal mining machinery for the mine of the Wheeling, Lake Erie & Pittsburgh Coal Company, at Dillon-dale, O., and a complete system of coal storing machinery for the Clybourn avenue docks of the firm of Coxe Bros., of Chicago.

The F. D. Cummer & Son Co., of Cleveland, have lately sold several of their dryers to the mines of the West. A recent sale of a dryer was made to the Waupaca County Marl Works, of Manawa, Wis., through their advertisement in the *Engineering and Mining Journal* and that concern is highly pleased with the work of the dryer, having sent the Cummer Company a testimonial to that effect.

The first test of power transmission from the Sierras to Fresno, Cal., was made recently at the new sub-station of the San Joaquin Electric Company. The power test proved even more satisfactory than the lighting test. The source of power is 35 miles from Fresno in an air line, and 1,200 H. P. can be utilized. A trial was made with one of the big pumps at the city water works, close to the sub-station, and with 75 H. P. the pump worked most satisfactorily.

TRADE CATALOGUES.

The Ludlow-Saylor Wire Company, St. Louis, Mo., have issued catalogue No. 25, illustrating the wrought-iron fences which they manufacture in almost endless styles and varieties. In addition they turn out ornamental metal work of all descriptions, in fact, anything in the wire, brass or iron line.

The Sykes Steel Roofing Company, Chicago, Ill., and Niles, O., have issued their eighteenth annual illustrated catalogue, a copy of which is at hand. They manufacture Sykes' patent improved standing seam roofing, and V-crimped, corrugated roofing and siding and sheet metal clabboarding, corrugated and beaded ceilings, sheet steel brick, etc., from sheet iron and steel, either black, painted or galvanized. At the World's Columbian Exposition they received a medal and a diploma, their "patent cap steel roofing" receiving the award "for lasting qualities, improved devices for fastening the metal, strength, lightness and proof against fire and lightning."

The Snow Steam Pump Works, of Buffalo, N. Y., have issued a handsomely illustrated pamphlet of mine pumps, of which they manufacture a number of different styles. Their duplex "sinking" pump heads the list, and will commend itself at once to all mining men because of excellent points in its construction. Among these may be mentioned its valves and their effective protection from accidental

injury, the arrangement of its connections and its compactness.

Their various styles of mine pumps are in all respects suited to the conditions that it may be required to meet in mining work, and intending purchasers would do well to inquire into their merits.

MACHINERY AND SUPPLIES WANTED.

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

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

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

GENERAL MINING NEWS.

ALABAMA.

JEFFERSON COUNTY.

The new wage scale of the 10,000 coal miners in this district went into effect July 1st to continue two years. The miners get an advance of 7% in wages: 40c. a ton, instead of 37½c. is made the minimum price to be paid when pig-iron is worth \$8.50 or less a ton, with an advance of 2½c. a ton for every advance of 50c. in the price of iron.

ALASKA.

DOUGLAS ISLAND.—Several ledges have been discovered, says the *Juneau Times*, carrying ore identically of the same character as the Treadwell—low grade sulphurets, assaying on an average from \$2.50 to \$3.50 gold to the ton. These ledges are also parallel and have about the same pitch and trend. The Yakima and Willis are properties of this description, lying southwesterly of the Treadwell, and were taken side by side by reason of the great width of the ledge and in order to cover it. The property as located is 1,200 by 1,500 ft., the ledge covering the entire Yakima claim and half the Willis, giving the enormous breadth of 900 ft. A creek varying in width from 15 to 18 ft. has cut a canyon through the soft ore from 10 to 60 ft. deep, leaving walls of solid ore on either side, while the bed of the stream is composed of the same material. A number of small tunnels and drifts have been run into the ore exposures along the canyon at different points showing it solid and quite uniform in value. The average of 50 assays gave a value of \$3.20 gold per ton. This new Alaska gold proposition is owned by Seattle parties who are making preparations for thorough and systematic development.

OUNALASKA.—Two schooners have arrived at the Tacoma, Wash., smelter with 203 and 500 tons of gold ore. The ore was brought from Ounalaska, on Unga island.

ARIZONA.

PINAL COUNTY.

MOHAWK.—This mine, near Mammoth, has been producing since May 1st. A 20-stamp mill and a Griffin mill, equal to 10 stamps, are handling the ore, 70 tons of which are being crushed every 24 hours. Forty men are employed about the works. Six engineers look out for the motive power. An abundant supply of both water and ore is reported, and it is expected that work will continue without interruption.

CALIFORNIA.

AMADOR COUNTY.

(From Our Special Correspondent.)

UNION CONSOLIDATED.—This mine, at Wieland, 8 miles northeast of Jackson, is now in complete working order, employing 35 men. The tunnel, 1,400 ft. in length, taps the shaft at the 200-ft. level and at the 300 two drifts, one 210 and one 280 ft., extend on either side of the shaft, showing an immense body of \$10 ore. The hoisting, pumping and compressed-air plants are operated by a 10-ft. Pelton wheel, the water being obtained from Volcano Ditch. The main shaft will be sunk to a depth of 1,000 ft. and the milling plant will be increased to 60 stamps.

BUTTE COUNTY.

(From Our Special Correspondent.)

MORNING STAR.—This mine, at Big Bend, is now owned by C. Waldeyer, who has erected a five-stamp mill on the property. The ledge is 10 ft. in width, assaying from \$5 to \$25 per ton, free milling. The mill will commence at once on the 2,000 tons on the dump.

CALAVERAS COUNTY.

(From Our Special Correspondent.)

BENSON.—This gravel mine is located four miles west of San Andreas, and contains 80 acres of patented land. The Montana Company, which has bonded it, will commence at once to pump out the old shaft. This mine was a good producer until it was shut down four years ago on account of water.

COPPERPOLIS.—It is reported that the copper mines at Copperopolis are to be reopened. The increased demand for copper has advanced the price to a point where it will pay to work these mines, which have been shut down for several years.

EL DORADO COUNTY.

LUCKY MARION GOLD MINING COMPANY.—This company, of Greenwood, in connection with several other mining companies propose putting in an electric plant to furnish light and power.

KERN COUNTY—RANDSBURG DISTRICT.
(From Our Special Correspondent.)

BURCHAM.—This mine comprises over 300 acres. The shaft is down 70 ft. in good ore, which improves with depth. The last lot milled, 18 tons, netted \$2,000, the ore running from \$1 to \$600 per ton. Five men are employed in the mine and eight men are working the placer ground with dry washers on percentage.

KENYON.—Fourteen tons of ore from this mine, crushed at the Garlock mill at Cow Wells, netted 9½ lbs. of gold.

OLYMPUS.—P. Reddy, who owns a quarter interest in this mine, has ordered a 20-stamp mill.

MARIPOSA COUNTY.

POWER TRANSMISSION.—It is stated that all arrangements have been completed for a 5,000-H. P. transmission plant to supply electric power to the mines near Coulterville.

(From Our Special Correspondent.)

TENDRON.—This mine, at Whitlocks, now owned by the Sierra Buttes Company, of London, is being worked under the management of A. G. Briggs. About 80 men are employed. There is a 20-stamp mill and fine hoisting and pumping plants on the property.

VIRGINIA.—This mine, three miles east of Coulterville, has been bonded by Blackmar & King and is being reopened under the superintendency of J. J. Dolan. Twenty-five men are employed cleaning out and retimbering the old tunnel and shaft. The mine has been a good producer, but has been idle for years.

SAN DIEGO COUNTY.

(From Our Special Correspondent.)

KENTUCK.—This mine, at Banner, is developing a 12-in. vein. Some specimens taken out run several thousands per ton; the average is said to be \$300 per ton.

YELLOW HAMMER.—This mine, in the Rice District, has been bonded by Perry Bevington, Dr. Frizell, Capt. Farnsworth and Thomas Rhodes, of Escondido.

SHASTA COUNTY.

MURRAY & HULL.—It is reported that the group of mines belonging to this property, located in Whiskey district, about 14 miles from Redding, and consisting of the Rising Star, Morning Star, Milton, Golden Eagle and Buck claims, were sold to a syndicate for \$15,000. A large new stamp mill will be erected and the mines extensively developed.

SISKIYOU COUNTY.

NEBRASKA.—This mine, at Cherry Creek, has been doing so well this year as to justify the erection of a quartz mill.

TRINITY COUNTY.

(From Our Special Correspondent.)

HAYWARDS FLATS.—The French syndicate, who bonded these mines, finding the supply of water inadequate, is now at work upon a plan to take water from Stuarts Fork and convey it by a series of ditches, flumes and pipes to the mines. To avoid a long detour around the mountain, a tunnel two miles in length was begun. About 1,100 ft. is completed, and McLean Bros. have taken the contract to complete the remaining 9,000 ft.

TULARE COUNTY.

CHRYSOPRASE.—Mining for this beautiful, bright stone, which takes a polish, and is highly prized for jewelry, is being prosecuted nine miles northeast of Visalia. Chrysoprase was first discovered in that locality about ten years ago. The stone occurs in thin layers in silicified serpentine. Much labor is required to uncover small veins, which are generally from a half-inch to two inches thick. The result of two weeks' work, says the Visalia *Delta*, was only about 8 or 10 oz. of gem material. The total amount dug out was but a few pounds. Most of this was pitted or contained flaws, and the shade of most of it was very light green.

COLORADO.

BOULDER COUNTY.

COMSTOCK GOLD MINING AND MILLING COMPANY.—This company has been incorporated at Ward; capital stock, \$500,000, shares \$1 each. The incorporators are Joseph P. Coffee, Louis N. Putnam and Wm. P. Gillingham.

CLEAR CREEK COUNTY.

DORIC.—The plant of machinery in this company's new building, consisting of an 80 H. P. boiler, a Norwalk compressor and exhaust fan and three Leyner drills, is nearly completed. A dynamo to light the buildings is soon to be put in.

GILPIN COUNTY.

ABE LYONS.—It is reported that a fine body of ore has been opened up on this property. The ore is copper and is said to carry \$100 gold value to the ton.

FIRST CENTENNIAL.—Ten leasers are working in this mine in Chase gulch, the principal work being drifting and stoping. Mill shipments are being made with regularity.

PERIGO.—Cleaning out the tunnels and overhauling all the machinery on this property has been going on for some time. The lower tunnel is in over 2,000 ft., and will be driven ahead at once with air drills.

(From Our Special Correspondent.)

BUTLER.—Local parties have taken a lease and bond on this mine, on Gunnell Hill, and are drifting westward at the 125-ft. level. Below this point the shaft is filled with debris, and its total depth is not known.

CONCRETE.—In consequence of the stoppage of the Gunnell pumps, it is reported that the Concrete management are going to put in a good pump at the 1,100, their bottom level.

CROWN POINT AND VIRGINIA.—The shaft is now down 580 ft. from surface, at which point drills will be run out east and west. Sinking of the shaft will be continued, it is said, to a depth of 1,000 ft.

WAIN.—At this mine in Chase Gulch the upper 50 ft. of the shaft are being re-sunk a few feet south, to avoid a sharp angle which it previously made at that depth, the upper 50 ft. having been vertical. The whole length of the shaft will now follow the inclination of the vein.

WAUTAUGA.—At this mine they expect to complete retimbering the shaft within a couple of weeks, so as to be able to commence drifting.

JEFFERSON COUNTY.

DENVER PUBLIC SAMPLING WORKS.—This company has completed a reduction works at Golden.

OURAY COUNTY.

SCARLET PEAKS MINING COMPANY.—This company was incorporated June 15th with a capital stock of \$1,000,000. Location is Ouray County and offices in Denver. The incorporators are Philip Argall, William Weston and Charles C. Parson.

SAN MIGUEL COUNTY.

SUFFOLK.—This mill, at Ophir, is running 30 stamps.

TELLURIDE.—It is reported that between 300 and 400 cars of concentrates and crude ore are shipped from Telluride monthly. The largest contributors are the Smuggler-Union, K. C. Humboldt, Japan, Columbia and Tom Boy mines. Monday of last week 15 carloads were shipped out.

SUMMIT COUNTY.

WAPITI.—Four giants are at work on the Wapiti, washing the sides of Farncomb Hill.

GOLDEN CROWN.—The water in this placer has become too plentiful to be handled by the pumps, and work has been suspended temporarily.

LAKE COUNTY.

(From Our Special Correspondent.)

ARKANSAS VALLEY BI-METALLIC.—Both of these smelters are taking all the ore they can possibly get hold of. They are still enabled to run in full blast, and the former smelter is also receiving ore from other places. The Bi-Metallic is at present operating on a large amount of second-grade ore which comes from the Wolfstone dump. This dump is a low-grade sulphide, and can be used to advantage by the Bi-Metallic treatment.

BELGIAN-FLAGSTAFF.—The rich strike made last week in this property as mentioned in my special telegram, is indeed proving a bonanza. The property is being operated by the Sydney Leasing Company. The find was made in the Flagstaff ground, but it is being developed through the Belgian. The rich streak of chlorides soon exhausted itself, but it opened up into a body of ore that is developing into a big bonanza. This stuff, which is now being taken out, runs over 500 oz. silver to the ton. Additional men have been put on, all of whom are receiving \$3 a day.

LEADVILLE.—Since my last letter, there has been no change in the strike situation, with the possible exception that an agreement is farther away than ever before. The strike has now (July 4) been on nearly three weeks. At a meeting of the mine managers on Wednesday night (July 1), they positively refused to accede to the demands of the miners, who virtually ask that the entire schedule of wages paid before the panic of 1893 be again restored. The mine managers claim that at the present price of silver they cannot pay the old schedule, and they further argue that the miners signed an agreement in 1893 to the effect that they would work at \$2½ a day until silver reached 83½c., in which case they were to receive \$3 a day. The strike is remarkable for the reason that not a blow has been struck nor a harsh word uttered since the men walked out.

All of the largest producers of the camp are at present closed down. But the closing of these big properties has acted as a stimulant to a large number of small producers, so that the daily output is at present about 600 tons. Of this amount 100 tons goes to Chicago for the Illinois Steel Works, and is taken out of the Catalpa-Crescent property.

The oxidized iron lessees are also shipping every pound of ore that they can get out. The Morning and Evening Stars put on additional men, all of whom are getting \$3 a day. They also had 2,000 tons of ore in their bins when the strike was inaugurated. Of this combination the Vanderbilt, the O. K., the Little Chief and the Seneca have all largely increased their iron production.

MIKADO.—This mine is now the largest producer in the camp and is shipping over 100 tons a day of sulphide ore, some of which is of a very high grade.

VINNIE.—This lease, on Breece Hill, is the only big property that is working. About 30 tons a day of low-grade ore are being shipped.

WAGE PROPOSITION.—The mine managers, in their reply to the request made by the miners, notified the men that they could all go back at the old wages that were in effect before the strike. The miners declare that they will not accept this proposition.

GEORGIA.

RICHMOND COUNTY.

CEMENT GRAVEL.—Operations have been commenced on a bed of cement gravel 20 miles north of Augusta, on the Port Royal & Western Carolina Railway. The bed covers many acres, and is on the estate of the late R. H. Middleton, at Clark's Hill. It is similar to the deposit worked by the Augusta Gravel Company. A chemical analysis of the gravel is being made to determine its proportion of cement.

IDAHO.

LATAH COUNTY.

MUSCOVITE MICA MINING COMPANY.—Work has been resumed on this company's mine, 15 miles from Vollmer, after a suspension of several years. The mica occurs in blocks of various sizes, enclosed in a 10-ft. ledge of feldspar. About 3,000 ft. of development work has been done, consisting of a shaft 160 ft. deep and four tunnels, of which the three upper ones average 800 ft. in length, and the lowest, 40 ft. below the bottom of the shaft, is in 200 ft., and will now be driven farther.

IDAHO.

NEZ PERCES COUNTY.

SNAKE RIVER.—The Snake River mining boat Leota has commenced operations on the gold lined bars of the Snake, says the *Lewiston Tribune*. The water is pumped from the river by two large pumps. One is a centrifugal that throws water through a 15 in. pipe for sluicing. A cylinder force pump forces the water through an 8 in. pipe to the giant, which tears down the bank and forces by hydraulic pressure, 1,000 yds. of sand and gravel into the sluice boxes every 24 hours. The main sluice box is 24 in. wide, and its bottom is covered with steel plate and steel riffles. From the main sluice box are six under-currents which lead off into six riffle tables; from these the sand passes into smaller boxes over brussels and blankets on the burlap tables, where the slime and black sand are separated from the sand. The tables and smaller sluice boxes are treated four times every 24 hours by the blankets, brussels, and burlaps being thoroughly washed, and the fine gold, slime, and black sands going through a chemical process, preparing it for amalgamation.

Sixteen men are now employed, and operations are carried on day and night. A clean-up has not yet been made, but satisfactory results are expected. When this fact is established water will be brought from the Alpowa Creek to work this bar, and the Leota will be moved to some other bar, where a similar test will be made, and so on until the vast bars along the Snake and Clearwater that have heretofore paid but moderately will be made to yield their precious gold on the wholesale plan.

SHOSHONE COUNTY.

CRESCENT GOLD MINING COMPANY.—A Moscow, Idaho, syndicate has secured control of this company's properties near Pierce City, also of the Boles group of mines in the same locality. The Crescent group consists of eight claims. The Bond claim, upon which development has been done, has a tunnel 530 ft. long through a ridge which crosses the claim. The ground has been stoped up to near the surface for about two-thirds of the length of the tunnel. The ledge proper is 3 ft. wide, with a 12 in. pay streak, all free milling. The Boles group consists of four claims, the Best Chance, Golden, Columbia and the Bole, all located on a line with the tunnel of the Crescent company and on the same ledge.

KENTUCKY.

FLOYD COUNTY.

SOUTH PENN OIL COMPANY.—This company has just finished two wells on the right fork of Beaver Creek in territory that was abandoned some two years ago, both of which are good for 25 barrels per day.

MICHIGAN.

IRON—GOGEBIC RANGE.

METROPOLITAN IRON AND LAND COMPANY.—An extensive shutdown occurred at all of the mines of this company last week, and fully 1,500 men are idle. The Metropolitan group of mines include the Norrie, East Norrie and Pabst, and their average yearly shipments combined are about 1,000,000 tons of ore. The cause of the shutdown is the slight demand for iron ore, the fact that they have in stock piles about 500,000 tons of ore, and that the season is so far advanced, with sales so far only about 100,000 tons. The furnaces are running upon the productions of the smaller mines.

MINNESOTA.

(From Our Special Correspondent.)

ORE SHIPMENTS.—Iron ore shipments for the month of June fully bear out the weekly statements that have been made in this correspondence, the official figures showing a total of 740,000 tons. This is the greatest amount ever shipped out of the State in that time, and leads all other northern mining States for this year. Of the total, Duluth shipped 375,000 tons, Two Harbors 326,000 tons and Superior 29,000 tons. Duluth's record was not

only the best ever made by that port, but is the best made this year by any port on the lakes. The three railways shipping from the Minnesota ranges are now sending ore out at the rate of 6,000,000 tons for the season—about the rate that was expected of them long before there was an agreement as to the lessening of output by the Bessemer pool. So far this month this enormous output is being kept up and the demand for vessels in the lake ore trade is almost entirely from the head of Lake Superior. Rates on ore to Lake Erie are only 65 to 70c. a ton at present.

IRON—GUNFLINT RANGE.

(From Our Special Correspondent.)

EXPLORATIONS.—The explorations that have been made on this range this spring, in the most northeasterly part of Minnesota and across the line in Canada, have convinced the people at the back of the enterprise that they have great wealth in the deposits of nickel and iron ores there. Some 15,000 acres of land have been secured by a syndicate that has its headquarters at Detroit, Mich., and it is expected that very considerable development work will be done in the district during the next year or two.

IRON—MESABI RANGE.

(From Our Special Correspondent.)

LAKE SUPERIOR CONSOLIDATED MINES.—This company in its explorations south of Hibbing, in section 12, has struck ore of a promising appearance and will develop its find. The ore body is supposed to be a continuance of the body of the Penobscot mine.

MOUNTAIN IRON COMPANY.—This mine is closed for the present and no date is set for its reopening. The ore that has been shipped from it will now go forward from other properties of the Consolidated Company.

OLIVER MINING COMPANY.—This company has shipped so far this season about 400,000 tons, within 105,000 of its total for last season. In June its shipments were over 180,000 tons. The mine has put into use a shovel for mining ore that was bought under a guarantee to load 4,000 tons every 10 hours, digging the ore without previous blasting, or from the natural bed. The shovel is doing better than this and is loading at the rate of 3025-ton cars an hour, with prompt service, and can easily put out 5,000 tons a day, and possibly more. A day or two ago it loaded 3,200 tons from the ore bed in eight hours, working only about a little more than half the time, because of the scarcity of cars. This shovel is of 90 tons weight, with a dipper of 2½ cu. yds. capacity, and with a very powerful reach of arm. It is believed to be the heaviest in use.

VEGA IRON COMPANY.—This mine, which was a month ago sold to Cleveland interests connected with the Franklin group and was afterwards closed, will reopen this week with a full force.

IRON—VERMILION RANGE.

(From Our Special Correspondent.)

PIONEER MINING COMPANY.—This company had a fall of about 500 tons of rock on the fourth level last week, killing three men and severely injuring two more. No blame is attached to the company. The mine is hoisting about 1,000 tons a day.

MISSOURI.

JASPER COUNTY.

(From Our Special Correspondent.)

JOPLIN ORE MARKET.—The output of ore was better than last week, for the time the mines were operated, as they worked but 5 days, all shutting down to celebrate the Fourth. The top price paid for zinc ore was \$20.50 per ton, with an average of \$18.50 per ton. The turn-in of the week appears lighter, but the Picher Company failed to make a report of the amount of lead bought by them last week. The price of lead was \$16 per 1,000 lbs., with 50c. added for hauling. There is considerable lead and zinc ore left in the bins. The following was turned in by the different camps: Joplin zinc, 1,071,060 lbs.; lead, 83,210 lbs.; value, \$12,042. Webb City zinc, 130,780 lbs.; lead, 15,130 lbs.; value, \$1,427. Cartersville zinc, 1,473,790 lbs.; lead, 196,600 lbs.; value, \$16,545. Galena, Kan., zinc, 2,620,000 lbs.; lead, 498,900 lbs.; value, \$31,550. Mt. Vernon zinc, 87,500 lbs.; value, \$287. Oronogo lead, 24,800 lbs.; value, \$289. Zincite zinc, 20,370 lbs.; value, \$204. Totals for the district: Zinc, 5,403,500 lbs.; lead, 818,440 lbs.; value, \$62,057.

CARMICHAEL, MEEKER & COMPANY.—This company has leased 16 acres of the Armil land, southwest of Joplin, and a prospect shaft is being sunk in which, at 65 ft., 15 ft. of lead dirt was struck. Under this lead dirt they had 12 ft. of dead ground, and then went into lead and zinc dirt in flint and selvedge grounds, with no water. They are 110 ft. deep, are still sinking in pay dirt and will go through the ore before drifting.

COLUMBIA.—This plant is mining steadily on rich dirt and making a ton of zinc ore every hour. They are drifting at 115 ft. on a 30-ft. face of zinc ore in hard ground and strong water. They are mining with two steam drills, and they keep the crusher full of dirt.

ELEVENTH HOUR.—Joe Aylor has ordered two 16-in. Cornish force pumps for this lease. E. I. Schooler will superintend making them after a pattern of his own, which is an improvement over the old style. A contract was made with the Webb City Iron Works on the 29th of June to build them in six weeks. All the working parts are to be of

brass. Both pumps will be put in pump shaft No. 1 and the 15 in. pump will be removed to pump shaft No. 2, on the west side. Two steam condensers will be erected, whereby the cost of the water supply for the boilers will be greatly lessened.

FUNK & Co.—On Lot 1 this company is working at 60 ft. in the old Rising Sun cave-in and with a horse hoister are making over 10 tons of zinc ore and 3,000 lbs. of lead a week.

HEROLD MINING COMPANY.—This company is repairing its steam concentrating plant, and is putting in a pump to furnish water to run the plant. They expect to be ready to start the plant in two weeks. About a year ago they sank a shaft 185 ft. in hard ground and did not get any indication of ore. They then came up and started a drift at 130 ft. After drifting 115 ft. in dead ground they struck a rich body of lead and jack in open ground and drifted 40 ft. in rich dirt. The air then got so bad that they could not work in the drift, so the company made a new shaft near the heat of the drift. In this shaft they struck 3 ft. of good pay dirt at 85 ft. Again at 102 ft. they struck a rich body of lead and jack and have gone through 12 ft. of it. They are still sinking in rich lead and zinc dirt and when the 130-ft. level is reached they will have a 28-ft. face of lead and jack to work, which yields good returns.

JONES, HOHENSCHILL & COMPANY.—On Lot 6 this company has sunk a prospect shaft 177 ft. and had ore indications below 93 ft. They have started to drift at 140 ft. and the dirt is getting richer as they advance.

LOT No. 3.—McKee and the Schellenback Brothers have sunk a prospect shaft 167 ft. deep here. Pay dirt was struck at 135 ft., which continued all the way down. A drift was started at 140 ft. and 12 ft. from the shaft opened up a large face of lead and jack in open ground. It is getting better the further they drift and this week they will put up a screen and build a wash place and make a turn-in.

McKEE COMPANY.—This company has leased 20 acres of the Connor land situated south of the Tracey and east of the Victor. They prospected this land with a drill and it showed up rich dirt from 126 ft. to 185 ft. in open ground and no water. They were still in pay dirt when they stopped drilling.

PHILLIPPI, DARLING & COMPANY.—On the Chatham lease this company sank a shaft 90 ft. in hard ground without a trace of ore, but on drifting 30 ft. from the shaft a rich face of lead and pebble jack was struck in open ground, and no water. A turn-in is to be made this week.

MONTANA.

DEER LODGE COUNTY.

ANACONDA.—The largest blocks of copper ever shipped from the Rocky Mountain region are now being cast by this company for shipment to St. Petersburg, Russia. They average in weight 3,600 lbs., and measure 6½ in. thick by 42 in. square. The company has an order for 200 long tons of these blocks. This represents 120 blocks, weighing a total of 448,000 lbs. This special order of copper is to be used for armor plate in lining battleships of the Russian navy.

ORIGINAL BUTTE.—An attachment suit in the District Court, says the Anacoda Standard, has been instituted by the Colorado Smelting and Mining Company against this company for \$95,748. The complaint in the case recites that on June 19th the defendant company was indebted to the plaintiff in the sum above stated on account of moneys laid out and expended by the plaintiff on behalf and for the use of the defendant at the latter's special instance and request. Judgment for the amount with legal interest is asked. In an affidavit for attachment it is alleged that the sum is not secured by mortgage or lien on any property. The attachment was placed in the hands of the sheriff and levied on the mine and other property of the defendant company.

FLATHEAD COUNTY.

SNOWSHOE.—This company has now about 100 men in its employ. Weekly shipments amount to four cars of concentrates, which amount is soon to be doubled.

GRANITE COUNTY.

BI-METALLIC AND GRANITE.—It is stated that a concentrator will be erected at Granite by these companies for the working of low-grade ores which have accumulated on the dumps of the two mines. A couple of the Kinkead mills will be put up as an experiment. These mills are already there and are stored at the Bi-Metallic mill.

SILVER BOW COUNTY.

(From an Occasional Correspondent.)

SIX O'CLOCK.—Great interest is felt in the progress of a shaft now being sunk on this claim on the East side of the valley just below the Great Northern railroad track. Strong quartz gossan shows in the railway cuts. The shaft is now down between 300 and 400 ft. in the wall rock and at 500 ft. the intention is to crosscut to the vein. If successful, it will give a great impetus to mining on the east side of the valley and greatly enlarge the ore reserves of Butte.

NEVADA.

ESMERALDA COUNTY.

GREEN'S.—A strike of gold ore is reported from the East Walker River. The find is in the same range as the Pine Grove mines.

LINCOLN COUNTY.

DELAMAR.—This mine is reported to have been sold to English capitalists for a sum estimated at \$3,000,000. There are in the mine over 20,000 ft. of development work. These workings consist of 10 tunnels, and drifts that penetrate all portions of the mountain. The DeLamar Lode of recent date says of it: "Upward of \$200,000 has already been expended on this plant and probably half as much of the above stated amount has been expended on the water. Nearly 10,000 tons of ore have been run through the mill, yielding over \$650,000 since it was started up. Every modern accommodation is to be found in connection with the property, one of the finest fitted offices in the state and a perfect electric light system lighting the office and every part of the mill and the mines."

STOREY COUNTY.

MACKAY GOLD AND SILVER MINING COMPANY.—This company was recently incorporated with a capital stock of \$15,000,000. The company owns mines in the Virginia District.

STOREY COUNTY—BRUNSWICK LODGE.

JOINT WORKINGS OF THE CONSOLIDATED CALIFORNIA AND VIRGINIA, BEST & BELCHER AND GOULD & CURRY.—Shaft No. 2—The joint shaft No. 2 has been sunk 10 ft. on the incline; total depth, 257 ft.; bottom in hard porphyry. Savage—The tunnel started in Savage ground was extended 27 ft., passing through porphyry and quartz; total length, 604 ft. Gould & Curry—East crosscut No. 4, which was started 750 ft. from the mouth of the tunnel, was extended 21 ft.; total, 54 ft.; face in porphyry and stringers of quartz.

OCCIDENTAL CONSOLIDATED.—550 level—The east crosscut from the lower tunnel, which is being run to connect with the Edwards shaft, is now in 307 ft., having been extended 46 ft. during the week. At a point in the crosscut 290 ft. in we cut through a seam of quartz 3 ft. wide, which assays about \$4 in gold; face of crosscut is now in porphyry. 650 level—West crosscut No. 2, which was started 20 ft. south of the main winze, is in 488 ft., having been extended 38 ft. The face is in hard porphyry. 750 level—The east crosscut from south drift is in 10 ft. and shows ore assaying \$14 per ton in gold. West crosscut from south drift is in 11 ft. and is in ore assaying about \$20 per ton in gold.

STOREY COUNTY—COMSTOCK LODGE.

The following are extracts from the latest weekly reports of the superintendents:

CONSOLIDATED CALIFORNIA & VIRGINIA.—Some of the men working in the old stops continued filling in with fine rock the open slope or square sets at the south end of the openings above the 1,750 level.

The Morgan mill in closing the run worked 123 tons and 80 lbs. of ore, assay value of which, per battery sample, was \$49.80 per ton.

Bullion shipped to Carson mint, cleanup, assay value \$34,756.19.

The total extraction of ore for the week amounted to 43 tons, the average assay value of which, per samples taken from the cars when raised to the surface, was \$67.47 per ton.

HALE & NORCROSS.—In this mine, on the 900 level, the north drift was advanced 16 ft.; total length, 131 ft.; face in porphyry with stringers of quartz. 976 level, No. 3 upraise—Have been working north on the eighth and ninth floors; also started to raise for tenth floor. The ore streak looks some better in the raise than at the date of last report. No. 4 upraise—Have been working north on the fifth and sixth floors. The ore streak looks poorer than at last report. Have done the necessary repairing on this level the past week. Extracted during the week, from 975 level, 20 cars of ore assaying per mine car sample: Gold, \$17.30; silver, 15.755 oz. per ton.

NEW MEXICO.

COONEY MINING DISTRICT—SOCORRO COUNTY.

(From Our Special Correspondent.)

CONFIDENCE MINE.—This mine is showing up extremely well. The main tunnel is in 1,500 ft. and shows a fair grade of ore in the face. Cross-cuts have been run toward southwest and northwest, but none of them have yet found ore. From first ore chute stopes are carried east and west in good ore, and the block of ground between first and second ore chutes, about 500 ft. long and 200 ft. high, which was supposed to be barren ground, has proved to be a good grade of milling ore. No work is carried on in shaft No. 1. Shaft No. 2 is 120 ft. below main tunnel level, and in it drifts are being driven east at the 60 and 100-ft. levels in good ore. Connection through these drifts will soon be made with shaft No. 3. The vein is evidently widening in depth, the value of the ore remaining the same. The mill is handling 80 to 85 tons per day.

DEADWOOD.—The owners of this mine are pushing development work. A crosscut is now being run to the foot wall, proving the vein to be about 12 ft. wide. The vein matter is very hard quartz, with pyrites of iron carrying gold and sulphide of silver.

FLORIDA.—The tunnel on this claim is in 270 ft., and the owners are now crosscutting in a large body of ore. The last assays gave \$41 in gold and \$7.80 in silver. Some ore shipped gave returns of \$56 in Gold and \$44.80 in silver; total, \$100.80 per ton.

LITTLE WHITE WATER GULCH.—Good gold ore has lately been struck here. The veins struck are

about five miles south of Graham, running north and south. They are fissure veins in a bluish coarse-grained porphyry, dipping 45° to the east. The vein matter is quartz, calcspar and barite. Some ore assaying \$496 in gold and \$9 in silver was struck near the surface. The ore is free milling gold ore, the gold being rather coarse and carried in oxide of iron. An average of 5 ft. 5 in., close to the surface, gave \$7.50 in gold and 50c. in silver. A number of claims have been located and considerable prospecting is going on.

MOUNTAIN KEY.—This mine has been leased to H. Price, Graham, N. Mex. A couple of men are at work prospecting the vein.

SANTA FE COUNTY.

ALBEMARLE.—A rich strike is reported in this mine in Colla canon. The ore has very much the appearance of gray sand.

NEW YORK.

ONONDAGA COUNTY.

BALDWINVILLE.—It is reported that gas was found in very large quantities in the Trenton rock. Small pockets have been found at all depths, but a real flow has been found under an estimated pressure of 500 lbs. to the square inch. A discharge from a 2-in. pipe was lighted, and while 25% of the gas is leaking, there was a blaze 20 ft. in diameter and 20 ft. in height. The depth of the well is 2,425 ft.

NORTH CAROLINA.

POLK COUNTY.

DOUBLE BRANCH.—It is reported that this mining property has been bought by Cincinnati capitalists for \$1,000. It is near Tryon, and the tract embraces 640 acres.

OKLAHOMA.

CLEVELAND COUNTY.

LXINGTON COAL MINING COMPANY.—A charter has been granted to the Eagle Mountain Mining Company. The incorporators are: A. G. Carter, John McCoy, T. S. Sproule, of Lexington, and Ben Freeny, T. J. Harris and Charles Good, of Chickasaw. The company has a large coal lease in Chickasaw Reservation which they will develop.

PENNSYLVANIA.

BERKS COUNTY.

COAL LANDS.—Over 1,000 acres of farm land have been leased by capitalists of Reading and Allentown, under the impression that paying veins of coal can be developed. The farms are along the Lebanon Valley Railroad, between Wernersville and Robeson, and recently a discovery of coal was made near the former place. The samples procured burned freely, and the coal was pronounced to be of excellent quality.

FAYETTE COUNTY.

DUNBAR FIRE BRICK COMPANY.—This company has completed an extensive tram road, from Ferguson station, several miles back into the mountain, where a deposit of fire clay has been opened.

SOUTH DAKOTA.

CLARKE COUNTY.

SOUTH DAKOTA MINING AND MILLING COMPANY.—The patented group of claims situated in Garden City camp, Ida Gray district, owned by this company, and known as the Edna, Eva, Elsmere and Robert lodes, have been leased to Emil Faust, president of the Moffit Mining and Milling Company, for the term of one year.

CUSTER COUNTY.

FULLER'S EARTH.—A contract has been closed for 100 car loads of this material to be furnished from claims near Argyle station on the Burlington & Missouri River road.

LAWRENCE COUNTY.

DEADWOOD AND DELAWARE SMELTER.—This company recently purchased the control of the stock (153,000 shares) of the Ruby Gold and Silver Mining Company in Ruby Basin. The price paid for the stock was \$30,000, being but a trifle less than 20c. per share.

(From an Occasional Correspondent.)

RICHMOND.—Work is under way on this old claim, at Galena, opening up bodies of siliceous ores, not noted when the mine was formerly worked for argentiferous galena. Considerable of the latter ore is also being taken out and handpicked, with a view of making an experimental campaign with the old lead-silver stack that has now been idle some years. The stack is being repaired for an early blowing in. Mr. Klotz, formerly with the Kansas City Company, is the metallurgist in charge. All the ores are in Potsdam sandstone some distance above a sheet of porphyry.

TERRY PEAK.—The chief interest in the hills centers at present in the increasing development of the siliceous-gold ores. Great activity prevails around Terry Peak, and new discoveries are weekly enlarging the productive country. The ores have been shown by Prof. F. C. Smith, of the State School of Mines at Rapid City, to have been originally tellurides where oxidized, and to still contain notable quantities of tellurium when unaltered. They impregnate several different horizons in the Potsdam quartzite, and to a certain extent the porphyry intrusions as well, with which they are always more or less associated. As the intrusions are at times phonolite, though mostly trachyte, the parallelism in ore and igneous rock with Cripple Creek, Colo., is at once apparent.

PENNINGTON COUNTY.

(From an Occasional Correspondent.)

RAPID CITY.—The State School of Mines had the most successful year of its history last year, largely owing to the efficient work of Prof. Frank Clemes Smith. Over 70 names were on the rolls, and the school is increasing its hold on the people of the Hills.

TENNESSEE.

HICKMAN COUNTY.

TENNESSEE PHOSPHATE COMPANY.—Thomas Worthington, of Birmingham, Ala., has bought the properties of this company, which have been in a receiver's hands since last September. This includes some of the very best properties on Swan Creek, mainly on Upper Swan. There are about 8,000 acres, all told, in leases and freehold. Besides this, the Nunn mine has been opened, and has houses, offices, etc., and a narrow-gauge railroad. Price paid was reported at \$90,000. A road will probably be put in to work the upper deposits of these tracts.

TEXAS.

REEVES COUNTY.

UNITED STATES SULPHUR AND CHEMICAL COMPANY.—This company, incorporated in West Virginia to work the heretofore untouched deposits of sulphur in Texas, is capitalized at \$500,000. The Texan deposits of sulphur extend over an area of about 500 acres, and are about 20 miles west of Guadalupe and 40 miles northwest of Pecos City. The president of the company is R. E. Kyle, of Gadsden, Ala.

UTAH.

JUAB COUNTY.

MAMMOTH.—This company has decided to erect a fine hoist at its mine, and the contract for the same has been awarded. The specifications for this hoist call for a 200-H. P. Scotch marine boiler and 600-H. P. Webster, Camp & Lane engine, manufactured at Akron, O.

PINTE COUNTY.

DALTON & LARK.—These mines are reported to be in better condition than ever before, both as to quantity of ore broken down and amount of ore in sight. In the Dalton crosscut an upraise is being made for a shaft in which to station another hoist. About 100 tons of ore is being shipped daily, and when the new hoist is in place, it is expected that this output will be increased to 200 tons every 24 hours.

SALT LAKE COUNTY.

UTAH MINING COMPANY.—This company has filed articles of incorporation. The capital stock has been placed at \$100,000, in shares of \$1. The corporation will do a general mining and milling business and takes the stock of the Mining Guaranty and Trust Company, incorporated and doing business under the laws of Nevada. James P. Freeze has been chosen president; P. W. Madsen, vice-president; Marcellus S. Woolley, treasurer, and E. T. Woolley, secretary.

UTAH.

TOOELE COUNTY.

MERCUR.—There were recently exhibited in Salt Lake City some samples of ore from this mine, different in character from any yet found. They are a flinty quartz, impregnated with cinnabar, and also carry some gold. The ore came from the main Ruby incline-shaft on the Mercur ledge, which is now down 300 ft. on the dip of the vein, the face being in a solid body of good grade milling ore. The drift above mentioned was started at a distance of 150 ft. below the tunnel level and has been driven 30 ft. in a southerly direction into the hill; and the ore encountered and blocked out is a flinty quartz, as already indicated, and is free milling.

OVERLAND.—As work progresses in this mine, near the Sunshine, the outlook becomes more encouraging. At present a drift is being run northerly from the bottom of the 160-ft. shaft on the strike of the vein, and the ore is still carrying good values.

VIRGINIA.

LOUDOUN COUNTY.

LOUDOUN MINING COMPANY.—A charter has been granted to this company, with these officers: President, John B. Fassett, of New York City; Secretary and Treasurer, L. C. Thomas, of New York City.

WASHINGTON.

KITTITAS COUNTY.

BLEWITT.—It is reported that a run of 552 tons from this mine turned out bullion to the amount of \$6,523, while a second run of 107 tons gave returns of \$1,575. A new strike, said to have been made a few days ago, assayed well in gold.

SPOKANE COUNTY.

CLIMAX GOLD MINING COMPANY.—This company is incorporated with headquarters at Spokane. The capital stock is \$1,000,000. Trustees named are C. D. Crites and F. E. Leland, Lima, O.; D. F. Wetzell, John H. Shaw and W. A. Ritchie, Spokane.

IDLER MINING COMPANY.—This company of Spokane has been incorporated with \$1,600,000 capital stock. The trustees are Charles S. Warren, Butte; J. C. Miller, Wilsburg, Va.; John Bough, James B. Jones, G. B. Dennis, A. P. Curry and E. Dempsie, Spokane.

STEVENS COUNTY.

SUMMIT.—At this mine they are working 10 men and have put on a night shift. They are crosscutting at the 100 ft. level in the old shaft, and although they have drifted 17 ft. have not yet reached the foot wall. They also have a 60 ft. tunnel on this property, which shows a vein of good ore. The ore is galena, carrying gold and silver, and is concentrating in character.

WEST VIRGINIA.

PLEASANTS COUNTY.

CARTER OIL COMPANY.—It is reported that this company's gusher on the Livingston farm, near Hebron, is good for nearly 350 bbls. per day. It is said to be the richest strike in that section of the country.

WOOD COUNTY.

EASTERN OIL COMPANY.—It is reported that this company has struck a 75-bbl. well on the Harness Farm at Waverly.

WILLIAMSTOWN.—A report from this place tells of the discovery of a big gas well, located on the Charles Uhl farm.

WYOMING.

CARBON COUNTY.

(From Our Special Correspondent.)

BATTLE LAKE.—The owners of this copper property have put on a force of men and teams, for the purpose of shipping the ore to an Eastern market. A car of the ore shipped to Chicago netted the company \$361, after deducting all expenses including the hauling of the ore 50 miles to the railroad and shipping by rail about 1,500 miles to smelter. Tests made on the ore show that it will be cheaper to ship it than to ship in the necessary fluxes to treat it on the ground.

A great deal of quiet work is going on in the mining industry throughout all the mineral belts in the State, especially in Albany County. Douglas Creek, which is over 35 miles in length, and its many tributaries, are lined with miners actively engaged in washing the precious metal from the gravel, and the primitive sluice box, rocker and long tom can be seen at almost every bend of the creek, while the larger companies, like the Douglas Consolidated, Albany and Spring Creek, are using hydraulics with good success.

The Spring Creek Company are now making their annual clean up, and, while they are not through, enough is in sight to guarantee a successful and satisfactory season's work. All the tributaries of the Douglas, as well as those of the North Platte are located and are in the hands of parties anxious for their development.

A great many locations are being made on the tributaries of the Big Laramie River, especially on the Beaver, Bear, Fox and others. These all show well by prospecting, especially Fox Creek, where it is claimed that the gravel averages \$2.50 per yard. There is a great deal being done on One Mile, Three Mile, Four Mile, Foote Creek, Rock Creek, north and south forks of Dutton Creek, north fork of Cooper Creek, Wagon Hound and others. The gravel on these several streams is from three to 20 ft. to bed rock and it is estimated will average from 50 to 75c. per cubic yard. There is sufficient fall for hydraulic working and plenty of water for all practical purposes. There are a great many placer mines scattered through this section and the indications now point to successful clean-ups at the close of the mining season.

CONVERSE COUNTY.

(From Our Special Correspondent.)

DOUGLAS.—There is a considerable amount of development work being done the present season around Laramie Peak, which is situated some 35 miles southwest of this place and more especially in the War Bonnet district.

This district covers a large area, and is well-mineralized, the formation being made up of granite, porphyry, gneiss and slate.

The principal work is being carried on by the Douglas Mining and Milling Company on the Copper King property which is situated on a branch of the Box Elder, a tributary of the North Platte River.

The ore body where the Copper King is located is 7 ft. wide, and lies between well defined walls of granite and slate. A shaft has been sunk on the property to a depth of 40 ft., and a tunnel is being run to intersect the ore body at a greater depth. The tunnel is now in a distance of 290 ft., and the result of the work is satisfactory to the owners.

Other proprietors in this locality show equally as well for the amount of work done, and there is no reason why the camp should not become a good producer under proper management.

EVENING STAR.—There is also considerable work being done on the Horse Shoe, another tributary of the North Platte. This mine is situated on this stream and ore taken from the shaft at a depth of 20 ft. gives good returns. Some 50 locations have been made in this section and the outlook for the future is bright.

LARAMIE COUNTY.

(From an Occasional Correspondent.)

HECLA MINING AND REDUCTION COMPANY.—Articles of incorporation were recently filed by this company. The capital stock is \$2,000,000. The incorporators and directors are James Adams, of Wyoming; H. M. Wright, of Boston; John M. Thurston,

of Nebraska; Aug. H. Phelps and Jno. W. Moakler, of Denver. The officers are: James Adams, president and general manager; Jno. W. Moakler, vice-president and treasurer; Aug. H. Phelps, secretary. The company owns a group of four claims at Hecla in what is more familiarly known as the old Silver Crown Mining District. Considerable development work has already been done upon the property. The ore is a good grade of galena. The Department of the Interior has at last recognized this as a mineral belt, and forever settled the controversy arising from the Union Pacific land grants.

SWEETWATER COUNTY.

GREEN RIVER SODA WELL.—The owners of this well, near the town of Green River, have placed a steam pump in position and are pumping the product into evaporating vats. The capacity is 2,500 lbs. of soda every 10 hours.

WESTON COUNTY.

NATIONAL OIL AND MINING COMPANY.—This company, recently organized to develop oil lands, is preparing to put down wells on its property near Newcastle. A carload of oil-boring machinery has arrived and is being placed on the ground on the oil prospects. The company controls 8,000 acres of oil land in this vicinity.

FOREIGN MINING NEWS.

BRAZIL.

ST. JOHN DEL REY GOLD MINING COMPANY.—The report for the year ending February 28th states that the profits from working, after deducting all expenses at the mine, amounted to \$192,440. Interest paid and expenses of the London office amounted to \$132,170, leaving a net balance of \$60,270. The directors propose to write off the deficit for the previous year, which amounted to \$19,525, and to carry forward the remaining balance of \$40,745 to the account of the current year.

CANADA.

BRITISH COLUMBIA.

LE ROI MINING COMPANY.—This company has just placed an order with the Ingersoll Rock Drill company for a large direct-acting winding roll, 20 x 40, and for three 125-H. P. boilers. This is the largest winding engine on a meal roll in Canada, and will be put on the main shaft. The boilers will be utilized to run the new 40-drill compressor on the Black Bear site.

WEST KOOTENAY DISTRICT.—From this time on shipments of ore will be made from the Nickel Plate mine that, it is said, will carry some gold and 6 to 8% copper. Large bodies of this ore are reported sight. The Skyline mine has its ore bins filled and shipments have begun.

(From Our Special Correspondent.)

RED MOUNTAIN RAILWAY.—A hasty trip down the Northport to note the progress of Mr. Corbin's grading partly reveals the most gratifying evidences of actual work. Graders, camps may be seen at an interval of every few miles, pitched between Rossland and Northport and work has actually commenced. This road, which has been familiar as the Red Mountain Railway, is a branch of the Spokane & Northern and its construction until the summer was delayed on account of the right of way, which Mr. Corbin did not succeed in obtaining until very recently. Its construction is deemed of such local importance that many have placed it on a par with the output of two of the best mines in the camp, because the communication which it will afford with the south is not only along the natural highway, but it will become a great outlet to the south, especially for ore which will be shipped to points south of the line.

The mention of the road would perhaps be better in a railway journal, but its construction is so well bound up with the mineral industry of the camp that it is worthy of mention at least.

ONTARIO.

(From Our Special Correspondent.)

A. L. 75.—But two of the new Ingersoll rock drills on this work are in operation in the No. 5 shaft, at a depth of 120 ft., where the lode maintains its high character for strength and richness in native and free-milling ore. Pending the arrival of J. C. Foley and contemplated changes in present organization, the night shifts have been laid off this week.

BAD VERMILION LAKE.—The Rodi claims are under partial development, with fair results in free-milling ore, while the adjoining claims of W. E. Stone continue to improve in output and quality as work goes on.

FERGUSON'S (ENGLISH SYNDICATE).—A large force (chiefly surface men) are engaged at this place, viz., A. L. 110 and A. L. 111, in preparing for a season of vigorous mining development. Already several test pits and at least one working shaft have been commenced, all upon strongly defined lodes, and in all of which native and free-milling gold ores are the result.

K. 198.—This adjoins Foley on the west. It has an area of 215 acres, and is traversed by a series of fissure veins cutting diagonally across the formation (protogine granites) that everywhere, exposed by stripping and sinking, shows to the naked eye fine and coarse native gold freely distributed. A force of miners is this week engaged in opening up

the central portion of this property. The entire block, like many of the best claims in this immediate vicinity, is owned by Colonel Ray, banker, of Port Arthur, one of the original adventurers into the new gold regions of the upper and lower La Seine River.

RAY-FOLEY MINE.—The last instalment of \$40,000 was paid by J. C. Foley to Col. S. W. Ray and others, on June 1st, for gold-mining claims A. L. 74 and 75, on the original Ray-Wiegand locations, now under development by the J. C. Foley combination.

MEXICO.

RIO GRANDE, SIERRA MADRE & PACIFIC RAILROAD.—It is expected that within a month the work of locating this railroad will be completed by four surveying parties now in the field. It is to connect Juarez City and Corralitos, a distance of 150 miles, and will open up some good mining country.

ITALIA.—A number of capitalists have organized a company to operate this mine at La Junta, about 30 miles north of Minas Prietas, Mexico. Capital stock, \$125,000. A 10-stamp mill will be erected at once.

NICARAGUA.

United States Consul O'Hara, at Greytown, Nicaragua, has submitted to the department of State, a most exhaustive report upon the gold deposits of Nicaragua. On the Pacific side of the country heavy operations have been carried on for many years with English capital, and large mills are running steadily. On the Atlantic side 14 mills are in operation or in the course of construction. There are no smelting or concentrating works in the country, nothing but free milling ores being treated. The consul makes no secret of the great difficulties and hardships that lie in the path of the American miner, and says that while he does not advise people either to purchase mining stock or rush to Nicaragua in search of gold, he does believe that a live agent might sell considerable machinery and supplies.

SOUTH AFRICA.

MASHONALAND.

JEFFREYS PENHALONGA.—The reef has been struck in the long adit after driving 960 ft., at a depth of 470 ft. from the surface, says the *Rhodesia Advertiser*. The width of the reef at the point cut has so far been proved to 18 ft., and is not yet through, assaying over 20 dwts. to the ton. The mill-site drive has now been put in 450 ft. along the reef, which assays well throughout. There are now about 1,500 tons of ore at grass and development work is being vigorously pushed forward, and the battery is in course of erection.

LATE NEWS.

The coal mining tract in question covers an area of 7,500 acres, containing, it is said, large veins of the best steam, domestic and coking coal. About \$40,000 has already been expended in developing the property, one tunnel being in 620 ft.

COPPER MOUNTAIN.—Two shifts of men are at work on this lode adjoining the Gray Eagle property, in Lawrence County, S. Dak. A 160-ft. drift has been run in 200 ft. from the surface, in which rich copper prospects have been found.

ASBESTOS.—Samples of this mineral have been exhibited in Buffalo that came from a bed said to have been discovered near Hyattville, Bighorn County, Wyo. It is reported that the samples are of good color and fiber, and compare favorably with the asbestos mined near Casper.

SOUTH PENN OIL COMPANY.—This company's Morris well, located at Board Tree, nine miles Southeast of Cameron, Marshall County, W. Va., was put to pumping July 2d, and produced about 125 barrels of oil during the first 24 hours. It is thought that it will make about a 25-barrel well.

PRIDE OF THE MOUNTAIN.—It is reported that the tunnel that is being driven into this mine in Snohomish County, Wash., has struck a large body of ore at a depth of some 3,000 ft. below the point where the highest croppings of the vein have been discovered above. This is about of 1,100 ft. below the upper tunnel of the mine, in which mining is now being carried on.

PLACERS.—It is reported that rich placers exist along the streams and beach of the western part of Clallam County. The gold is said to exist in ruby sand, which lies, in some cases, 6 in. below the level of the beach. This sand contains innumerable little rubies that sparkle brilliantly when exposed to the sun. Among these rubies lies the gold. This sand is found only in patches, consequently some of the claims are more valuable than others.

COAL CREEK.—Work in the mines is about as usual for this season of the year, but the general condition of the coal mining business is somewhat unsettled, says the *Chattanooga Tradesman*. Some weeks ago, in the Shamrock mine in Briceville,

Anderson County, Tenn., work was suspended on account of dissatisfaction over some small reduction in wages. It is reported that the Coal Creek company have asked their men to dig coal at 35c. per ton, which is a reduction of 5c.

BLACK DIAMOND COAL COMPANY.—This company has just put in a large coal hauling engine and electric plant at the Beech Grove mine, Anderson County, Tennessee. They have also erected a tipple and coal screen, which means that the coal must be screened and a scale of wages arranged accordingly. The coal is very soft for screening, and there are numerous apprehensions that the price will be unsatisfactory. This company will also erect a fire-brick plant to be run in connection with their mining plant, an extensive bed of fire clay having been found lying directly over the coal.

SUNDANCE COAL AND COKE COMPANY.—Articles of incorporation have been filed for this company. The capital stock is \$1,000,000. The company is organized for the development of the coal fields adjacent to the city of Sundance, Crook County, Wyo., and is to act in co-operation with the Wyoming and Black Hills Railroad, which owns the deposits.

The mines are situated about 10 miles southwest of Sundance, and are within 18 miles of Merino, a station on the Burlington & Missouri road with which it is proposed to connect from the south. Also with the Fremont, Elkhorn & Missouri Valley at a near point in the Black Hills mining region to the northeast.

(Special to the Engineering and Mining Journal.)

LEADVILLE, COLO.—By TELEGRAPH, July 9th, 1896.—Strike situation unchanged. Have heard rumor here of sympathetic strike of union miners at Cripple Creek and other camps, but have been unable to verify it.

PENNSYLVANIA.

TWIN SHAFT DISASTER.—The condition of affairs at this mine at Pittston, where 58 men were entombed by an extensive cave-in on June 28th, is but little improved since last week. The work of opening a passageway to where the men are supposed to be has continued day and night, but because of the difficulties which beset this task progress has been comparatively slow. As yet the advance has been less than half the distance it is necessary to go, and as this work has occupied 12 days it does not seem possible that, even under the most favorable conditions, any of the men can be found alive. Hope of any such result has been generally abandoned, and it is even rumored that the search will be discontinued. It is certain that the men so engaged are in constant danger, and that to carry on this work the company is paying out a sum of money that could be put to a more practical use in rendering assistance to the afflicted families.

Governor Hastings, on July 2d, sent letters to Mine Inspectors Edward Roderick, of Scranton; William Stein, of Shenandoah, and Edward Brennan, of Shamokin, requesting them to visit the Twin Shaft mine and conduct an investigation having for its object, first, what, in the opinion of the inspectors, was the cause of the accident; second, whether, in their opinion, any precautions were omitted which would have tended to prevent the disaster; and third, what legislation, in their opinion, would secure to the miners of the state immunity from this class of risk.

This committee has been on the ground since July 6th, aiding, in their capacity as experts, to devise other means of rescue, and also to learn from actual observation those conditions which are necessary to be known to properly conduct the investigation. The first session for this purpose was held July 9th.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, July 10.

Statement of shipments of anthracite coal (approximate) in tons of 2,240 lbs., for the week ending July 4th, 1896, compared with the corresponding period last year:

	1896.		1895.
	Week.	Year.	Year.
Pennsylvania Railroad.....	49,953	1,744,121	1,820,587

PRODUCTION OF BITUMINOUS COAL, in tons of 2,000 lbs. for week ending July 4th, and for years from January 1st, 1896 and 1895:

	1896.		1895.
	Week.	Year.	Year.
Shipped East and North:			
Allegheny, Pa.....	38,380	1,209,567	2,111,931
Barclay, Pa.....	562	21,586	227,351
Beech Creek, Pa.....	37,117	1,594,118	1,510,439
Broad Top, Pa.....	53,634	2,017,320	2,284,341
Clearfield, Pa.....	58,298	1,644,712	1,570,151
Kanawha, W. Va.....	4,278	37,081	1,224,606
Phila. & Erie.....			2,823,214
Pocahontas Flat Top.....			
Totals.....	192,269	7,104,184	12,592,623

	1896.		1895.
	Week.	Year.	Year.
Shipped West:			
Monongahela, Pa.....	14,239	524,361	429,363
Pittsburg, Pa.....	29,437	953,835	975,763
Westmoreland, Pa.....	29,688	1,016,919	970,975
Totals.....	73,364	2,495,115	2,376,131
Grand totals.....	265,633	9,599,299	14,968,754

Production of coke on line of Pennsylvania Railroad for the week ending July 4th, 1896, and year from January 1st, 1896, in tons of 2,000 lbs.: Week, 73,740 tons; year, 2,285,301; to corresponding date in 1895, 2,867,759 tons.

Anthracite.

The anthracite coal trade shows no improvement from our last report, and with few exceptions hardly any new business can be recorded. The consumers are still of the opinion that they are being charged winter prices, so they are not in a hurry to fill their coal bins. Unless some "friendly power" convinces them that they are on the wrong side of the situation much dissatisfaction among consumers is feared when the producing companies and sales agents advance prices in the fall. With a restricted output and the present shortage of Lehigh and some other coals, there is a fair prospect of another advance in prices.

We understand that some of the leading companies have already mined so large a quantity of coal that they will have to restrict their production if they want to keep within their prescribed allotments.

The middlemen appear to be doing little or no business at present. They say that while orders are scarce coal is still scarcer and that they cannot even get the small quantity necessary to fill the demand. Such is the situation of the anthracite coal trade in the East, and it is likely to continue so all through this month and probably for several weeks in August. The West continues to take much of the coal going forward, and prices there are said to hold their own.

We quote f. o. b. prices as follows: Broken, \$3.75; egg, \$4; stove, \$4.25; chestnut, \$4, though a company operating in the Lehigh region reports a sale of 500 tons of egg coal this week at \$4.25.

Bituminous.

In the soft-coal market there seems to be a fair amount of business doing, and the shipments generally are said to be quite satisfactory. The efforts of consumers to "get in" on the terms and conditions of the Bituminous Coal Association have caused sales agents to become alarmed as regards business. They have complained to the producers of the position taken by consumers, but as the latter have the upper hand in times like the present, it is not surprising to learn that they "say nothing and saw wood." The operators are of the opinion that the consumers will come around when they see that lower prices cannot be obtained by the course they are now pursuing toward the sales agents.

The better grades of coal are taking about all the business that is wanted at present, and while the lower grades show a smaller amount of shipments and tonnages than last year they are making more net money now than they did at that time.

The association is holding its regular monthly meetings, while the committee meetings of this organization are being held more frequently. Very little is being done at these meetings, however, which are made up principally of a discussion of the current situation of trade.

The Eastern New England markets are taking the larger part of the coal that is going forward. Business is improving slightly at Sound ports. New York harbor trade is steady, and most consumers are taking their full quantity of coal. All-rail trade does not seem to have changed much from last week as regards tonnage.

Transportation from mines to tide is good. We hear of no blockades on any of the roads, and coal is coming through with enough regularity to allow of calculations ahead for charters to arrive. There is a fair amount of coal on the way from the mines, though it is not an over-supply. Most consumers have a fair stock of coal on hand for present wants.

In the coastwise vessel market rates are weak, with a good supply of the larger class of vessels. An offer of a large barge at 50c. to Boston is noted. It cannot be expected that ocean freights will go lower than this; 55c. is about the ruling rate.

We quote current rates of freight from Philadelphia: To Boston, Salem, Portland, Providence, New Bedford and the Sound ports generally, 55@60c.; Portsmouth and Bath, 60c.; Wareham, 75c.; Lynn, 65@75c.; Newburyport, 70@75c.; Dover, \$1 and towage; Saco, 80c. and towage; Gardiner, 60c. and towage; Bangor, 65c. alongside. Five and ten cents above these rates are asked from Norfolk, Baltimore and Newport News.

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, alongside; New York Harbor, \$3. There is a 2c. differential in favor of Clearfield and Beech Creek coals.

NOTES OF THE WEEK.

Receipts of coal at San Francisco by water in June were 90,931 tons; for the six months ending June 30th they were 637,527 tons, a decrease of 7,805 tons, or 1.2%, from last year. For the six months this year the supply was from the following sources: Eastern (anthracite and Cumberland), 9,020 tons; Oregon and Washington, 224,121; British Columbia, 240,822; Australia, 93,786; Great Britain, 69,778 tons. The statement does not include coal from the Mt. Diablo mines in California.

Buffalo.

July 9.

(From Our Special Correspondent.)

The coal trade continues quiet both for anthracite and bituminous. There are few special incidents to

report. The prices for anthracite coal are as follows: For 2,240 lbs. on board vessels at Buffalo, \$4.80 for grate and \$5.05 for egg, stove and chestnut; for 2,240 lbs. delivered at Bridges, \$4.50 for grate and \$4.75 for egg, stove and chestnut; for 2,000 lbs. delivered in city limits, \$4.75 for grate, \$5 for egg, stove and chestnut and \$3.75 for pea. Blossburg per 2,000 lbs. delivered \$4. Lake freight declined 10c. to Lake Michigan and 5c. to Lake Superior ports.

The lake shipments of coal from Buffalo for the month of June were 348,849 net tons, as compared with 270,381 tons in 1895 and 384,663 tons in 1894; for the season to June 30th, 664,183 net tons in 1896, as compared with 530,169 tons in 1895 and 726,407 tons in 1894.

The shipments of coal from this port westward from June 28th to July 4th, both days inclusive, aggregated only 51,020 net tons, distributed as follows: 12,950 tons to Chicago, 3,950 tons to Milwaukee, 9,100 tons to Duluth, 1,000 tons to Gladstone, 1,000 tons to Sault Ste. Marie, 2,150 tons to Saginaw, 700 tons to Toledo, 2,900 tons to Fort William, 850 tons to Ashland, 670 tons to Portage, 1,150 tons to Port Huron, 800 tons to Michigan City, 600 tons to Grand Haven, 1,000 tons to Bay City, and 2,200 tons to Hancock. The rates of freight were as follows: 50 @40c. to Chicago, 45@35c. to Milwaukee, 35c. to Gladstone, Sheboygan and Hancock, 60c. to Michigan City, 40c. to Racine, 50c. to Grand Haven 30c. to Fort William, Port Huron and Ashland, 30 @25c. to Duluth, 25c. to Superior and 25c. to Bay City and Toledo. Closing dull.

Chicago.

July 8.

Anthracite.—Circular prices are now for grate and egg \$5.35, stove and chestnut \$5.60 f. o. b. cars Chicago. The circular retail price is now placed at \$6.75. There was considerable activity in hard coal during the last days of June, due to the increased prices of July 1st, but since then the market has been inactive. There is but little coal being placed, and what buying is now on is merely of the hand-to-mouth kind. There are but few large contracts in sight, and it is hardly possible that any of them will be closed until prices are really settled. The market will hold firm at circular quotations, but it is hardly feasible that prices can be maintained during the summer with the great business depression throughout the West. The out-of-town trade is a great factor in this market, and until orders come in a great deal more lively than at the present time this center will remain very inactive.

Bituminous Coal.—Soft coal is very inactive, and actual business is apparently becoming less each week, as the manufacturing concerns are running on shorter time, and, in consequence, using less coal. There are no heavy contracts in the market outside of a few municipal requirements, and those, when given, will represent but little advantage to the dealer.

Pittsburg.

July 9.

(From Our Special Correspondent.)

Coal Trade.—Coal men are very indifferent about a further rise, and claim that they lost money in the last shipment; the lower markets are all overstocked, and prices are down to a very low figure. The rise in the Ohio will enable boats with empties to reach port. In regard to shipping any more coal at present we consider it very doubtful as there is no money in the business at present prices. Look at the situation for a moment. The lock tolls on the Monongahela are 80c. per ton; the Kanawha boats pay no lockage, and are 250 miles nearer Cincinnati, besides they pay them less money than is paid on the Monongahela. The last shipment was a big disappointment. The markets of the South and West were filled with coal, which had not been consumed, and ready markets could not be found for the Pittsburg shipments; this lowered prices and many thousands of bushels were sold at a sacrifice. Coal merchants, whose yards were stocked, bought the fuel at the low prices offered which was the only way the stuff could be disposed of; thousands of bushels at great expense were shipped to the far West. Captain S. S. Brown, one of the largest operators, said about the onslaught of West Virginia: "We pay our miners more than the Kanawha coal men; we have the big Monongahela tolls to pay; we cannot sell coal in the Louisville market at the figures set; nearly all the shipments are for Louisville. This market is supplied with West Virginia coal."

Several representatives of a coal company have been in the vicinity of Harmer and Springdale townships for the past week attempting to buy up the coal that underlies the property. From \$1.50 to \$25 an acre, according to the location, has been offered a number of farmers. Coal lands are being examined at various places with a view to purchase.

Connellsville Coke.—The situation shows but little change; the week's increase over the preceding one was very small. In the new Bee-Hive oven the coke haulers lose their pull. John C. Dias and N. B. Taylor, of Wilmerding, claim to have built a new bee-hive oven which will do away with the loss of time in hauling the coke from the oven after it is burned. The bottom of the oven is built on a truck; when the coke has been burned and is ready for drawing the truck is removed and the coke drops out automatically, so the oven can be cleaned in less than ten minutes.

The Bessemer Coke Company has purchased a tract of several hundred acres of coal land to erect

a new coke plant at Greensboro, Pa., in Unity township, from I. W. Rhodes, Wallace H. Rowe, Hiram Griffin and William Humphries, for which they paid the sum of \$80,000; they will at once open up works at that place and have chosen William Hart, of Munhall, as superintendent. The summary from the region was 10,304 ovens in blast with 7,643 idle; the changes show 395 ovens less in blast than the preceding week. Production for the week amounted to 101,663 tons; increase, 121 tons.

In the running order of the ovens in blast, 4,894 ovens made six days; 5,340 ovens made five days, and 70 ovens four days, an average of 546 days. The shipments of coke for the week reached 6,150 cars against 6,114 the preceding week; they are distributed as follows: To Pittsburg, 1,962 cars; points west of Pittsburg, 3,034 cars; points east of Pittsburg, 1,154 cars; total, 6,150 cars.

The following table shows six months production and shipments of coke, January to June, 1896:

Coke.	Production.		Shipments.	
	Tons.	Cars.	Tons.	Cars.
January.....	519,414	489,769	26,891	26,891
February.....	617,812	580,679	31,808	31,808
March.....	453,896	492,858	29,992	29,992
April.....	454,675	496,909	27,240	27,240
May.....	550,669	602,875	33,307	33,307
June.....	49,621	436,734	22,263	22,263
Total.....	3,006,037	3,099,864	171,501	171,501

IRON MARKET REVIEW.

NEW YORK, Friday Evening, July 10, 1896.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending		From		From	
	July 12, 1895.	July 10, 1896.	Jan., '95.	Jan., '96.	Tons.	Tons.
Anthracite.	32	20,124	41	25,960	576,022	781,638
Coke.....	122	131,800	135	161,170	3,773,840	4,624,819
Charcoal...	18	3,961	19	6,130	111,484	148,540
Totals...	172	155,885	195	193,200	4,461,346	5,554,997

There is nothing in the way of improvement to report in the condition of the iron and steel market during the past week. National politics unquestionably have had a depressing effect on trade. The uncertainty as to what will be done at Chicago and the money question are the all-absorbing topics of conversation in the trade. Buyers will certainly hold off and it is not expected that any very large orders will be placed soon. In the steel-rail market, the Cambria Iron Company finally secured the contract for 20,000 tons of street rails for the Consolidated Traction Company, of Pittsburg, which is probably the largest order placed during the year. The expectations in the structural iron and steel line are good and while the mills are anxious for business, prices are maintained.

Signatures are being steadily received to the Amalgamated Association's new scale of wages, and many rolling mills continue closed for the present. The tin-plate people and the Association have agreed on a compromise scale, but the agreement has not yet been generally signed.

New York.

July 10.

It has not required much time this week to record sales, and there has been plenty of opportunity to discuss the situation. Except in structural work everything is dull and nobody seems to expect any new business of importance.

NOTES OF THE WEEK.

The bids received for the water-works contracts at Deckertown, N. J., were opened on July 6th and we are informed that the results are as follows: Sub-Division A included 1,069 tons cast-iron pipe, sizes 4 to 8 in., and 9 tons specials. Nine bids were received, and the contract was awarded to the Warren Foundry and Machine Company, the lowest bidder, at \$17.90 per ton for pipe, and \$35.00 per ton for specials, delivered f. o. b. cars at Deckertown. The highest bid received was \$19.80 per ton.

Sub-Division B.—Valves and hydrants; seven complete bids and five incomplete bids; contract awarded to R. D. Wood & Co. for \$2,574, the highest bid being \$3,194.

Sub-Division C.—Laying pipe and setting valves and hydrants, 16 bids ranging from \$9,014 to \$19,124.

Sub-Division D.—Building two reservoirs; seven bids, ranging from \$8,051 to \$12,107. Contracts will be let on the most advantageous combined bids for Sub-Divisions C and D, four bids having been held for further consideration, and all other bids under these sub-divisions rejected.

Pig Iron.—Quoted prices are practically the same as last week. While many furnaces are anxious for business, whatever concessions may be given are made quietly and nominally. No changes are reported. Inquiries for round lots for fall shipment are now coming in, but large buyers are waiting, watching the market closely, and taking advantage of the fact that while many furnaces are out of blast a large stock of pig is on hand.

We quote for large lots, tidewater delivery, Northern brands: No. 1 foundry, \$12.25@13; No. 2

foundry, \$11.25@12; gray forge, \$11@11.50. For Southern irons, same delivery, we quote: No. 1 foundry, \$12.50@12.75; No. 2 foundry, \$11@11.50; No. 1 soft, \$10.75@11.25; No. 2 soft, \$10.25@10.75; forge, \$10@10.50.

Cast-Iron Pipe.—This market has been quiet during the past week, there being few enquiries, with small sales. The particulars of the Decker-town contract are noted above.

Wrought Iron Pipe.—There were no new features to characterize this market for the week. Prices were not maintained quite as firmly as the trade would like to see, and the demand is only fair. We quote prices out of store as follows, with the usual shading for large quantities at mill: Butt black, 57, 10, 10, 10; lap black, 67, 10, 10, 10; butt galvanized, 52, 10, 10, 10; lap galvanized, 55, 10, 10, 10, 10.

Spiegeleisen and Ferro-Manganese.—No sales of importance are reported. Prices remain unchanged and are \$19.50@20.50 per ton for foreign spiegeleisen and \$47@47.50 for ferro.

Steel Billets and Rods.—Billets remain practically the same as last reported and no business is noted. Prices are unchanged at \$21.75 for New York delivery. Rods \$27.

Structural Iron and Steel.—Business in this market is reported as good. While the mills could handle more business they are not seriously complaining and are maintaining prices. We quote angles, 1 1/2@1 3/4; channels, 1 7/8@1 3/4; tees, 1 3/4@1 3/4; beams, 1 7/8@1 3/4, in quantities, with a slight advance for small lots.

Nails.—Business is very quiet with little or no demand. There is no change in prices, which we quote as follows: Wire nails \$2.55 per keg and cut nails \$2.30 per keg f. o. b. Pittsburg, in carload lots.

Steel Rails and Rail Fastenings.—Nothing transpired this week in the way of business, and no sales are reported. The pool price of \$28.75 per ton at tidewater still holds, with girder rails \$28@30 per ton at tidewater.

Old Rails.—There is little or no demand for old steel rails, and the quotations \$11@12.50, New York harbor delivery or Sound port, still hold. Old rails for relaying purposes are held at \$19@22, per ton, New York. A sale of 500 tons 56 lbs., at \$21.50, delivered at Hoboken, is reported.

Scrap Iron.—There is very little demand, and prices are the same as last quoted: Good machinery scrap, \$10@11.50 per ton; ordinary cast-iron scrap, \$9@10; stove-plate and mixed, \$6@7.50.

Buffalo, July 8.

(Special Report of Rogers, Brown & Co.)

The pig-iron market in this vicinity remains quiet. Considerably more interest is being shown in the low prices now ruling and while the comment is often heard that present prices seem very attractive, yet the unsettled condition of affairs in general prevents for the time being the placing of orders for future delivery. The few orders which are now being placed have been for quick shipment, showing that consumers are running close to the wind and not carrying their usual stock of pig iron. The consumption of foundry iron in this vicinity keeps up surprisingly well. Quite a few of the grey iron foundries in and around Buffalo shut down the first of the month for their annual inventory, but all have started up again with at least as many men employed as before, and in not a few cases are melting more iron now than a month ago. This speaks well, everything considered. Prices are about as mentioned below, although many furnaces would doubtless accept less for a good-sized order for early shipment. We quote on a cash basis f. o. b. cars Buffalo as follows: No. 1 foundry strong coke iron, Lake Superior ore, \$13.50; No. 2 foundry strong coke iron, Lake Superior ore, \$13; Ohio strong softener No. 1, \$13.50; Ohio strong softener No. 2, \$13; Jackson County silvery No. 1, \$15.25; Southern soft No. 1, \$12.40; Southern soft No. 2, \$11.90; Hanging Rock charcoal, \$18; Lake Superior charcoal, \$14@14.50.

Chicago, July 8.

(From Our Special Correspondent.)

There has been no improvement in this market worthy of notice from last week. Buying in all lines continues moderate, and prices are uncertain. There are some big inquiries in the market, but business in large proportions is very slow in developing. The Northern and Southern furnaces are after prevailing business with a vengeance, and consequently there has been a lowering of prices within the last few weeks. Steel rails, billets and rods are yet being bought only in small quantities. Structural material is in some demand for railroad bridge work.

Pig Iron.—The aggregate business transacted from week to week in pig iron does not vary more than 1,000 tons. The Southern furnaces appear to have done most of the business this week, though they have to come down in their prices to do so. We quote as follows: Lake Superior charcoal, \$13.50@14; Local coke foundry No. 1, \$11.75@12; No. 2, \$11.25@11.75; No. 3, \$11@12.25; Local Scotch foundry, No. 1, \$11.75@12; No. 2, \$11.25@11.75; No. 3, \$11@12.25; Southern coke No. 1, \$11.60@12.10; No. 2, \$10.85@11.35; No. 3, \$10.60@10.85; No. 1, soft, \$10.85@11.35; No. 2, soft, \$10.60@

\$10.85; Southern silveries No. 1, \$11.85@12.35; No. 2, \$11.60@11.85; Jackson County silveries, \$14.50@16; Ohio strong softeners, \$15@15.50; Alabama car wheel, \$16.85@17.35; Bessemer, \$13@13.50.

Structural Material.—Some of the railroads are contracting for material to complete small bridges along their lines. Building shapes are in little demand. Prices are as follows: Beams and channels, 1 7/8@1 3/4; angles, 1 1/2@1 3/4; plates, 1 1/2@1 3/4; tees, 1 1/2@1 3/4. Small lots from stock are quoted 1/4@1/2 c. higher.

Steel Rails.—A good run of small orders is received. Large business is scarce, the railroads continuing to hold off. Rails are quoted \$29 and up, according to specification.

Billets and Rods.—But few orders have been booked, and there is but little inclination on the part of consumers to test the market. Prices are maintained, however, and indications are that they will go no lower. Billets are quoted \$21.25.

Bar Iron.—Consumers in certain lines think that prevailing prices are too high and are therefore keeping out of the market in expectation of reduced quotations. Bar iron is now quoted 1 3/4@1 3/4; and guaranteed 1 3/4@1 3/4.

Old Rails and Wheels.—A few small sales are being made from week to week, but the market is without any active features. Old iron rails are quoted \$13.50@14 and old wheels \$13@13.50.

Cleveland, July 8.

(From Our Special Correspondent.)

Iron Ore.—The market remains firm, and one of the reasons given for this condition is the fact that, comparatively speaking, very little ore is being brought from the head of the lakes at present. For the same reason but few sales are reported. Many of the mills and foundries tributary to Cleveland have shut down for annual repairs, and it is thought that there will be no strong demand for ore until August. Standard Bessemer are very strong at \$4, and one or two sales have been reported at \$4.25. When more ore is brought down from the lakes it is thought the price will drop again to \$4. Standard non-Bessemer hematites are quoted \$3@3.25, the same as last week. Mesabi non-Bessemer are quoted at \$2.50@2.60. The prices of other ores remain unchanged.

The ore freight rates have touched rock bottom, the vesselmen say. It has been a case of cut and slash during the past week, and the result can be seen in the present rates, which are: From the head of the lakes, 60c.; from Marquette, 55c., and from Escanaba, 45c. When the season opened the rate from the head of the lakes was \$1; from Marquette, 85c., and from Escanaba, 65c. It is believed by both vesselmen and shippers that the rate will take an upward jump the latter part of the present month, which may affect the price of ore.

Pig Iron.—There are no changes in the prices this week. The quotations are: Lake Superior charcoal, \$13.50@14; bituminous coke No. 1 foundry iron, \$13.25; No. 2, \$12.75; Ohio Scotch No. 1, \$12.75; No. 2, \$12.25; Bessemer pig, \$12.75.

Pittsburg, July 9.

(From Our Special Correspondent.)

Raw Iron and Steel.—Business since our last has been quiet; the holiday season being over, preparation will now be in order for business. The industrial situation is not very satisfactory, and the prevailing quietude will, no doubt, be intensified by the usual stoppages of the iron and steel plants for stock taking, repairs and the adjustment of the scale for the year that begins July 1st. The iron trade has continued quiet, that being the usual situation on the opening of the second six months of the year; prices are about at a standstill, but are not expected to go any lower. There is still a lack of confidence in the stability of pool prices which restrains free buying by consumers; although the outlook for consumption is certainly favorable, and the partial removal of uncertainty on the money question has encouraged more hope of an early improvement in business. All things taken into consideration, the iron and steel trade remains quiet and steady; consumption is still at the minimum, and shows little signs of increasing until the general business situation shall have improved radically. The limited business that offers, however, is done at irregular prices, although the margin between cost and selling price is so slight that no important decline in quotations is deemed possible. In one or two instances, however, weakness has developed, and some round lots of pig iron are hanging over the market, which needy holders are obliged to sell; but the tone, as a rule, is steady, as buyers are not taking more than they can handle at once and producers are limiting their output to trade requirements.

An extensive shutdown occurred at all the mines of the Metropolitan Land Company, in the Lake Superior region, and fully 1,500 men are forced into idleness. The cause of the shutdown is the slight demand for iron ore; the fact that they have in stock piles 500,000 tons of ore, and that the season is well advanced, with sales thus far of only about 100,000 tons.

The wire nail trade consumption has been reduced to a minimum; it is understood that the July allotment is only 25,000 kegs, which is equivalent, practically, to a complete suspension of work.

The Latest.—Market dull, prices weak and lower. Bessemer pig sold at \$12.30@12.60 Pittsburg; Bessemer in the Valley nominal \$11.50@

\$11.60, with scarcely any demand. The Ohio Steel Company is purchasing Bessemer, which means the works will not close for the present. Steel billets dull and very much neglected, with sales all the way from \$19.50@20.35—and still the middlemen have a few more left.

SALES AND PRICES BESSEMER PIG AND BILLETS, JANUARY-JULY, 1896.

The following table furnishes the weekly sales of Bessemer, billets and all descriptions of raw material from reports published in the Daily Dispatch, and will be found useful for reference:

Table with 4 columns: Week, Bessemer, Billets, All Kinds. Rows include monthly totals from Jan 4 to May 27, and a grand total of 574,871 Bessemer, 268,200 Billets, and 1,285,764 All Kinds.

The following are the weekly prices of Bessemer pig and steel billets for the past six months, and will be found useful for reference. The figures are from the weekly price current of the Dispatch.

Table with 4 columns: Week, Bessemer prices, Week, Billet prices. Rows show weekly price fluctuations for Bessemer and Billets from Jan 4 to June 27.

COKE SMELTED, LAKE AND NATIVE ORE, BLOOMS, BILLETS AND SLABS AT MILL.

Table with 4 columns: Tons, Bessemer, Cash, Tons, Billets, Cash. Lists various iron products and their prices, including coke, blooms, billets, slabs, and charcoal.

Philadelphia. July 9.

Pig Iron.—Brokers and furnace agents agree that the past six days have been the dullest for a year. Mills are idle, foundry time has been considerably reduced, new work is not coming in, and in consequence no one is buying furnace products. Besides there is an undercurrent of feeling that prices in certain products must break before the fall trade opens. Then again pestiferous politics come in, at least people harp on that subject as holding business up. The most careful work this week among people who usually speak intelligently of the iron trade fails to bring out anything worth occupying space to talk. Coke, ore, nails, shapes and some other things are artificially high, but that does not explain present dullness. No change in prices.

Steel Billets.—A crisis in billets is approaching from our point of view, and we do not accept the dictum that billets will stay at \$21.50. Consumption has declined, and new contracts will not be entered into right away. A cut in prices is generally accepted. Open-hearth steel production is likely to increase, and billet makers will soon be obliged to discount the effect of this fact.

Merchant Iron.—There is no news from the mills and very little new business at the stores.

Skelp.—Certain parties whose inquiries early in June attracted some attention, are back again, but are evidently waiting for lower prices, which up to this hour manufacturers are not willing to concede.

Sheet.—Sheet iron, light and galvanized, is an exception to the rule. There are fair sales every day from stores, and a large consumption of that sort of stuff which finds its way in roofing and general construction purposes. The mill people look for a large amount of profitable business this fall.

Pipes and Tubes.—Here and there a mill is full of work and others are short. Speaking generally, there is not sufficient demand to keep this branch of the iron trade out of the mischievous practice of cutting prices. Manufacturers, in working up fall trade, think there will be plenty for all if it is not scared off.

Merchant Steel.—New business has not been heard of this week.

Plate.—The plate iron makers report no progress in getting new business that has been hanging on the trade horizon for several weeks. Prices are firm, because low quotations are impossible on small lots.

Structural Material.—New business has been in sight for two months, some of the bridge work calling for large sizes. The promised activity is not in sight.

Steel Rails.—There is nothing to report.

Old Rails.—No business has been done.

Scrap.—Yardmen are gathering up scrap where they can find it on their own terms.

METAL MARKET.

NEW YORK, Friday Evening, July 10, 1896.

Gold and Silver.

Prices of Silver per Ounce Troy.

July.	Sh. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.	July.	Sh. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.
4	*				8	4 87 3/4	31 1/2	68 3/4	532
6	4 87 3/4	31 1/2	68 3/4	532	9	4 87 3/4	31 1/2	68 3/4	532
7	4 87 3/4	31 1/2	68 3/4	532	10	4 87 3/4	31 1/2	68 3/4	532

* Holiday.

Silver has remained quite steady the past week. Demand has been good and shipments have been large. Speculation here has been dull, but the sentiment as a result of the fight for silver is favorable for steadiness in price.

The United States Assay office in New York reports the total receipts of silver at 71,000 oz. for the week.

Gold and Silver Exports and Imports.

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

	Coin and bullion.		In ores.		Total excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
GOLD					
May	\$19,103,913	\$610,204	\$7,022	\$101,570	E. \$18,399,161
1896	36,020,185	24,334,634	247,509	614,295	E. 11,319,064
1895	35,099,797	23,890,555	314,562	627,106	E. 10,897,698
SILV.					
May	51,159,331	564,332	35,897	1,388,140	E. 3,244,465
1896	2,579,452	4,956,084	589,916	7,230,915	E. 13,982,319
1895	19,809,591	3,352,821		4,989,891	E. 11,466,879

This statement includes the exports and imports at all United 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 July 9th, 1896, and for years from January 1st, 1896, 1895, 1894, 1893 and 1892:

We'k	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
1896	\$15,700	\$18,977	\$1,144,802	\$36,001	E. \$1,166,594
1896	73,817,752	17,225,837	19,393,248	1,187,439	E. 34,787,724
1895	32,818,909	21,044,310	21,935,416	921,297	E. 32,788,717
1894	68,591,982	10,871,317	19,589,515	831,005	E. 76,499,175
1893	68,877,642	8,684,804	17,853,586	1,356,345	E. 76,690,079
1892	45,951,373	6,548,906	12,141,410	947,905	E. 50,590,102

Of the gold exported \$1,000 went to Turk's Island, \$11,700 to the West Indies, and the balance to London; of the silver, \$21,872 went to the West Indies, and the remainder to London. The specie imported came chiefly from Central and South America.

Average Monthly Price of Silver

in New York and London, per ounce Troy, from January 1st, 1896, and for corresponding months, 1895 and 1894.

Month.	1896.		1895.		1894.	
	Lon. Pence.	New York Cents.	Lon. Pence.	New York Cents.	Lon. Pence.	New York Cents.
January	30 69	67 13	27 26	59 69	30 81	66 63
February	31 01	67 07	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	61 92
May	31 08	67 85	30 61	66 75	28 69	62 96
June	31 16	68 69	30 47	66 61	28 63	62 59

FINANCIAL NOTES OF THE WEEK.

Political matters have quite overshadowed business interests, and there has been a general disinclination to enter into transactions of any magnitude. This is well reflected in the stationary price of exchange, and silver, which would have been more apt to be influenced one way or another had speculation existed in consequence of the struggle going on in Chicago, and now nearly concluded.

The gold movement has not been of great importance as to volume this week, \$500,000 having been withdrawn for export to Germany; but there are symptoms of withdrawing gold for purposes of hoarding, about \$650,000 or \$700,000 having been taken for home and Canadian use. Were there any real apprehension of free silver coinage there would be a rush for gold.

Returns compiled to-day for the *Evening Post* by 16 banks of this city show the following interior currency movement for the past seven days: Received from interior institutions, \$1,285,000; shipped to interior institutions, \$869,000; net receipts for the week, \$416,000, against net receipts of \$1,250,000 for the week ending July 4th, \$2,081,700 for the week ending June 20th, \$2,551,669 for the week ending June 13th, \$845,000 for the current week in 1895, \$2,755,000 in 1894, net shipments of \$2,017,000 in 1893, net shipments of \$786,000 in 1892, net receipts of \$3,705,000 in 1891, and of \$839,000 in 1890. The opening of July is almost always followed, as the above comparisons will show, by a shrinkage in remittances of currency from the interior, and this is a leading factor in the reduced gold export movement usual during the current month.

The statement of the United States Treasury on Thursday, July 9th, shows balances in excess of outstanding certificates as below, comparison being made with the corresponding day of last week:

	July 1.	July 9.	Changes.
Gold	\$101,648,103	\$100,651,257	D. \$993,846
Silver	37,147,729	37,797,403	E. 649,674
Legal tenders	88,938,226	84,419,041	D. 4,519,222
Treasury notes, etc.	34,574,064	34,767,522	E. 193,458
Totals	\$262,308,222	\$257,633,186	D. \$4,675,036
Govt. bank deposits	16,974,476	15,938,032	D. 1,036,444

Total United States Treasury notes issued under act of July 14th, 1890, in general circulation and in the Treasury, \$129,583,280. Against these are held in the Treasury \$11,217,582 coined standard silver dollars, and the silver bullion purchased at a cost of \$118,365,698, making a total of \$129,583,280.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending July 3d, gives the following totals, comparisons being made with the corresponding weeks in 1895 and 1894:

	1891.	1895.	1896.
Loans and discounts	\$483,753,500	\$513,604,700	\$476,192,300
Deposits	588,598,000	569,873,200	499,046,900
Circulation	10,331,700	13,134,000	14,556,900
Specie	91,223,000	61,436,500	61,866,500
Legal tenders	128,661,300	110,145,500	83,223,700
Total reserve	\$219,284,300	\$171,612,000	\$145,090,000
Legal requirement	147,119,575	142,468,300	124,761,750
Surplus reserve	\$72,164,725	\$29,143,700	\$20,328,250

Changes for the week this year were increases of \$1,200,000 in loans and \$2,072,200 in deposits; decreases of \$28,000 in circulation, \$149,000 in specie, \$922,000 in legal tenders and \$1,589,050 in surplus reserve.

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:

	Gold.	Silver.	Total.
Asso. Banks of New York	.....	.....	\$61,866,300
1895	.....	.....	64,496,500
Bank of England	\$239,465,845	.....	239,465,845
1895	187,351,030	.....	187,351,030
Bank of France	409,215,900	\$251,227,800	660,443,700
1895	416,975,414	251,166,893	668,142,307
Imp. Bank of Germany	.....	.....	217,930,060
1895	.....	.....	250,790,000
Austro-Hungarian Bank	136,210,000	64,294,000	200,504,000
1895	99,560,000	67,085,000	166,645,000
Netherlands Bank	13,172,000	34,818,000	47,990,000
1895	21,411,000	35,132,000	56,543,000
Belgian National Bank	.....	.....	20,652,000
1895	.....	.....	20,949,000
Bank of Spain	42,028,000	57,501,000	99,529,000
1895	40,621,000	61,683,000	101,704,000
Bank of Italy	60,625,000	10,350,000	70,975,000
1895	60,105,000	10,230,000	70,335,000
Imp. Bank of Russia	472,715,000	.....	472,715,000
1895	309,815,000	.....	309,815,000

The return for the Associated Banks of New York is of date July 3d; all the others are of date July 9th, except the Bank of Italy, which is dated May 31st, and the Bank of Russia, whose return is dated May 16th-28th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England reports its gold only, not considering silver at all. The Imperial Bank of Germany and the Belgian National Bank do not report gold and silver separately.

Receipts of gold and silver from Mexico at San Francisco, principally by rail, for the six months ending June 30th, were:

	1895.	1896.
Mexican dollars	\$2,622,514	\$3,781,140
Bullion	41,932	572,820
Total silver	\$2,664,446	\$4,353,960
Gold	485,618	339,854
Total	\$2,550,064	\$4,693,814

The large increase in silver is to be noted, the amount having more than doubled this year.

Shipments of silver from London to the East for the year up to June 25th are reported by Messrs. Pixley & Abell's circular as below:

	1895.	1896.	Changes.
India	£1,992,380	£1,791,298	D. £198,082
China	1,400,767	531,244	D. 869,523
The Straits	390,803	509,032	E. 118,229
Totals	£3,783,950	£2,831,574	D. £952,376

Arrivals for the week this year were £218,000 in bar silver from New York, and £13,000 from the West Indies; a total of £231,000. Shipments for the same period were £15,000 in bar silver to India; also £28,884 in Mexican dollars to China; a total of £43,884.

Indian Exchange continues very strong, and the applications for the 50 lakhs of Council bills offered in London largely exceeded the total. The average price realized was 14 2/1d. per rupee. The price is maintained partly, as for several weeks past, by the demand for bills on Chinese and Japanese account, principally in settlement for rice purchases; and also by the demand for remittances in view of the coming issue of rupee paper in India. The Council has issued the formal prospectus of the new loan. Bids will be received until July 23d in India, and the total amount of the loan will be 4 crores (40,000,000 rupees) at 3% interest. No issue price is named, but it is announced that a minimum has been agreed upon below which no bids will be received.

Domestic and Foreign Coins.

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

	Bid.	Asked.
Mexican dollars	\$0.53 3/4	\$0.54 1/4
Peruvian soles and Chilean pesos	48 3/4	49 1/4
Victoria sovereigns	4.90	4.94
Twenty francs	3.88	3.92
Twenty marks	4.78	4.85
Spanish 25 pesetas	4.78	4.85

Other Metals.

Copper.—The market continues firm if not strong, but exceedingly dull, and hardly any business has been doing. No large quantities of copper are for sale, but in the absence of buyers, prices are if anything slightly easier, and we have to quote Lake copper 11 1/2, electrolytic copper in cakes, wire-bars or ingots, 11 1/2; cathodes, 10 1/2, and casting 10 1/2.

In the home market the wire drawers are very busy, but other branches of business can stand an improvement. Exports continue heavy from day to day, and the foreign market exhibits a great deal of strength. It has been reported that the Old Dominion mine will start up again next Monday. Outside of that, production for this month is likely to show a slight falling off.

The foreign market continues rather firm, although g. m. b.'s have suffered a slight decline. The market opened at £49 12s. 6d. @ £49 15s. for spot closing at £49 @ £49 2s. 6d. for spot and £49 2s. 6d. @ £49 5s. for three months prompt, or, in other words, the premium for futures has again almost entirely disappeared. Stocks abroad are greatly reduced, and foreign smelters are asking high prices for tough and best selected. Buyers have not been very active and little business has been reported, but whatever was transacted was at full prices. For refined and manufactured we quote: English Tough £52 10s. @ £53; Best Selected, £53 @ £53 10s.; Strong Sheets, £59 @ £55 10s.; India Sheets, £57 @ £57 10s.; Yellow Metal, 5½d.

Tin.—In spite of the larger arrivals of late, spot tin remains comparatively firm, as it is very well held. When comparing the prices ruling abroad with those here, this is quite natural, as the latter leave the importers hardly any profits whatever. The demand is not very brisk, but is steady, and in the main deliveries are satisfactory. We quote for July, August and September delivery 13'70 @ 13'80.

The London market experienced but slight fluctuations, and closes about the same as last week, viz., £61 @ £61 2s. 6d. for spot and £61 10s. @ £61 12s. 6d. for three months prompt. Reports from the East seem to indicate that production will not increase; on the contrary, may show a slight falling off. This would certainly help the statistical position of the article.

According to the statement of the New York Metal Exchange, the shipments of Straits tin to Europe and the United States for the first half of 1896 have been 22,750 long tons, or very nearly the same as for the first half of 1895. Deliveries in consuming countries for the half year are estimated at 25,300 long tons. The visible supply July 1st, including Banca, Billiton and Singkep, as well as Straits tin, was 31,137 tons, an increase of 5,593 tons over the corresponding date in 1895, showing that production is still a little ahead of consumption.

Lead continues very flat and is pressed for sale. It appears that there are accumulations in the West, and buyers doing almost nothing, prices have again given way somewhat and we have to quote 2'97½ @ 3c. New York, with little business doing. Prices in the West are also somewhat easier, and sales are reported from St. Louis at 2'75. Conditions in Leadville remain about the same and the strike may become more serious at any moment. This has so far had no effect on the lead market.

The market abroad is also flat, Spanish lead being quoted £11 @ £11 1s. 3d. and English lead 2s. 6d. more.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is dull and there is no demand to speak of. Soft Missouri and chemical lead are worth 2'75c., and corroding is held at 2'77½c.

Spelter is rather irregular, and is also pressed for sale. Consumption, especially for galvanizing purposes, is poor, and some sales for export have again been reported at prices ruling below those in the home market. We quote 4c. delivered New York, but this price may possibly be shaded a little.

In London, the price for good ordinaries has declined to £18, and specials to £18 2s. 6d., but these prices are only obtainable for nearby delivery.

Antimony continues dull and depressed, Cookson's, 7c.; U. S. French Star, 6½c.; and Hallett's, 6½ @ 6½c.

Nickel.—Demand is steady and prices are firm at 34 @ 35c. per lb. for ton lots and 36 @ 38c. per lb. for smaller orders. London prices are 13 @ 14d. for larger orders and 14½ @ 15½d. per lb. for small lots.

Platinum.—The demand is somewhat in excess of supply and quotations are firm, \$14 @ \$15 per oz., New York, being asked. London prices are 57s. @ 58s. per oz.

For chemical ware, best hammered metal, Messrs. Elmer & Amend, New York, furnish the following quotation, the prices given being respectively for orders of over 250 grams; for orders of over 100 grams and less than 250 grams, and for orders of less than 100 grams: Crucibles and dishes, 50c., 5½c., and 52c. per gram. Wire and foil are 47c., 48c. and 49c. per gram. The current retail price for crucibles is 60c. per gram.

Quicksilver.—The New York quotation continues unchanged at \$37 per flask. The London price is £6 10s. per flask, with £6 8s. 9d. named from second hands.

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

Aluminum:	
No. 1, 98% pure rolling ingots, per lb	50 @ 55c.
No. 1, ingots for re-melting, per lb	48 @ 53c.
No. 2, 91% pure,	38 @ 42c.
Ingots from scrap, per lb	35 @ 40c.
Aluminum-nickel casting metal, per lb	40 @ 45c.
Bismuth, per lb.	\$1.30 @ \$1.75
Phosphorus, per lb.	50 @ 55c.
Platinum, per oz.	\$14 @ \$15
Tungsten, pure, powder per lb.	70c.
Tungstic acid, per lb.	45c.
Ferro-tungsten, 60% in ton lots, per lb	60c.

The variations in price are chiefly on size of order.

Imports and Exports of Metals.

Baltimore.**	Week, June 25.		Year, 1896.	
	Exp.	Imp.	Exp.	Imp.
Bismuth metal, cases.....			40	43
Chrome ore..... long tons			16,230	4,594
Copper, fine.....	834			
" matte.....	196		1,865	
" sulphate.....				
Iron ore.....		10,617		209,271
" pigs, bars, ingots, blooms, " "				2,076
Iron oxide..... bags				300
" pyrites..... long tons			150	
Ferro-manga- nese.....				1,357
Ferro-silicon.....				70
Lead.....	200		2,398	
Limestone..... short				2,743
Manganese ore..... long		2,500		6,367
Spiegeleisen.....				415
Steel.....	8		18	
Steel wire, bundles.....		431		5,774
Tin, long tons.....	30			95
Tin and black plates, boxes				91,080
Zinc (spelter) long tons.....	44		161	

**From our special correspondent.

New York.*	Week, July 2.		Year, 1896.	
	Expts.	Impts.	Expts.	Impts.
Aluminum..... lbs.				
Antimony ore..... short tons				
" regulus, casks				
Brass, old..... short tons	12		134	59
Copper, fine..... long tons	1813	20	39,007	1,388
" matte.....	1155		8,869	1,256
" ore.....				
" sulphate.....				
Iron ore.....				
" pigs, bars, rods.....		50		3,217
Iron pyrites.....				
" sulphate.....				
" Ferro-mangan'se				
" Ferro-silicon.....				
" Manganese ore.....				
" Spiegeleisen.....	350			19,593
Lead ore.....				
" pigs and bars.....	1420	1,109	19,516	20,985
Magnolia metal.....				
Nickel.....				
Steel, billets, rods.....		572		14,740
Tin.....		450		7,731
Tin and black plates, boxes		58,622		
Zinc (spelter)..... long tons	120		691	121

* Metal Exchange Reports. † Week ending July 9.

Philadelphia.††	Imports.	
	Week, July 3.	Year, 1896.
Antimony, casks.....		
Copper ore, long tons.....	2,800	14,281
Ferro-Manganese, long tons.....		380
Ferro-Silicon.....		60
Iron ore, long tons.....	6,050	135,586
" pig.....		618
" and steel scrap, long tons.....		4,564
Manganese ore, long tons.....		134
Spiegeleisen.....		305
Tin.....		27,073
Tin and black plates, boxes.....		

†† From New York Metal Exchange Reports.

Average Monthly Prices of Metals

In New York since January 1st, 1896, and for the corresponding periods in 1893, 1894, 1895 and 1892, in cents per pound.

Month.	1896.	1895.	1894.	1893.	1892.
Copper:					
January.....	9'87	10'00	10'13	12'13	11'01
February.....	10'34	10'00	9'63	12'00	10'00
March.....	11'03	9'75	9'81	11'88	10'38
April.....	10'98	9'75	9'50	11'38	11'50
May.....	11'15	10'25	9'80	11'00	11'63
June.....	11'67	10'63	8'94	11'00	11'86
Tin:					
January.....	13'62	13'25	20'16	19'99	20'50
February.....	13'44	13'35	19'69	20'30	20'00
March.....	13'30	13'20	19'09	20'71	20'25
April.....	13'34	14'00	19'75	20'81	20'50
May.....	13'54	14'65	20'21	19'96	20'80
June.....	13'39	14'15	19'75	19'76	22'00
Lead:					
January.....	3'08	3'10	3'19	3'87	4'20
February.....	3'19	3'12	3'31	4'22	4'12
March.....	3'14	3'12	3'37	3'96	4'21
April.....	3'07	3'08	3'43	4'08	4'15
May.....	3'03	3'16	3'39	3'89	4'12
June.....	3'63	3'25	2'31	3'77	4'26
Spelter:					
January.....	3'75	3'28	3'56	4'39	4'69
February.....	4'03	3'20	3'85	4'39	4'69
March.....	4'20	3'24	3'89	4'28	4'89
April.....	4'19	3'30	3'62	4'38	4'88
May.....	3'93	3'50	3'47	4'41	4'79
June.....	4'10	3'63	3'40	4'27	4'71

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, July 10.

Heavy Chemicals.—There is no notable change to report in this market; it remains quiet. Bleaching powder shows some steadiness and it is said that all the arrivals at this port are promptly taken up by consumers, thus preventing a surplus of stocks. Caustic soda is firm and without change in prices. There has been no further improvement in alkali from our last report. We quote current prices as follows: Caustic soda, 60%, \$2 22½ @ \$2.42½; 70 @ 74%, \$2.12½ @ \$2.25; 76%, \$2.20 @ \$2.25 per 100 lbs. Alkali, 58%, 80 @ 85c. for 50-ton lots and over, and 90 @ 95c. for smaller quantities. Bleaching powder, prime brands, \$1.87½ @ \$1.90; Continental, \$1.70 @ \$1.80 per 100 lbs. Bicarb. soda, English, 1'50 @ 1'60c.; American, bulk, \$1.50 @ \$1.50 per 100 lb.; Sal-sol, 3, English, 70 @ 72½c.; American, 65c. (in barrels). 80c. (in kegs), per 100 lbs.

Acids.—Wholesalers are still doubtful as to future prospects. The acid market is very quiet now, and prices on the whole are considered low. The acid manufacturers held a meeting on Wednesday last to consider the situation and condition of the trade, but nothing definite was decided upon, so the meeting adjourned until two weeks hence, when another attempt will be made to come to some effectual understanding as to how prices can be increased in the face of hard times and over-production capacity.

It will be interesting to note the remedies for these ills of the trade. We quote as follows in New York and vicinity, in lots of 50 carboys or over: Acetic acid (in barrels), \$1.25 @ \$1.40; muriatic acid, 18°, 75c.; 20°, 75 @ 85c.; 22°, \$1.10 @ \$1.25, according to make and quantity. Nitric acid, 36°, \$3.25 @ \$4.36; 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, 66°, 75 @ 95c.; 10 @ 15c. higher for small quantities; chamber acid, \$6 @ \$6.50 per ton at factory. Blue vitriol, \$4 @ \$4.25, according to grade and order.

Brimstone.—There have been no cable advice concerning the Sicilian brimstone market nor the syndicate which is being formed to monopolize it, especially in this country. Apropos of the present condition of the sulphur market there has been incorporated under the laws of the State of West Virginia the United States Sulphur and Chemical Company with a capital stock of \$500,000, divided into 100,000 shares at a par value of \$5 each. The object of this company is to work the brimstone deposits in El Paso County, Texas, to which reference has been made in another column of this issue of the *Engineering and Mining Journal*. The principal office of the company will be in New York City. We understand that the market is bear of both Sicilian and Louisiana sulphur, and prices are nominally \$18.50 for best unmixed seconds and \$18 for thirds.

Fertilizing Chemicals.—There has been more or less business doing in this market during the week and buyers are making inquiries preparatory to ordering for the fall season. Otherwise the fertilizer market is quiet. We quote: Sulphate of ammonia, gas liquor, \$2.30; bone, \$2.10 @ \$2.15. Dried blood, high grade, \$1.37½ @ \$1.42½; per unit f. o. b. Chicago. Azotine, \$1.70, basis New York. Concentrated phosphate (30% available phosphoric acid), 60c. per unit. Acid phosphate, 13% to 15%, av. P₂O₅, 54 @ 65c. per unit at seller's works in bulk. Dissolved bone black, 17% to 18%, P₂O₅, 87½ @ 90c. per unit. Acidulated fish scrap, \$10 @ \$11 and dried scrap with few or no sales, nominally \$16.50 @ \$17.50 f. o. b. fish factory. Tankage, high grade, \$19 @ \$20; low grade, \$18 @ \$19. Bone tankage, \$21; ground bone, \$22 @ \$22.50. Bonemeal \$19.50 @ \$23.

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

Double Manure Salts: 48-53%, New York and Boston, \$1.01; Philadelphia, Baltimore and Norfolk, \$1.02; Southern ports, \$1.03½.

Muriate of potash remains inactive. The new prices are 1'78c. at New York and Boston; 1'79½c. at Philadelphia, Baltimore and Norfolk, and 1'81½c. at New Orleans for 80 @ 85% (basis of 80%), in lots of 50 tons and upward.

Kainit.—Quotations for 1896 are as follows: New York, Boston, Philadelphia and Baltimore, \$8.80 per ton; Norfolk, \$9.15, and New Orleans, \$9.30 per ton, for 25 tons and upward. Sylvinit at the same ports is quoted at 36½c., 37½c. and 38c., respectively.

Nitrate of Soda is selling at 1'77½ @ 1'80c. for spot, and 1'82 @ 1'87½c. for futures, according to position. It is said that 1'75c. has been refused on 5,000-bag lots.

NOTES OF THE WEEK.

Articles of incorporation have been filed at the office of the Secretary of State at Albany, N. Y., by the Church & Dwight Company to buy and manufacture bicarbonate of soda, saleratus, sal soda and carbonate of soda in all its forms. The principal business office of the company will be in Solway, Onondaga County, New York; capital, \$2,000,000; directors, John Dwight, John E. Dwight, William I. Walker, E. Dwight Church, James A. Church and E. Dwight Church, Jr., of New York City.

This is an incorporation of the old and well-known firm of John Dwight & Co.

Nitrate of Soda—Messrs. Mortimer & Wisner, the well-known brokers of this city, send us the following statement of nitrate, issued under date of July 1st.

	1896.	1895.	1894.
	Bags.	Bags.	Bags.
Imported into Atlantic ports from West Coast S. A., from Jan. 1, 1896, to date.....	499,499	434,890	240,301
Totals.....	499,499	434,890	240,301
Stock in store and afloat June 1, 1896, in New York.....	100,000	77,464	22,626
Boston.....	600	2,636	.....
Philadelphia.....	2,000	4,500	1,150
Norfolk, Va.....	.....	421	.....
Charleston.....	.....	1,700	.....
To arrive, actually sailed.....	189,000	152,000	208,100
Vis. supply to Oct. 15, 1896.....	282,000	239,321	231,876
Stock on hand, Jan. 1, 1896.....	53,839	58,367	44,938
Deliveries past month.....	95,452	74,891	29,572
" since Jan. 1 to date.....	451,338	405,936	261,463
Total yearly deliveries.....	.....	828,042	701,202
Prices cur. July 1, 1896.....	172½	167½	220

Liverpool. July 1.

(Special Correspondence of Joseph P. Brunner & Co.) There is practically no change to report in the position of chemicals.

Soda ash is steady, but inactive. Spot range for tierces as to market we quote as follows: Leblanc ash, 48%, £4@£4 5s.; 58%, £4 5s.@£4 10s. Ammonia ash, 48%, £3 2s. 6d.@£3 10s.; 58%, £3 7s. 6d.@£3 12s. 6d. per ton, net cash; bags 5s. per ton less. Soda crystals are moving off fairly, at £2 7s. 9d. per ton, less 5% for barrels and 7s. less for bags.

Caustic soda is quiet, the spot range, as to market, being about as follows: 60%, £6 5s.@£6 10s.; 70%, £7 5s.@£7 10s.; 74%, £8 5s.@£8 10s.; 76%, £9@£9 5s. per ton, net cash.

Bleaching powder is dull, and £7@£7 5s. per ton, net cash, is nominal range for hardwood packages, according to destination. Chlorate of potash is quite idle and 4½d. per lb. is about nominal value. 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 a shade firmer at £3 6s. 3d.@£3 10s. per ton, less 2½% for good gray, 24%@25% in double bags f. o. b. here, as to quality. Nitrate of soda is steadier, at £8 2s. 6d.@£8 5s. per ton, less 2½% for double bags f. o. b. here, according to quality. Carb. ammonia, lump, 3d. per lb.; powdered, 3½d. per lb., net cash.

MINING STOCKS.

Complete quotations will be found on pages 46 and 47 of mining stocks listed and dealt in at:

New York.	Aspen, Colo.	St. Louis.
Boston.	Colorado Springs.	Paris, France.
Philadelphia.	Duluth, Minn.	Mexico.
Baltimore.	Helena, Mont.	Shanghai, China.
Pittsburg.	Salt Lake, Utah.	Valparaiso, Chile.
Denver, Colo.	San Francisco.	London, England.
Chicago and Cleveland, page 44.		

NEW YORK, Friday Evening, July 10.
The mining stock market during the week has been rather feverish, due to the telegraphic advices from Chicago that the Convention there has nominated Mr. Bryan, a free-coinage man, as candidate for the Presidency. As the greater number of stocks dealt in on the Consolidated Stock and Petroleum Exchange and the New York Stock Exchange are "gold stocks," they should not suffer, but all business is affected injuriously by this movement. The volume of business transacted this week did not exceed 13,155 shares at both exchanges.

In the Comstock group the stock to show the largest number of sales was Comstock Tunnel, with 4,000 shares at 8c. Consolidated California & Virginia opened at \$2.05, rallied to \$2.15, and receded at the close to \$2 with sales of 390 shares. Consolidated Imperial recorded sales of 500 shares at 4c. Hale & Norcross was stationary at \$1.35 with sales of 300 shares.

There were 300 shares sold of Chollar at \$2.55@ \$2.60 (assessment paid). Mexican was sold at 75c., and the dealings amounted to 500 shares. Potosi was dealt to the extent of 500 shares at \$1.25@ \$1.30. Sierra Nevada showed sales of 365 shares at 65@70c. Yellow Jacket returned to the Consolidated Stock and Petroleum Exchange this week, and we record sales of 100 shares of the stock at 47c. Belcher showed sales of 200 shares at 50c. Best & Belcher was traded in to the extent of 100 shares at 85c.

Of the California stocks we note sales of 200 shares of Brunswick Consolidated at 20c., 200 shares of Mono at 16c. and a like number of shares of Standard Consolidated at \$1.30.

The Colorado show sales as follows: 600 shares of Creede & Cripple Creek at 5c., 500 shares of Cripple Creek Consolidated at 14@15c., 300 shares of Isabella at 64c., 100 shares of Little

Chief at 16c., 1,500 shares of Mount Rosa at 12@14c., 1,500 shares of Pharmacist at 8@9c. An official of the Victor Gold Mining Company states that the roasters at the Florence Mill are not ready yet to handle the ore from the mine.

There was a sale of 800 shares of Bedford Consolidated, a Montana stock, at \$2.75@ \$2.85.

Boston. July 9.

(From Our Special Correspondent.)
The market for copper stocks the past week has ruled extremely dull, but prices have generally been well sustained, and in some instances an advance noted. The two leading stocks, Boston & Montana and Old Dominion, have been quite strong, especially the latter, which recovered in part from the extreme depression of last week, on the report that the strike at the mine had been settled, and work would be resumed in the near future, and sold up to \$16½. A good deal of stock came on the market, causing a reaction to \$15, at which price it closed today.

Boston & Montana advanced from \$86½ to \$87½, reacting to \$85½, and closing at \$86. Calumet & Hecla sold at \$303 in small lots for investors. Osceola gained \$1 and sold at \$26, closing strong. Quincy holds steadily at and around \$114, with small lots selling at \$113. The scrip is firm at \$80. Tamarac was steady at \$84 in the early dealings. To-day a large block of stock was put on the market, forcing the price down to \$78, the lowest price of the year. Franklin, on the good report from the Jr. mine, was in better demand, and advanced from \$8½ to \$10½, closing here. Kearsarge also was firm, and advanced from \$11 to \$12½. Atlantic declined ½% to \$18½ on small transactions. Tecumseh sold at \$2 and Wolverine advanced ½% to \$7. Butte & Boston advanced to \$2. Gold mining stocks are in no greater favor just at present than the metal itself is at Chicago, and transactions are confined to one or two specialties. There has been aggressive selling of Pioneer, resulting in a decline from \$5 to \$3½, with a slight rally in later sales to \$3¾. Gold Coins Company sold at 45c. Merced is steady at about \$7.

Cleveland. July 8.

(From Our Special Correspondent.)
Uncertainty regarding the financial policy which will obtain in the country after the November election has induced quite a number of prospective purchasers of iron-ore stock to withhold investing at present, according to a statement made by a member of the firm of C. H. Potter & Co. Notwithstanding this feeling of unrest the bids for Republic Iron Company stock were a few points higher this week. Following are the quotations:

Name of Company.	Par val.	July 8.	
		Bid.	Ask.
Aurora.....	\$25	86	88
Chandler.....	25	34	35
Cleveland-Cliffs Iron Co.....	100	45	..
Jackson Iron Co.....	25	70	75
Lake Superior Iron Co.....	25	30	31
Lake Superior Consolidated.....	100	20	21
Pittsburg & Lake Angeline.....	25	75	..
Republic Iron Co.....	25	18	..

Colorado Springs, Colo. July 9.

(Special to the Engineering and Mining Journal.)
By Telegraph.—Cripple Creek stock market is very weak to-day and most of the stocks declined in prices. Portland fell off 20 points, and Isabella four points. This decline in values is accounted for by the rumor of a chance of Union miners in Cripple Creek being persuaded by Leadville strikers to aid them by striking. We do not, however, anticipate trouble.

Salt Lake City, Utah. July 4.

(Special Report of James A. Pollock.)
The mining stock market for the past week had few changes of note from the conditions existing during the week previous. Attention was largely given by local investors to the cheaper and speculative stocks, outside orders mainly keeping up the purely investment portion of the list. Ajax did considerable business at about the previous week's quotations. Alliance, Anchor, Bogan and Gas were all quiet and did little.

Centennial-Eureka is practically out of the market, and will continue so until it is definitely known how the option is going. There is no news regarding the deal. Shipments are not being made from the properties. Dalton & Lark will pay its monthly dividend of ¼c. per share July 15th. The stock was slightly shaded during the week. The offerings below 50c. were not heavy, however. Dalton continued weak. Both of the Dalys held their own, although Daly West has become the stronger of the two.

Eagle did little worthy of notice. Four Aces was considerably weaker, with few buyers in the market. The company's properties are reported to be in good condition. Galena did some business, but at unchanged quotations. Geyser was not in demand pending the determination of its issue with the Marion, now in the hands of the court.

Horn Silver has passed its quarterly dividend, which should have been paid on the last day of June. The reason given is trouble with the company's employes. Little of the stock is being offered. Mammoth paid its dividend July 1st, making a total of \$1,070,000 to the credit of the company. The stock continued very strong during the week.

The Mercur earnings, which would in the regular course of events have been distributed during June, went into the surplus fund, thereby strengthening the financial condition of the company. The labor troubles seem to have entirely disappeared, and everything is being operated to full capacity at the properties. There was little change in the stock. The offerings were not very heavy, although the quotation was somewhat shaded.

Ontario paid its usual dividend of 10c. per share June 30th. The stock continued somewhat weak. Silver King was not offered freely, with the stock held high. The company will pay its dividend of 25c. per share July 7th. Sunshine continued quite strong. The directors will probably meet this week to order the increase in the mill capacity, the process now being quite satisfactory, with the saving of values fully up to expectations. Swansea was considerably stronger and sold up to \$2.50 again. Utah was without special change. South Swansea attracted considerable attention and made good advances. The properties adjoin the Swansea.

San Francisco. July 3.

(From Our Special Correspondent.)
At the opening on Monday it was quite evident that the reaction from the recent spurt of activity was in full force, and that the market was dull and weak. It continued to be very quiet all the week, though prices stiffened up a little later, and the trading was very light. The expectation of a holiday helped to keep matters dull. The board adjourned from to-day over to Wednesday, July 8th.

Some quotations noted at the close are: Chollar, \$2.50@ \$2.55; Consolidated California & Virginia, \$1.95@ \$2; Hale & Norcross, \$1.30@ \$1.35; Ophir, \$1.20 @ \$1.25; Potosi, \$1.20@ \$1.25; Confidence, \$1.05@ \$1.10; Gould & Curry, \$1@ \$1.05; Occidental, \$1@ \$1.05. Some trading was done in the Bodies, and they close rather weak at 41c. for Bodie Consolidated; 27c. for Bulwer, and 12c. for Mono.

So far as announced there are 11 assessments which become delinquent in July, the total amount called for being \$78,250. Of the 11 companies, three—Chollar, Kentuck and Occidental—are Comstock companies; two—Belle Isle and Navajo—are in Elko County, Nevada; the remaining six are California mines. The latter include the Oro Plata in Calaveras County; the Old Flag in Yuba County; the Bay State in Amador County; the Mono in Mono County; the Bullion Consolidated and the Reward in Nevada County.

The sales on regular call at the San Francisco Stock Board for the first six months of the year were as follows:

January, shares sold.....	1895. 254,315	1896. 286,415
February.....	196,705	183,790
March.....	296,530	246,115
April.....	262,810	264,735
May.....	274,030	818,610
June.....	231,645	479,135
Total.....	1,509,070	2,288,700

There was a falling off of nearly 50% in the sales for June as compared with May.

THE NEW EXCHANGE.

Business on the Gold Mining Exchange was rather quiet and there was little variation in prices on the call board. Some quotations are: Bestopalt, 50@51c.; Savannah, 43@47c.; Edna, 36@40c.; Lockwood, 32@33c.; Grant, 13@14c.

The call board is to be closed until July 13th, making a full week's vacation, for which most of the brokers will not be sorry.

BY TELEGRAPH.

San Francisco, Cal., July 10.—The opening quotations to-day were as follows: Best & Belcher, 72@73c.; Bodie, 40c.; Bulwer, 26c.; Chollar (assessment, 25c. delinquent), \$2.50; Consolidated California & Virginia, \$1.85; Eureka, 25c.; Gould & Curry, 89c.; Hale & Norcross, \$1.25; Mexican, 65c.; Mono, 16c.; Occidental, \$1; Ophir, \$1.10; Potosi, \$1.15; Savage, 80c.; Sierra Nevada, 59c.; Union Consolidated, 50c.; Yellow Jacket, 42@44c.

British Columbia. June 19.

ROSSLAND, B. C., July 3, 1896.
The present week has been similar to the last one so far as local mining stocks are concerned and the quotations are about the same.

Some of the brokers have expressed disappointment at the lull, but when the spring sales are considered, it is not surprising that the investor should now feel desirous of awaiting events. The output for the next two or three months is what is going to affect the investor, who is very materially influenced by actual results.

As yet it is very difficult to obtain correct figures representing the amount not only invested in stocks since the spring opened, but the sale of property directly made. The amount is certainly large, and those who are influenced by a spirit of prophecy see it trebled before the snow flies.

Certainly, the logical result of all the preparations which one sees on all sides, and which directly bear on the mineral industry of this district, this Trail Creek country particularly, must be a considerable output else why these facilities and this constant activity which prevails in the camp?

The only feature which appears to deserve observation is that there is a constantly increasing number of companies prospected, and their object seems to be a middle place between the prospectors and regular mining men. Whether or not this gap is best filled in the way which is the fashion here is yet a matter upon which more light must be shed

than has yet been radiated before pronouncing judgment. The purchasing of "wild cats" in any form is hard to suppress, because it is very difficult to define a "wild cat" from what may possibly be a future bonanza, and to place a cast-iron statute on record in this country does not seem to be according to the spirit of the camp, for in spite of a tendency to boom and to go ahead regardless of consequences, the camp is a genuine one, the Kootenay District is well mineralized and the greater portion of the population has come here to stay. It is this healthy determination to remain which has inspired confidence and presented an ample page of British Columbian mining history which has no counterpart in the past.

London. June 20.
(From Our Special Correspondent.)

The mining stock market has been more or less languid during the past week, in all sections. The rise in South Africans, which occurred a fortnight or so ago after the release of the Pretoria prisoners, has spent itself, and selling for profit taking has caused a general setback in quotations. The bad news about the continued rebellion in Matabeleland has suspended operations in Chartered and similar shares, and the quotations have dropped slightly. The wreck of the Drummond Castle put a temporary damper on the market, but when it was found that no one of note had lost his life the depression disappeared. President Kruger's demand that Rhodes should be brought to trial has led many to think that the attitude of the Boer Government toward the Outlanders, and the British is not so pacific, as we were led to expect after the release of the prisoners, and consequently many who were inclined to go back to the South African market have altered their decision and are holding aloof. The West Australian market has been dull all week, and the only section of the mining market that has shown any semblance of life has been New Zealand. Promoters are universally inquiring for gold mines in New Zealand, and there is every indication that this market will attain considerable dimensions before long.

American mining is at present almost entirely represented by British Columbia. During the past week two large promoting companies have been advertised in the daily papers, viz., "The London & British Columbia Gold Fields Company" and the Pioneer Exploration and Development Company of British Columbia. The former is represented in British Columbia by Mr. S. S. Fowler and the latter by Mr. Charles Tetley. Neither company has, as yet, bonded or discovered any properties, and they will not do so in a hurry, having only been formed now so as to be ready for the expected boom.

Another section of America which is beginning to interest English and French capitalists is the Lake of the Woods district. Two or three private syndicates have been working there during the last year or two, and I now hear that two French syndicates have representatives out there on the lookout for properties. A company called the "Seine River (Ontario) Gold Mines, Limited," has been introduced to the public this week. It has been formed to acquire and work the claims known as AL 110 & 111 & K 223 situated between Bad Vermilion and Shoal Lakes in Seine River County, Rainy Lake District. In this property it is stated there are four distinct quartz veins bearing gold. Sufficient exploration and development work has been done to show that there will be sufficient rock to keep 40 stamps going, when the machinery is completed. The gold appears to partake of the "specimen" type, but, judging from careful assays made by Messrs W. H. Merritt, W. D. Ferguson and A. B. Whitley, it is probable that the average returns will be quite \$20 per ton.

The progress of American mining toward favor in the eyes of the British public has had a serious check during the past week or two by the raking up in the financial papers of old failures. For instance, the shareholders in the Poorman, Jay Hawk and Springdale have simultaneously wakened up to the fact that their shares are unsalable and that nothing has been heard for many months of these mines, which were supposed to be so exceedingly rich and valuable. Poorman and Jay Hawk are English companies, and should issue reports in London frequently, but Springdale is a Denver corporation and it is difficult to obtain any information here. It would be of great assistance to the English market if those of your readers who know the latest history of these mines would communicate with you.

JUNE 27, 1896.

The announcement of a half yearly dividend of 18s. per share by the De Beers Company, together with a bonus of 4s., had very little effect on the market. With the dividend of 18s. declared on December 31st last the total distribution during the year ending June 30, 1896, will be 40s. per share, equal to 40 per cent. on the share capital. This is the highest dividend ever declared and at the same time the reserves of blue ground are announced to be greater than ever. The quotation of the £5 shares is now £31 and are being bought chiefly on the continent. The gross profit for the year was £2,248,000 and the net amount available for dividends was £1,900,000.

The West Australian has been dull and quotations generally are lower. There have been some exceptions, however, in the case of mines such as Royal Sovereigns, which are just commencing crushings. West Australian Joint Stock Trusts have also been very much in demand on account of the payment of a second quarterly dividend at the

rate of 100 per cent. per annum and the prospect of the continuation of such dividends. The profits are derived entirely from the selling of claims to other people and the promotion of other companies.

The New Zealand and Indian sections have been quiet, but compared with South Africans and West Australians have been firm and of good tone. Americans have been in the background and nothing has been done in British Columbians. The Montana Company has paid another small dividend of 3d. per share, but the directors regret to announce that the ore reserves have not been increased during the past six months. Development work has been pushed forward, but the results so far are not very encouraging.

With reference to the statement that Messrs. Rhodes and Barnato have representatives in British Columbia the British Westralia syndicate, which is run by the Barnato "crowd," commissioned Mr. Frank L. Gardner, an American mining engineer, to send out an expedition last October. Then a syndicate connected with the Consolidated Gold Fields of South Africa, of which Mr. Rhodes is a director, has representatives in the province.

Paris. June 28.
(From Our Special Correspondent.)

The most active department of our stock market continues to be found among the copper stocks. Nearly all of them have advanced still further in price. Boleo stands at 1,450 fr., while Rio Tinto, Tharsis and Cape Copper are in demand. A good deal is said about Anaconda stock and it will probably soon be quoted here.

The zinc shares continue strong and Malfidano has reached a high price. The new convention of the producers and the high prices of the metal sufficiently explain the movement of these stocks.

The metallurgical shares hold their recent advances well, and indeed one can well expect a good year for them. Orders continue large and the prices of iron and steel are much more satisfactory than a year ago.

The market for the South African shares has relapsed into uncertainty and dullness. The little excitement of the past two or three weeks has gone completely. In truth it was only a surface movement and did not affect our investors; though one can hardly tell what might have followed had prices gone up a little further, since there are many who would like to get rid of their stocks if they could do it without loss.

The foreign trade of France for the five months ending May 31st is reported as follows by the Ministry of Commerce:

	1895.	1896.
Imports.	France.	France.
Food.....	389,910,000	449,837,000
Raw materials.....	915,591,000	1,008,338,000
Manufactures.....	223,294,000	264,187,000
Totals.....	1,528,795,000	1,722,357,000
Exports.		
Food.....	227,431,000	261,766,000
Raw materials.....	351,238,000	377,366,400
Manufactures.....	731,323,000	767,926,000
Postal parcels.....	48,425,000	61,386,000
Total.....	1,358,417,000	1,427,544,000
Excess, exports.....	170,378,000	294,813,000

The imports of gold for the five months this year were 117,093,004 fr., and the exports 72,683,629 fr., showing a balance of 44,409,465 fr. imported.

A little commotion has been caused here by a notice from the Ministry of Finance that hereafter the law prohibiting the receipts of foreign copper and nickel coins at the public offices will be enforced. Practically this law has been disregarded so long that most of us had forgotten its existence; but now that the foreign coins are refused everyone begins to scrutinize the small change he receives. There is an immense quantity of these foreign coins in circulation here, not only those of countries in the Latin Union, which of course have the same nominal value as our own, but English pennies, which are taken as the equivalent of a lucentime piece; Spanish coins and lastly Argentine copper coins. That the small coins of neighboring nations should be here in quantities is natural enough and easily understood; but the presence of the Argentine money requires some explanation. As in that country a paper dollar could be exchanged for an equivalent number of copper pieces, and the paper could be bought for about one-quarter or one-third its value in gold, it occurred to certain speculators that there would be a great profit in collecting these pieces and shipping them to France, provided they could be put in circulation. As our people had been accustomed to accepting foreign copper coins without hesitation, this proved easy enough, and a very large quantity of these Argentine tokens are now in circulation. It is probable that they will now be received with hesitation, if at all, though the coins of Belgium, Spain, England, etc., will still be taken.

How to get rid of the superfluous coins is a question. By common consent these small coins are merely tokens issued for convenience, and no nation even pretends to make them of full value in metal. Hence a foreign coin is received here only by tolerance and custom, and not on its intrinsic value like a gold coin. It will not be easy to get rid of them if the tolerance heretofore accorded is withdrawn, and the money brokers will probably make a good profit on the Argentine coins at least. The loss to the public will be quite large in the aggregate, but, fortunately, it will be generally distributed, so that it will be little felt beyond the annoyance of watching one's small change.

The action of the legislature on the Madagascar question finally settles the standing of the great island as a colony entirely under French control. This is generally approved as the best possible arrangement. AZOTE.

MEETINGS.

Name of Co.	Location of office.	Date.	Time.
Candelaria.....	New York, N. Y.....	July 16	2 p. m.
Franklin.....	1642 Arapahoe St., Denver, Colo.....	" 15	8 " "
Gibraltar Con....	Howard Flat, Cal.....	" 25	2 " "
Kalamazoo Bonanza.....	Kalamazoo, Mich....	" 20	10 a. m.
Little Rhody Gold.....	Denver, Colo.....	Aug 2	.....
Little Annie.....	304 S. Galea St., Aspen, Colo.....	July 27	7.30 p. m.
Morning Star Gold.....	McDonald Block, Phillipsburg, Mont., Colo.....	" 31	1 " "
Queen Silver.....	Denver, Colo.....	" 24	7.30 " "
Rocky Point.....	Brandy City, Cal....	" 20	1 " "

ASSESSMENTS.

Name of Co.	Loc'n.	No.	Ding.	Sale.	Amt
Bay State.....	Cal.....	32	July 7	July 30	.03
Belle Isle.....	Nev.....	26	" 15	Aug. 12	.10
Bogan Silver....	Utah..	3	" 16	July 6	.05
Camp Floyd Gold.....	Utah..	2	June 27	" 13	.01
Central Eureka..	Cal....	1	" 22	" 18	.03
Channel Bend....	".....	3	July 31	Aug. 22	.05
Chollar.....	Nev....	42	" 14	" 4	.25
Emerald.....	Utah..	"	" 6	July 27	.01
Eureka Con.....	".....	"	" 8	Sept. 5	.10
Fogus.....	Nev....	"	" 11	Aug. 15	.10
Gibraltar Con....	Cal....	9	June 25	July 10	.001
Gold Belt.....	Utah..	"	July 20	Aug. 10	.0004
Horseshoe Bar. Con.....	Cal....	4	June 22	July 14	.50
Kentock Con....	Nev....	12	" 22	Aug. 12	.05
Leo.....	Mont..	"	" 23	" 14	.0004
Lucky Bill.....	Utah..	19	June 13	July 11	.02
Mabelle.....	Ore....	2	July 13	Aug. 3	.08
Mono Gold.....	Cal....	37	July 6	July 27	.10
Mt. Diablo.....	Nev..	4	" 2	" 23	.05
North Banner Con.....	Cal....	39	June 23	" 14	.05
North Belle Isle	Nev....	24	July 12	Aug. 10	.10
Occidental Con..	".....	23	" 7	July 28	.15
Peruvian Con....	Utah..	"	" 22	" 8	.02
Pine Hill G. & S.	Cal....	8	" 13	Aug. 10	.05
Reward Gold....	".....	13	" 2	July 20	.03
Silver King.....	Ariz..	14	" 16	" 14	.25
Skagit Cumb'rd Coal.....	Wash..	1	" 12	" 11	.03
Thorpe.....	Cal....	2	June 22	" 13	.10
Utah State Gold.	Utah..	1	July 20	Aug. 5	.0004
Ybarra Gold.....	Mex..	4	June 21	July 9	.15

DIVIDENDS.

NAME OF COMPANY	Current Dividends.		Paid since Jan. 1, 1896.	Total to date.
	Date.	Amount.		
*Etna Con.....			\$20,000	\$60,000
Alaska-Mexican.....			34,200	157,031
Alaska-Treadwell.....			150,000	2,825,000
Anaconda.....			750,000	.....
Aurora Iron.....			50,000	700,000
Bangkok-Cora Bell.	July 13	6,000	6,000	107,510
Hig Six.....			2,500	2,500
Roston & Mont.....			600,000	4,025,000
*Bullion Beek & Ch.			95,000	2,045,000
Calumet & Hecla.....	July 13	\$300,000	1,500,000	45,950,000
Cariboo.....			32,000	95,000
Centennial Eureka..			210,000	1,740,000
C. O. D.....			5,000	25,000
*Dalton & Lark.....			62,500	62,500
Dominion Coal.....			600,000	.....
*Elkton Con.....			20,000	65,000
Florence.....			54,390	89,348
Galea.....			16,000	30,000
Gold Coin.....			45,000	60,000
*Golden Fleece.....	July 15	18,000	126,000	527,179
*Gold & Globe Hill.			19,500	28,875
Hecla Con.....			30,000	2,130,000
Highland.....			25,000	3,159,918
*Homestake.....			188,500	5,900,000
Horn Silver.....			50,000	5,130,000
Iowa.....			27,000	20,000
Iron Mountain.....			30,000	440,000
*Isabella.....			112,500	135,000
*Le Roi.....			100,000	175,000
Mammoth.....	July 1	20,000	20,000	1,060,000
Mercur.....			100,000	450,000
Minnesota Iron.....	July 15	217,500	495,000	3,240,000
*Mont. Ore Pur. Co.	"	40,000	280,000	440,000
*Moon-Anchor.....			18,000	18,000
Moose.....			6,000	186,000
Napa Con.....	July 1	20,000	50,000	790,000
*Ontario.....			90,000	19,265,000
Osceola Con.....	July 25	50,000	125,000	2,072,500
Outaqueachy.....			1,000	1,000
*Portland.....			130,000	745,000
Quincy.....			40,000	8,070,000
Silver King.....			225,000	675,000
Slocan Star.....			100,000	100,000
Small Hopes.....			25,000	3,275,000
Smuggler-Union.....	July 1	50,000	100,000	100,000
*Union.....			23,500	73,000
Utah.....			13,000	145,000
*Victor.....			120,000	585,000
*Victor M. & L.....			12,000	42,000
War Eagle.....			25,000	157,500
Totals.....			\$957,500	\$7,362,590

* June dividend paid.

STOCK QUOTATIONS.

NEW YORK.*

Table of stock quotations for New York, listing companies like Adams, Ajax, Alamo, Alice, Alliance, Amer. Flag, Anaconda, Andes, Argentum-Jub., Bedford Con., Belcher, Best & Belcher, Bodie Con., Bullion Beck & C., Bulwer, Breeces, Brunswick, Centennial Eur., Chollar, Chrysolite, Comstock T., do. bonds, Con. Cal. & Va., Con. Imperial, Creede & C. C., Cripple C. Con., Cressna, Crown Point, Dalton, Daly, Deadwood Ter., Dunkla, Father de Smet, Golden Fleece, Gould & Curry, Hale & Norcross, Homestake, Horn Silver, Iron Silver, Isabella, King & Pemb., Lacrosse, Leadville Con., Little Chief, Mexican, Mollie Gibson, Mono, Mt. Rosa, Occidental Con., Ophir, Pharmacist, Phoenix, Portland, Potosi, Rover, Savage, Sierra Nevada, Silver King, Sm. Hopes Con., Specimen, Standard Con., Tetro, Union Con., Utah Con., Victor Work, Yellow Jacket.

* Official quotations N. Y. St. ex. and Con. Stock & Petroleum Exchanges. ‡ Holiday. Total shares sold, 13,155.

BOSTON, MASS.*

Table of stock quotations for Boston, Mass., listing companies like Allouez, Arnold, Atlantic, Bost. & C. C., Butte & Bost., Cal. & Hecla, Centennial, Dominion Coal, Franklin, Illinois Steel, Gold Con., Kearsarge, Lake Sup. Iron, Merced, Minnesota (Ir.), Napa, National, Old Dominion, Osceola, Pioneer, Pontiac, Quincy, do. scrip, Santa Rosa, San. Isabel (G.), Tamarack, Tecumseh, Westingh. E. & M., do. pref., do. scrip, Wolverine.

* Official quotations Boston Stock Exchange. † Holiday. Total sales, 51,996.

INDUSTRIAL COAL AND COAL RAILROAD.*

Table of stock quotations for Industrial Coal and Coal Railroad, listing companies like Bait. & Ohio, Ches. & Ohio, Col. C. & I. Dev., Col. Fuel & I., Col. H.V. & Tol., do. pref., Col. & H. Coal, Del. & Hud. C., Del., L. & W., General Elec., Lake Erie & W., do. pref., Morris & Essex, Nat'l Lead, do. pref., N. J. Central, N. Y., L. E. & W., do. pref., N. Y. Ont. & W., N. Y. Susq. & W., do. pref., Norfolk & W., do. pref., Phila. & Read, Tenn. & I., do. pref., Wheel. & L. E., do. pref.

* Official quotations N. Y. Stock Exchange. ‡ Holiday. Total shares sold, 34,131.

COLORADO SPRINGS, COLO.†

Table of stock quotations for Colorado Springs, Colo., listing companies like Ajax, Alamo, Am'ric'n C, Anaconda, Aola, Arg'ntum J, Bankok, Bankers, Banner, Ben Hur, Blue Bell, Mob Lee, Bost. & C. C., Buckhorn, Colo. C. & M, Columbine, Copper M, Cr. & C. C., Cr. C. Con., Cr. Cr. Exp., Cressna, Dante, Des Moines, Enterprise, Fanny R., Favorite, Franklin, Garfield-G, Gold Age, Gold Eagle, Gold F'ce, Gold & Gl., Gold King, Gold Stand, Gould, Grotte, Henrietta, Humboldt, Ida May, Ingram, C, Iron Clad, Isabella, do. stamp, Jack Pot., Jefferson, Keystone, Ladessa, Line 'n' Boy, Lottie Gib., Marion, Matos, Mollie G., Monarch, Mt. Rosa, Mutual, Nugget, Ophir, Oriole, Orphan B., Pappoose, Pharmacist, Portland, Princess, Reno, Sacram'to, Silver St., Specimen, Squaw Mt. T, Temon, Trachyle, Union, Virginia M, Work.

† Official quotations and sales Colo. Springs Mg. Stock Assoc. * Board of Trade Exchange. ‡ Holiday.

ST. LOUIS, MO., STOCKS. Week ending July 7.

Table of stock quotations for St. Louis, Mo., listing companies like Central Lead, Con. Coal, Doe Run Lead, Granite Mtn, St. Joe Lead.

SAN FRANCISCO, CAL.*

Table of stock quotations for San Francisco, Cal., listing companies like Alta, Belcher, Best & Belcher, Bodie Con., Bulwer, Chollar, Con. Cal. & Va., Crown Point, Gould & Curry, Mexican, Mono, Ophir, Potosi, Savage, Sierra Nevada, Union Con., Utah, Yellow Jacket.

* Official telegraphic quotations, San Francisco Stock Exchange.

BALTIMORE, MD.* Week ending July 8.

Table of stock quotations for Baltimore, Md., listing companies like Balt. M. & S., Conrad Hill, Con. Coal, G. Crk Coal, Howard C. & C, Lake Chrome, Ore Knob, Silver Valley.

* Official quotations Baltimore Stock Exchange.

BRITISH COLUMBIA.* Week ending July 3.

Table of stock quotations for British Columbia, listing companies like Boundary Creek, Old Ironsides Leasing, Colville Reservation, Reservation, Slocum Camp, Gray Eagle, Hecla, Caledonia Con, Crown Point, Deer Park, Evening Star, Eureka Con., Good Hope, Grand Prize, Great Western, Green Crown, Helen, High Ore, Iron Mask, Consolidated, Gertrude, Josie, Trail Creek (cont.), Knigt Templar, Le Roi, Lily May, Litt e Darling, Monte Cristo, Nest Egg, O. K., Palo Alto, Phoenix, Poorman, Rossland Gold, San Jaquin, St. Elmo, St. Mary, Silverline, Virginia, Vuican, War Eagle, W. Le Roi & Josie.

* From our special correspondent.

LONDON. June 26.

Table with columns: NAME OF COMPANY, Country, Product, Capital stock, Par value, Last dividend, Quotations (Buyers, Sellers), and various company names like Alaska-Mexican, Idaho, Arizona, etc.

DENVER, COLO.

Table with columns: NAME OF COMPANY, Par value, June 29, June 30, July 1, July 2, July 3, July 4, Sales. Lists various mining companies like Aled Mines, Anaconda, etc.

PARIS. Week ending June 26.

Table with columns: NAME OF COMPANY, Country, Product, Capital Stock, Par value, Div. last year, Prices (Op'n'g, Closing). Lists companies like Acieries de Creusot, Agnes Tenidas, etc.

PHILADELPHIA PA.

Table with columns: NAME OF COMPANY, Loc'n, Par Val, July 2, July 3, July 4, July 6, July 7, July 8, Sales. Lists companies like Acety. L.H. & P., Bethlehem Iron, etc.

MEXICO. Week ending July 2.

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

SALT LAKE CITY, UTAH. Week ending July 4.

Table with columns: Name of Company, Par value, Bid, Asked, Actual selling price, Name of Company, Par value, Bid, Asked, Actual selling price. Lists companies like Ajax, Alliance, etc.

VALPARAISO, CHILE. June 25.

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

PITTSBURG, PA. Week ending July 7.

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

HELENA, MONT. Week ending June 24.

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

SHANGHAI, CHINA. June 5.

Table with columns: NAME OF COMPANY, Country, No. of shares, Value, Last dividend, Price. Lists companies like Jelebu M. & Trad., Punjom M. Co., etc.

DULUTH MINN. Week ending July 4.

Table with columns: NAME OF COMPANY, Par value, Bid, Asked, NAME OF COMPANY, Par value, Bid, Asked. Lists companies like Adams Iron, Biwabik, etc.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns for Name and Location of Company, Capital Stock, Shares (No., Par Val), Assessments (Total Levied, Date and Amount of Last), Dividends (Total Paid, Date and Amount of Last), and Name and Location of Company, Capital Stock, Shares (No., Par Val), Assessments (Total Levied, Date and Amount of Last).

G., Gold. S., Silver. L., Lead. C., Copper. B., Borax. * Non-assessable. + The Deadwood previously paid \$275,000 in eleven dividends and the Terra \$75,000. † Previous to the consolidation in August, 1884, the California had paid \$31,320,000 in dividends and the Cons. Virginia \$42,390,000. 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.

CLASSIFIED LIST OF ADVERTISERS.

Air Compressors and Rock Drills
 Block, M. C. Mfg. Co.
 Burling Rock Drill Co.
 Clayton Air Compressor Works.
 Fraser & Chalmers.
 Ingersoll-Sergeant Drill Co.
 Laidlaw-Dunn-Gordon Co.
 (See Diamond Drills)
 Whitling Foundry Equipment Co.

Amalgamators
 Bucyrus Steam Shovel & Dredge Co.
 Fraser & Chalmers.

Amalgam Plates
 Western Plating and Mfg. Co.

Anti-Friction Metals
 Bealey, Chas. H., & Co.
 Chester Steel Cast. Co.

Architects and Builders
 Berlin Iron Bridge Co.
 Pittsburgh Bridge Co.
 Pollock, Wm. B., & Co.

Assayers' and Chemists' Supplies
 Alnsworth, Wm.
 Baker & Adamson.
 Baker & Co.
 Becker, Christian.
 Bullock & Crenshaw.
 Denver Fire Clay Co.
 Elmer & Amend.
 Henry Hill Chem. Co.

Attorneys, Corporation
 Emig, C. E.
 Hammerley, Hamilton & La Maistre.

Automatic Boiler Feeds
 Penberthy Injector Co.

Babbitt's Metal
 Bealey, Chas. H., & Co.

Bankers and Brokers
 Arkell, E., & Co.
 Bartlett & Co.
 Bonbright, W. P. & Co.
 Breitung, E. N.
 Crisp, C. S. Inv. Co.
 Crooks, E. E.
 Decker, L. R.
 Duer, G. A. C.
 Dursy Investment Co.
 Fittz, G. W. & Sons.
 Fletcher, C. S., & Co.
 Freyschlag, Kirby & Co.
 Grant, E. K.
 Handv & Harman.
 Hendrickson, W. J.
 Heron Bros.
 Hudgins, L. W.
 Hicks & Benzie.
 Johnson, L. L.
 Keith, F. M.
 Key, J. J.
 Kinney, M.
 Kellander, C. F. & Co.
 Leppelmer, N.
 Lents, John S.
 Mayer, Andrew.

Belting
 Carpenter, Geo. B., & Co.
 Hendrick & Bolthoff Mfg. Co.
 Jeffrey Mfg. Co.

Belt Lacing
 Bristol Co.

Blasting Caps
 Metallic Cap Mfg. Co.
 Rhenish Westphalian Explosive Co.
 Schroeder, Fr.

Blasting Batteries Caps and Fuse
 Climax Fuse Co.
 Lau, J. H., & Co.

Blowers, Pressure
 Connersville Blower Co.

Boilers
 Denver Eng. Wks. Co.
 Enterprise Boiler Co.
 Fraser & Chalmers.
 Heine Safety Boiler Co.
 Philadelphia E. N. & S. Wks., Ltd.

Brattice Cloth
 Bealey, Chas. H., & Co.

Brewers
 Pabst Brewing Co.

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

Bridges
 Berlin Iron Bridge Co.
 (See Machinery.)
 Shiffner Bridge Co.

Car Wheels
 Whitling Foundry Equipment Co.

Carbons
 Rhoad, Victor, & Co.
 New York Diamond Drill Co.
 Lexow, Theodor.

Chain and Link Belting (See Belting.)

Chemicals
 Baker & Adamson.
 Bullock & Crenshaw.
 Elmer & Amend.
 Henry Hill Chem. Co.

Coal
 Leeward-White Coal Mfg. Co.
 Oatner & Curran Consolidation Co.
 Davis Coal & Coke Co.
 Chemists.
 Simonds & Wainwright.

Chilled Castings
 Whitling Foundry Equipment Co.

Coal Cutters
 Ingersoll-Sergeant Drill Co.
 Jeffrey Mfg. Co.
 Leyner, J. Geo. (See Machinery.)
 Link Belt Machinery Co.

Compressors
 Clayton Air Compressor Works.
 Norwalk Iron Works Co.

Concentrators, Crushers, Pulverizers, Allis, V. F. & Co.
 "I. A. Theo. A.
 Bradley Pulverizer Co.
 Colorado Iron Works.
 Denver Eng. Works Co.
 Dodge Mining Machinery Co.
 Englebach Mach. Mfg. Co.
 Fraser & Chalmers.
 True Vanner Concentrator.
 Hendrick & Bolthoff Mfg. Co.
 Krupp, F.
 Link Belt Machinery Co.
 McCully, R.
 Scoville, H. H., & Co.
 Stedman Foundry & Mach. Co.
 Walburn-Swenson Mfg. Co. See Machinery

Contractors (See Machinery.)

Copper Boilers and Producers
 James & Shakspeare.
 Lambart's Wharf Co.
 Lewisohn Bros.
 Orford Copper Co.
 Pass, C., & Son, Ltd.
 Penn Salt Co.
 Phair, S., Dodge & Co.
 Tamarack Mfg. Co.
 Tamarack, Jr., Mfg. Co.
 Vivian, Younger & Bond.

Corrugated Iron
 Berlin Iron Bridge Co.
 Cincinnati Corrugating Co.
 Sikes Steel Roofing Co.

Cranes
 Whitling Foundry Equipment Co.

Crucibles, Graphite, Etc.
 Denver Fire Clay Co.
 Dixon, Jos. Crucible Co. & Machine Works.
 Cyanide.
 Roessler & Hasselacher Chemical Co.

Diamonds
 Bishop, Victor, & Co.
 Lexow, Theodor.
 New York Diamond Drill Co.
 Diamond Drills Co.
 Bishop, Victor, & Co.
 Bullock Mfg. Co., M. C.
 Lexow, Theodor.
 New York Diamond Drill Co.
 Sullivan Machinery Co.
 (See Air Compressors and Rock Drills.)

Draughtmen
 Young, Wm. R.

Drawing Materials
 Heer, Peter.
 Aloe, A. S. Co.
 Bealey, Chas. H., & Co.
 Dietzen, E., & Co.
 (See Engineering Instruments.)

Dredges
 Bucyrus Steam Shovel & Dredge Co.
 Marion Steam Shovel Co.
 Southern & Co.

Dryers
 Brown, Horace T.
 Sumner, F. D., Son Co.
 Denver Eng. Wks. Co.
 Durr, Frank G.
 Prentice, Russell.
 Froudlit, J. W., & Co.
 Reed, R., & Co.
 Riey, J. M.
 Rope, Key & Co.
 Sheldon, E. C.
 Still, Sill.
 Smith, C. H.
 Snow, E. P.
 Sprague, J. A.
 State Trust Co.
 Weyand Bros.
 Welles, E. F.
 White, Fred. B.
 Whig, Samuel.
 Williamson, W. W.
 Woods Investment Co.
 Wyoming Mfg. Bureau

Davis Colby Ore Roaster Co.

Educational Institutions
 Arizona School of Mines.
 Columbian University.
 Chicago School of Assaying.
 Correspondence School of Mines.
 Lehigh University.
 Mass. Inst. of Technology.
 Michigan Mining School.
 Missouri School of Mines.
 Rose Polytechnic Institute.
 Worcester Polytechnic Inst.

Electrical Batteries
 Macbeth, James, & Co.
 Link Belt Mach. Co.
 Oronite Co., Ltd.
 Repauno Chem. Co.
 Stiles, Geo.
 Walker Co.
 Westinghouse Elec. Mfg. Co.

Electrical Machinery and Supplies
 Bealey, Chas. H., & Co.
 Carl Electric Co.
 Denver Eng. Wks. Co.
 Electrical Engineer.
 General Electric Co.
 Jeffrey Mfg. Co.

Elevators, Conveyors and Hoisting Machines
 Brown Hoist & Conv. Mfg. Co.
 Caldwell, H. W., & Co.
 California Wire Wks. Co.
 Cooper, Hewitt & Co.
 Crook, W. A., & Bros. Co.
 Denver Eng. Wks. Co.
 Electrical Engineering Co.
 (See Wire Rope Tramway and Machinery.)

Emergencies
 Bealey, Chas. H., & Co.
 New York Belting & Packing Co., Ltd.
 Engineers, Chemists, Metallurgists
 See Directory Pages 4, 5 and 6.

Engineer's Instruments and Supplies
 Aloe, A. S. Co.
 Buff & Berger.
 Bullock & Crenshaw.
 Dietzen, F., & Co.
 Fauth & Co.
 Gurley, W. & L. E.
 Engines
 American Engine Co.
 Buckeye Engine Co.
 Bullock, M. C. Mfg. Co.
 Enterprise Boiler Co.
 Ellison, Wm., & Son.
 Fraser & Chalmers.
 Heine Safety Boiler Co.
 Lidgerwood Mfg. Co.
 (See Machinery.)

Excavators
 Bucyrus Steam Shovel & Dredge Co.
 Marion Steam Shovel Co.
 Southern & Co.
 Vulcan Iron Works.

Fire-Brick and Clay
 Denver Fire Clay Co.
 Hoskins, Wm.
 Moore, S. L., & Son Co.
 Pollock, W. B., & Co.
 (See Machinery.)

Fuses, Powder
 Ingersoll-Sergeant Drill Co.
 Climax Fuse Co.

Gas Engines
 Norman, J. J., & Co.

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

Gauges, Recording, Etc.
 Bristol Mfg. Co.

Gearing
 Bealey, Chas. H., & Co. | Denver Eng. Wks. Co.
 Chester Steel Cast. Co. | Fraser & Chalmers.
 (See Machinery.)

Grease, Graphite, Etc.
 Bealey, Chas. H., & Co. | Dixon, Jos. Cruc. Co.
 Harvey's Steel
 Pierce & Miller Engineering Co.

Heavy Machinery
 Denver Eng. Works Co.
 Fraser & Chalmers.

Rope, Rubber, Etc.
 New York Belting & Packing Co., Ltd.

Injectors
 Jenkins Bros.
 Penberthy Injector Co.

Insulated Wires and Cables
 Okonite Co., Ltd. The
 Insurance Companies
 Hartford Steam Boiler Inspect'n and Ins. Co.
 Mutual Life Insurance Co.

Joint Fittings
 Tight Joint Co.

Lead Linings for Chlorination Tubs.
 Raymond Lead Co.

Locomotives
 General Electric Co.
 Hunt, C. W. Co.
 Porter, W. & Co.
 Asbestos Paraffine Co.

Lubricators
 Detroit Lubricator Co.

Dealers in Mining, Milling and Other Machinery
 Allis, Edw. F., & Co.
 Bacon, E. C.
 Beckett, Fy. & Mch. Co.
 Bealey, Chas. H., & Co.
 Blake, T. A.
 Bradley Pulverizer Co.
 Buckeye Engine Co.
 Bullock, W. C. Mfg. Co.
 Caldwell, H. W., & Co.
 Card Electric Co.
 Carpenter, Geo. B., & Co.
 Channon, H. Co.
 Colorado Iron Works.
 Connersville Blower Co.
 Condit & Huff.
 Crook, W. A., & Bros. Co.
 Davis Colby Ore R. Co.
 Denver Mfg. Mach. Co.
 Denver Eng. Wks. Co.
 Dodge Mfg. Mach. Co.
 Ellison, Wm., & Son.
 Englebach Mfg. Co.
 Field & Goetsman.
 Fraser & Chalmers.
 Hammond, Mfg. Co.
 Heine Safety Boiler Co.
 Hendrick & Bolthoff Mfg. Co.
 Ingersoll-Sergeant Drill Co.
 Jeffrey Mfg. Co.
 Jessop, W. & Sons, Ltd.
 Leyner, J. Geo.
 Lidgerwood Mfg. Co.

Manganese Steel
 Taylor Iron & Steel Co.

Metal Dealers
 American & Dev. Mfg. Co.
 American Metal Co.
 Am. Zinc-Lead Co.
 Baker & Co.
 Bath, Henry & Son.
 Bealey, Chas. H., & Co.
 Bridgeport Copper Co.
 Cherokee, L. A. & Co.
 Spleter Co.
 Cookson & Co.
 Elliott's Metal Co., Ltd.
 Eureka Co.
 Foster, Blackett & Wilson.
 James & Shakspeare.

Metallurgical Works and Ore Processors
 American Dev. & Mfg. Co.
 Amer. Zinc Lead Co.
 Baker & Co.
 Balbach Sm. & Ref. Co.
 Balmington Copper Wks.
 Bridgeport Copper Co.
 Canadian Copper Co.
 Cookson & Co.
 Denver Eng. Wks. Co.
 Elliott's Metal Co., Ltd.
 Electro Cyanide Gold & Silver Extraction Co.
 Foster, Blackett & Wilson.
 Fraser & Chalmers.
 Crandall & Huff.
 Denver Eng. Wks. Co.
 Hendrick & Bolthoff Mfg. Co.
 Hunt, C. W., Co.
 Nelsonville Foundry & Machine Co.
 Whitling Foundry Equipment Co.
 (See Machinery.)

Mine, Mill and Smelters Supplies.
 Carpenter, Geo. B., & Co.
 Crandall & Huff.
 Denver Eng. Wks. Co.
 Hendrick & Bolthoff Mfg. Co.
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 Hendrick & Bolthoff Mfg. Co.
 Hunt, C. W., Co.
 Nelsonville Foundry & Machine Co.
 Whitling Foundry Equipment Co.
 (See Machinery.)

Mining and Land Companies
 American Dev. & Mfg. Co.
 Clark Land & Mines Co.
 Ledoux & Co.
 Atlantic Mfg. Co.
 Arizona Copper Co.
 Nickel
 Canadian Copper Co.

Ore Cars
 Trux Mfg. Co.

Ore Hoisting
 Brown, Horace T.
 Sumner, F. D., & Sons Co.
 Denver Eng. Wks. Co.
 Durr, Frank G.

Ore Testing Works
 Hunt, F. E.
 Ledoux & Co.
 Montana Ore Purchasing Co.
 State Ore Sampling Co.
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 Robertson, W. F.
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 Denver Eng. Wks. Co.
 Fraser & Chalmers.
 Harrington & King Perforating Co.
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 Ludlow-Saylor Wire Co. (See Machinery.)
 Robinson & Orr.

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 Dodge Mining Machinery Co.

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 Chester Steel Cast. Co.
 Corone Steel Works.
 Crescent Steel Co.
 Denver Eng. Wks. Co.

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 Bucyrus Steam Shovel & Dredge Co.
 Marion Steam Shovel Co.
 Southern & Co.

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 Balbach Sm. & Ref. Co.
 Balmington Copper Wks.
 Bridgeport Copper Co.
 Elliott's Metal Co., Ltd.
 Kan. City Sm. & Ref. Co.
 Mathison Smelting Co.

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 Bethlehem Iron Co.
 Carpenter Steel Co.
 Chester Steel Cast. Co.
 Chrome Steel Works.
 Crandall & Huff.
 Crescent Steel Co.
 Moore, M. L., & Sons Co., Ltd.
 Denver Eng. Wks. Co.
 Gates Iron Works.

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 Brown Hoist & Conv. Mfg. Co.
 Boobing, W. A., Son & Co.
 California Wire Wks.
 Colorado Iron Works.
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advertisin out in the wrong direction—missed the Engineer and Mining Journal.

POSITIONS VACANT. FREE ADVERTISING

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

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

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

1463 WANTED—A GENTLEMAN FAMILIAR with railway supplies and specialties, knowing the manufacturers and comparative merits of their products. Address H. G., ENGINEERING AND MINING JOURNAL.

1464 WANTED—COMPETENT MAN TO GO TO SIDON, SYRIA, to introduce artesian well-boring apparatus. Must have good references, and be willing to stay a year or longer if necessary. Address ISLAM, ENGINEERING AND MINING JOURNAL.

1466 WANTED—ELECTRO-METALLURGIST. An important recently organized copper-mining company is considering the advisability of erecting electrolytic works, and would like to correspond with electro metallurgist capable of designing and running the same. A liberal salary will be paid if, after investigation, it is decided to refine by this process. Address RIO GRANDE, care of ENGINEERING AND MINING JOURNAL.

1467 WANTED—ASSAYER AND ASSISTANT CHEMIST, by a firm of refiners of precious metals. Address, stating age, experience and wages expected, REFINERS, ENGINEERING AND MINING JOURNAL.

1468 WANTED—A MAN WHO IS A THOROUGHLY COMPETENT MECHANICAL DRAFTSMAN and Chemist, who is willing to start with low wages, where chances for advancement are good; steady position. Address, stating references, experience and salary expected, XY, ENGINEERING AND MINING JOURNAL.

1469 WANTED—A THOROUGHLY EXPERIENCED FURNACE MAN who understands manufacturing Ferro Manganese and Spiegel. Address, with full particulars, O. R. E., ENGINEERING AND MINING JOURNAL.

1470 WANTED BY AN ENGLISH COMPANY a competent and experienced mine manager, to open up gold mine near Rat Portage, Ontario, Canada, and to erect stamp mill. Must assay and have chemical knowledge. Age not less than 35. References to persons in London, England, desirable. State salary. Address R. E., ENGINEERING AND MINING JOURNAL.

1471 WANTED—A COMPETENT ENGINEER who has had experience in mining and mine examinations throughout the West to take a position with a mining company as one of their field engineers; proofs of ability and trustworthiness will be required. Address EXPLORATION, ENGINEERING AND MINING JOURNAL.

1472 WANTED—A FIRST-CLASS MILLWRIGHT accustomed to quartz mill for mine in Central America. Contract three years. Give terms and references. Address MILLWRIGHT, ENGINEERING AND MINING JOURNAL.

1473 WANTED.—A GOOD BLACKSMITH for mining camp in Central America. Must understand mule shoeing. Contract three years. State terms and references. Address BLACKSMITH, ENGINEERING AND MINING JOURNAL.

1474 WANTED.—ANALYTICAL CHEMIST, for position at a blast furnace. Young man with a few years' experience preferred. Send references and salary expected. Address CARBO, ENGINEERING AND MINING JOURNAL.

SITUATIONS WANTED.

Advertisements for SITUATIONS WANTED will be charged only 10 cents a line.

GRADUATE MINING ENGINEER.—Young man, wishes position, any country, as assayer assistant to manager or superintendent of mines. One year's experience in topography, hydrography and chemistry. Address C. H. K., 652 CARR ST., MILWAUKEE, WIS. No. 17,459, July 18.

YOUNG MAN, THIRTY YEARS OF AGE, desires position as foreman or assistant superintendent of copper or lead silver smelter. Has practical knowledge of reverberatory and blast furnace work; practical builder of both furnaces. Address COPPER, ENGINEERING AND MINING JOURNAL. No. 17,448, July 25.

WANTED—BY A CAPABLE MINING ENGINEER, a position by the 1st of August as manager with a first-class gold, silver or copper mining company in Mexico or elsewhere; age, 52 years; 27 years' practical experience; also a thorough knowledge of chemistry and bookkeeping in English and Spanish. Presently engaged with the largest mining and metallurgical company in the Republic of Mexico. Object, change of location. Address for 30 days, MEXICO, ENGINEERING AND MINING JOURNAL. No. 17,459, July 25.

CHEMIST AND ASSAYER, SIX YEARS in responsible positions now in charge of a Lake Superior laboratory, desires position in Southwest. Refers to present employers. Address "V," Box 399 Ironwood, Mich. No. 17,457, July 25.

A MINING ENGINEER, AGE 22, GRADUATE of Mass. Institute of Technology, '95, desires a position with gold mining company, willing to go anywhere. Address COB, ENGINEERING AND MINING JOURNAL. No. 17,447, July 18.

YOUNG GRADUATE MINING ENGINEER, one year's experience, wishes position as assistant superintendent, chemist, assayer, surveyor or draughtsman in a mine or smelter. Best references. Will go anywhere. Address E. M., 429 Morgan street, St. Louis, Mo. No. 17,455, July 11.

WANTED—POSITION WITH COMPANY intending to adopt the cyanide process. Large experience; good references. Address CYANIDE, ENGINEERING AND MINING JOURNAL. No. 17,460, July 25.

MILLMAN DESIRES CHANGE.—THOROUGH experience in milling, concentration and chlorination. Considerable knowledge of cyanide process. Now in charge of successful reduction plant. Address MILLMAN, ENGINEERING AND MINING JOURNAL. No. 17,458, August 8.

WANTED—POSITION AS RESIDENT manager or superintendent; 15 years' practical experience; now with the largest company in Northern Mexico as mine superintendent; Spanish American country preferred; highest recommendations. Address AMERICANO, ENGINEERING AND MINING JOURNAL. No. 17,432, Aug. 1.

MINING ENGINEER AND METALLURGIST of high standing is open to engagement. Large properties or works preferred. Specialties made of successfully treating low-grade ores. Address CONCENTRATOR, ENGINEERING AND MINING JOURNAL.

GRADUATE M. E. WANTS POSITION as assistant manager or superintendent. Eight years' experience. Two years' engineering experience. Address AHORA, ENGINEERING AND MINING JOURNAL.

CHEMIST, AT PRESENT EMPLOYED BY A well-known iron company, desires chemical work in or near a city or in a large town. Is a rapid and accurate analyst; sober and industrious. Best recommendations from present employers. Would accept college or high-school position as instructor. Address C. H. E., ENGINEERING AND MINING JOURNAL. No. 17,454, July 18.

A POSITION WANTED IN SPANISH SOUTH America as chief accountant or representative of a mining or manufacturing concern. Experience for a number of years with one of the largest mining enterprises in Mexico; full knowledge of English, Spanish and German; also some French; 30-31 years; single; best references. Address SPANISH SOUTH AMERICA, ENGINEERING AND MINING JOURNAL. No. 17,461, Aug. 22.

Contracts Open.

TREASURY DEPARTMENT, OFFICE SUPERVISING ARCHITECT, WASHINGTON, D. C., July 15th, 1896.—Sealed proposals will be received at this office until 2 o'clock, p. m., on the 12th day of August, 1896, and opened immediately thereafter, for furnishing and erecting complete either a hydraulic passenger elevator or an electric passenger elevator in lieu of the hydraulic elevator, for the U. S. Court House, Post Office, etc., building at Wilmington, Del., in accordance with the drawings and specifications, copies of which may be had at this office or at the office of the Superintendent at Wilmington, Del. Each bid must be accompanied by a certified check for a sum not less than 2% of the amount of the proposal. The right is reserved to reject any or all bids or to waive any defect or informality in any bid should it be deemed in the interest of the Government to do so. All bids received after the time stated will be returned to the bidders. Proposals must be enclosed in envelopes, sealed and marked, "Proposal for a Hydraulic Passenger Elevator or an Electric Passenger Elevator for the U. S. Court House, Post Office, etc., Building at Wilmington, Del.," and addressed to WM. MARTIN AIKEN, Supervising Architect. Orig.

TREASURY DEPARTMENT, Office of the Supervising Architect, Washington, D. C., June 11th, 1896.—Sealed proposals will be received at this office until 2 o'clock p. m. on the 7th day of August, 1896, and opened immediately thereafter, for all the labor and materials required for the erection and completion (except heating apparatus) of the U. S. Post Office building at Meridian, Miss., in accordance with the drawings and specification, copies of which may be had at this office or the office of the Superintendent at Meridian, Miss. Each bid must be accompanied by a certified check for a sum not less than 2% of the amount of the proposal. The right is reserved to reject any or all bids and to waive any defect or informality in any bid, should it be deemed in the interest of the Government to do so. All proposals received after the time stated for opening will be returned to the bidders. Proposals must be enclosed in envelopes, sealed and marked "Proposal for the erection and completion (except heating apparatus) for the U. S. Post Office building at Meridian, Miss.," and addressed to WM. MARTIN AIKEN, Supervising Architect. Orig.

BRIDGE.—The contract for the masonry and superstructure of a bridge over the Jackson River at Iron Gate will be let by the Board of Supervisors of Alleghany County, Virginia, on Wednesday, July 15, at the County Court House in Covington. Specifications may be had of J. E. JOHNSON, JR., Longdale, Alleghany Co., Va.

PLANS FOR BRIDGE.—Bridge Engineers are requested to submit designs for the superstructures of a new bridge over Newtown Creek, between Manhattan avenue, in the City of Brooklyn, and Vernon avenue, in Long Island City, to the Joint Bridge Committee of the Board of Aldermen of the City of Brooklyn and the Board of Supervisors of Queens County, at a meeting to be held at Common Council Chambers, City Hall, Brooklyn, on the 23d day of July, 1896. These designs are to be for the superstructures of a bridge to replace the present Vernon avenue bridge. The style and dimensions of the new structure, the method of moving the same and the clear waterway are to be determined by each designer, and are to be in accordance with the regulations of the United States War Department. Each competitor is to submit drawings showing the general design of the proposed structure, with length of movable span or spans, and of stationaries, if any, width of clear waterway, width of roadway and footways, loads proposed to be sustained and carried, dimensions of all the parts and modes of construction, and strain sheets showing the forms and construction of typical members with strains sustained; also the metals proposed to be used, style of flooring and motive power, with sufficient detail to indicate the manner of the application and operation of the same, and a typewritten description of the proposed structures. The length between the bulkhead lines measured on a line from the intersection of the center of Manhattan avenue and the bulkhead to the intersection of the center of Vernon avenue and the bulkhead is 280 ft. The angle of intersection of this line with the bulkhead lines taken down stream, on the Queens County side, measured from south to west, is 74 degrees 39 minutes. The width of Manhattan avenue is 70 ft., and of Vernon avenue is 80 ft. The grade of the avenue at the bulkhead line is 7 ft. above high water. The committee will make no compensation to any engineer competing excepting to the one whose designs are accepted and approved. Each engineer will be requested to submit in writing with his designs the price of the same, and by submitting his designs each engineer agrees to make no charge therefor, or for any work done or expense incurred, unless his designs are approved and adopted, and in no event shall such charge or price exceed the price submitted with the design. Any desired detail or site not herein contained may be had upon application to JOHN J. McLAUGHLIN, County Engineer of Queens County, N. Y.

WATER-WORKS.—The President and Board of Trustees of the village of Cerro Gordo, Piatt County, Illinois, will receive sealed bids for a complete system of water-works until July 23d, 1896. The works will consist of a brick pumping station, brick tower and tank, one gasoline engine and a vertical power pump, and a system of water main pipes, hydrants and valves. The contractor will be paid cash for all of the system except the water main pipes, hydrants and valves, for which he must receive special assessment bonds. Specifications may be obtained of the village clerk or Chas. F. Sturtevant, Consulting Engineer, at whose offices the plans will be on file after July 10th. The Board will receive bids on any division or the entire system; but must be written on the printed forms attached to the specifications. A properly endorsed certified check of \$200 on any division, or \$500 on the entire system, must accompany each proposal. All checks shall be made payable to the order of the "Treasurer of Cerro Gordo, Illinois." Any contractor failing or refusing to enter into a contract, if awarded him, within 10 days of such award, will forfeit his check to the village. A solvent and satisfactory bond of \$1,000 on any division of this work, or \$5,000 on the whole system, will be required.

THE ENGINEERING AND MINING JOURNAL

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	24	2	8	24	38	66	90	113
	27	2 1/4	9	27	43	72	98	125
	30	2 1/2	10	30	48	79	108	137
	33	2 3/4	11	33	53	86	117	149
	36	3	12	36	58	93	126	161
	39	3 1/4	13	39	63	100	135	172
	42	3 1/2	14	42	68	107	144	183
	45	3 3/4	15	45	73	114	153	194
	48	4	16	48	78	121	162	204
	51	4 1/4	17	51	83	128	171	224
	54	4 1/2	18	54	88	135	180	243
	57	4 3/4	19	57	93	142	189	261
	60	5	20	60	98	149	198	279
	63	5 1/4	21	63	103	156	207	298
	66	5 1/2	22	66	108	163	216	317
	69	5 3/4	23	69	113	170	225	336
	72	6	24	72	118	177	234	355
	75	6 1/4	25	75	123	184	243	374
	78	6 1/2	26	78	128	191	252	393
	81	6 3/4	27	81	133	198	261	412
	84	7	28	84	138	205	270	431
	87	7 1/4	29	87	143	212	279	450
	90	7 1/2	30	90	148	219	288	469
	93	7 3/4	31	93	153	226	297	488
	96	8	32	96	158	233	306	507
	99	8 1/4	33	99	163	240	315	526
	102	8 1/2	34	102	168	247	324	545
	105	8 3/4	35	105	173	254	333	564
	108	9	36	108	178	261	342	583
	111	9 1/4	37	111	183	268	351	602
	114	9 1/2	38	114	188	275	360	621
	117	9 3/4	39	117	193	282	369	640
	120	10	40	120	198	289	378	659
	123	10 1/4	41	123	203	296	387	678
	126	10 1/2	42	126	208	303	396	697
	129	10 3/4	43	129	213	310	405	716
	132	11	44	132	218	317	414	735
	135	11 1/4	45	135	223	324	423	754
	138	11 1/2	46	138	228	331	432	773
	141	11 3/4	47	141	233	338	441	792
	144	12	48	144	238	345	450	811
	147	12 1/4	49	147	243	352	459	830
	150	12 1/2	50	150	248	359	468	849
	153	12 3/4	51	153	253	366	477	868
	156	13	52	156	258	373	486	887
	159	13 1/4	53	159	263	380	495	906
	162	13 1/2	54	162	268	387	504	925
	165	13 3/4	55	165	273	394	513	944
	168	14	56	168	278	401	522	963
	171	14 1/4	57	171	283	408	531	982
	174	14 1/2	58	174	288	415	540	1001
	177	14 3/4	59	177	293	422	549	1020
	180	15	60	180	298	429	558	1039
	183	15 1/4	61	183	303	436	567	1058
	186	15 1/2	62	186	308	443	576	1077
	189	15 3/4	63	189	313	450	585	1096
	192	16	64	192	318	457	594	1115
	195	16 1/4	65	195	323	464	603	1134
	198	16 1/2	66	198	328	471	612	1153
	201	16 3/4	67	201	333	478	621	1172
	204	17	68	204	338	485	630	1191
	207	17 1/4	69	207	343	492	639	1210
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DIVIDENDS.

HOMESTAKE MINING COMPANY,
MILLS BUILDING, 15 Broad Street,
New York, July 14th, 1896.
DIVIDEND NO. 216.

The regular monthly dividend, TWENTY-FIVE (25) CENTS PER SHARE, has been declared for June, payable at the office of the company, San Francisco, or at the transfer agency in New York, on the 25th inst. Transfer books close on the 20th inst.
LOUNSBERY & CO., Transfer Agents.

ISABELLA GOLD MINING COMPANY.
COLORADO SPRINGS, Colo., July 10th, 1896.
DIVIDEND NO. 7.

A dividend of ONE CENT PER SHARE (\$22,500) has been declared, payable July 25th, 1896, to stockholders of record July 18th, 1896.
The stock transfer books will be closed July 18th, 1896, at 3 o'clock p. m., and will be re-opened on the morning of July 26th, 1896.
PERCY HAGERMAN,
Vice-President and Treasurer.

ONTARIO SILVER MINING COMPANY,
MILLS BUILDING, 15 Broad street, New York,
July 17th, 1896.

DIVIDEND NO. 204.
A dividend of TEN (10) CENTS PER SHARE has been declared, payable at the office of the company, San Francisco, or at the transfer agency in New York, on the 31st inst.
Transfer books close on the 25th inst.
LOUNSBERY & CO., Transfer Agents.

SMUGGLER UNION MINING COMPANY,
804 BOSTON BUILDING, Denver, Colo.

A dividend of ONE (\$1) DOLLAR PER SHARE has been declared, payable at the office of the company, July 1st.
Transfer books will be closed on the 20th inst for 12 days.
A. H. FOWLER, Secretary

LANDS AND MINES FOR SALE.

GOLD MINES FOR SALE

On Pacific Coast. Correspondence solicited.

J. F. CROSETT,
Secretary, Gold Mining Exchange,
No. 628 Sacramento St., San Francisco, Cal.

HAVING A LARGE AMOUNT OF GOOD paying placer ground close to Denver. I want an associate with means to help develop same, or will sell part of it. Come prospect and convince yourselves. None but responsible parties need apply. Address G. B. MINETT, Golden, Col.

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Bought and sold on a strictly commission basis. **No loading.** We have a No. 1 Gold property and a first-class Lead mine for sale. Suppose you write us for particulars.

F. B. COOK & CO.,
Atlas Block, - Salt Lake City, Utah.

FOR SALE—CAMBRIA SLATE QUARRY,

Situated on Slate Ridge, Harford County, Md. This is a fully-equipped plant between 5 and 6 acres. The quarry is in a paying and working condition and must be sold to settle an estate; will be sold at a BARGAIN. Reference, J. A. BARNET, Delta, York Co., Pa. For full information address G. A. WOLTMAN, Real Estate and Insurance, York, Pa.

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Two or three large Huntington Gold Mills, in good order, for mines in the South.

Address, giving full particulars, price, etc., HUNTINGTON, ENGINEERING AND MINING JOURNAL.

WANTED.

Good Gold and Copper Mines.

Must have ore "in sight" to justify the price, and those offering them must pay experts' fees if statements made are not substantiated on examination by competent engineers.

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SECOND-HAND RAILS.

If you have any Rails which are in good condition to relay—or if only good to be used as scrap—write us; we buy both kinds.

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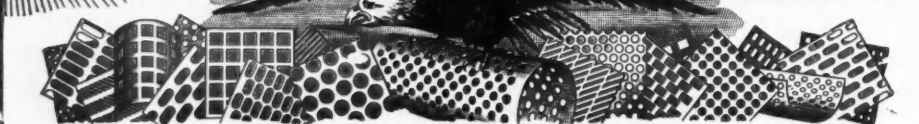
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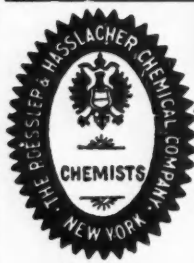
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